BLEMO® ER24Variable Speed Drives for Asynchronous and Synchronous Motors

Programming Manual

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BLEMO® Frequenzumrichter

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use BLEMO software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

A DANGER

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

▲ WARNING

WARNING indicates a hazardous situation, which, if not avoided, **could result** in death, serious injury, or equipment damage.

A CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, **could result** in minor or moderate injury, or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by BLEMO for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification Of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Intended Use

This product is a drive for three-phase synchronous and asynchronous motors and intended for industrial use according to this manual. The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements and the technical data. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.

Product related information

Read and understand these instructions before performing any procedure with this drive.

A ADANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only appropriately trained persons who are familiar with and understand the contents of this manual and
 all other pertinent product documentation and who have received safety training to recognize and avoid
 hazards involved are authorized to work on and with this drive system. Installation, adjustment, repair and
 maintenance must be performed by qualified personnel.
- The system integrator is responsible for compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Many components of the product, including the printed circuit boards, operate with mains voltage. Do not touch. Use only electrically insulated tools.
- Do not touch unshielded components or terminals with voltage present.
- Motors can generate voltage when the shaft is rotated. Prior to performing any type of work on the drive system, block the motor shaft to preventrotation.
- AC voltage can couple voltage to unused conductors in the motor cable. Insulate both ends of unused conductors of the motor cable.
- Do not short across the DC bus terminals or the DC bus capacitors or the braking resistor terminals.
- Before performing work on the drive system:
 - Disconnect all power, including external control power that may be present.
 - Place a "Do Not Turn On" label on all powerswitches.
 - Lock all power switches in the open position.
 - Wait 15 minutes to allow the DC bus capacitors to discharge. The DC bus LED is not an indicator of the absence of DC bus voltage that can exceed 800 Vdc.
 - Measure the voltage on the DC bus between the DC bus terminals (PA/+ and PC/-) using a properly rated voltmeter to verify that the voltage is <42 Vdc.
 - If the DC bus capacitors do not discharge properly, contact your local BLEMO representative. Do not repair or operate the product.
- Install and close all covers before applying voltage.

Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

WARNING

UNEXPECTED EQUIPMENT OPERATION

- Carefully install the wiring in accordance with the EMC requirements.
- Do not operate the product with unknown or unsuitable settings or data.
- Perform a comprehensive commissioning test.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

A A DANGER

ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION

Do not use damaged products or access sories.

Failure to follow these instructions will result in death or serious injury.

Contact your local BLEMO sales office if you detect any damage.

▲ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines. 1
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE

Before switching on and configuring the product, verify that it is approved for the mains voltage.

Failure to follow these instructions can result in equipment damage.

^{1.} For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems".

WARNING

HOT SURFACES

- Ensure that any contact with hot surfaces is avoided.
- $\bullet \quad \hbox{Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.}\\$
- Verify that the product has sufficiently cooled down before handling it.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions

Failure to follow these instructions can result in death, serious injury, or equipment damage.

A WARNING

EXPLOSION HAZARD

Only use this device outside of hazardous areas (explosive atmospheres).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

About the Book



At a Glance

Document scope

The purpose of this document is to:

- · help you to set-up the drive,
- · show you how to program the drive,
- show you the different menus, modes and parameters,
- help you in maintenance and diagnostics.

Validity note

NOTE: The products listed in the document are not all available at the time of publication of this document online. The data, illustrations and product specifications listed in the guide will be completed and updated as the product availabilities evolve. Updates to the guide will be available for download once products are released on the market.

This documentation is valid for the ER24 drive.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.blemo.com. The internet site provides the information you need for products and solutions

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error**, **error message**, **failure**, **fault**, **fault reset**, **protection**, **safe state**, **safety function**, **warning**, **warning message**, and so on.

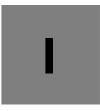
Among others, these standards include:

- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- EN 954-1 Safety of machinery Safety related parts of control systems
- EN ISO 13849-1 & 2 Safety of machinery Safety related parts of control systems.
- IEC 61158 series: Industrial communication networks Fieldbus specifications
- IEC 61784 series: Industrial communication networks Profiles
- IEC 60204-1: Safety of machinery Electrical equipment of machines Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

Also see the glossary at the end of this manual.

General Overview



What's in this Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
1	Overview	<u>17</u>
2	Setup	<u>37</u>

Overview



What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Factory configuration	<u>18</u>
Application functions	<u>19</u>
Basic functions	<u>23</u>
Graphic display terminal option	<u>24</u>
Graphic display terminal option	<u>24</u>
Pow ering up the drive for the first time	<u>27</u>
Remote display terminal option	<u>30</u>
Structure of the parameter tables	<u>31</u>
Finding a parameter in this document	<u>32</u>
Description of the HMI	<u>33</u>
Structure of the menus	<u>35</u>

Factory configuration

Factory settings

The ER24 is factory-set for common operating conditions:

- Display: drive ready [Ready] (rdY) when motor is ready to run and the output frequency when motor is running.
- The LI3 to LI6 logic inputs, AI2 and AI3 analog inputs, LO1 logic output, AO1 analog output, and R2 relay are unassigned.
- Stop mode if error is detected:freewheel.

Code	Description	Factory settings values	Page
bFr	[Standard mot. freq]	[50Hz IEC]	<u>86</u>
tCC	[2/3 wire control]	[2 wire] (2C): 2-wire control	<u>85</u>
Ctt	[Motor control type]	[Standard] (Std): standard motor law	<u>105</u>
ACC	[Acceleration]	3.0 seconds	<u>87</u>
dEC	[Deceleration]	3.0 seconds	<u>87</u>
LSP	[Low speed]	0 Hz	<u>87</u>
HSP	[High speed]	50 Hz	<u>87</u>
ItH	[Mot. therm. current]	Nominal motor current (value depending on drive rating)	<u>87</u>
SdC1	[Auto DC inj. level 1]	0.7 x nominal drive current, for 0.5 seconds	<u>93</u>
SFr	[Switching freq.]	4 kHz	<u>94</u>
Frd	[Forward]	[LI1] (L_I1): Logic input LI1	<u>126</u>
rrS	[Reverse as sign.]	[LI2] (L_I2): Logic input LI2	<u>126</u>
Fr1	[Ref.1 channel]	[Al1] (Al1): Analog input Al1	<u>154</u>
r1	[R1 Assignment]	[No drive flt] (FLt): The contact opens when a fault is detected or when the drive has been switched off	<u>138</u>
brA	[Decrampadapt.]	[Yes] (YES): Function active (automatic adaptation of deceleration ramp)	<u>172</u>
Atr	[Automatic restart]	[No] (nO): Function inactive	<u>252</u>
Stt	[Type of stop]	[Ramp stop] (rMP): On ramp	<u>173</u>
CFG	[Macro configuration]	[Start/Stop] (StS)	<u>82</u>

Note: If you want to keep the drive presettings to a minimum, select the macro configuration [Macro configuration] (CFG) = [Start/stop] (StS) followed by [Restore config.] (FCS) = [Config. CFG] (In I). For more information, see page 82.

Check whether the values above are compatible with the application.

Application functions

The tables on the following pages show the combinations of functions and applications, in order to guide your selection.

The applications in these tables relate to the following machines, in particular:

- · Hoisting: cranes, overhead cranes, gantries (vertical hoisting, translation, slewing), lifting platforms
- **Handling**: palletizers/depalletizers, conveyors, roller tables
- Packing: carton packers, labeling machines
- Textiles: weaving looms, carding frames, washing machines, spinners, drawing frames
- Wood: automatic lathes, saws, milling
- Process

Each machine has its own special features, and the combinations listed here are neither mandatory nor exhaustive.

Some functions are designed specifically for a particular application. In this case, the application is identified by a tab in the margin on the relevant programming pages.

Motor control functions

Functions	Page	Applications					
		Hoisting	Handling	Packing	Textiles	Wood	Process
V/f ratio	<u>105</u>						
Sensorless flux vector control	<u>105</u>						
2-point vector control	<u>105</u>						
Open-loop synchronous motor	<u>105</u>						
Output frequency up to 599 Hz	<u>105</u>						
Motor overvoltage limiting	<u>120</u>						
DC bus connection (see Installation manual)	-						
Motor fluxing using a logic input	<u>189</u>						
Sw itching frequency of up to 16 kHz	<u>94</u>						
Auto-tuning	<u>87</u>						

Functions on speed references

Functions	Page	Applications					
		Hoisting	Handling	Packing	Textiles	Wood	Process
Differential bipolar reference	<u>129</u>						
Reference delinearization (magnifying glass effect)	<u>131</u>						
Frequency control input	<u>154</u>						
Reference switching	<u>167</u>						
Reference summing	<u>168</u>						
Reference subtraction	<u>168</u>						
Reference multiplication	<u>168</u>						
Adjustable profile ramp	<u>170</u>						
Jog operation	<u>178</u>						
Preset speeds	<u>180</u>						
+ speed / - speed using single action pushbuttons (1 step)	<u>184</u>						
+ speed / - speed using double action pushbuttons (2 steps)	<u>184</u>						
+/- speed around a reference	<u>187</u>						
Savereference	<u>188</u>						

Application-Specific functions

Functions		Applications					
		Hoisting	Handling	Packing	Textiles	Wood	Process
Fast stop	<u>173</u>						
Brake control	<u>191</u>						
Load measurement	<u>199</u>						
High-speed hoisting	<u>201</u>						
Rope slack	<u>204</u>						
PID regulator	<u>206</u>						
Motor/generator torque limit	<u>215</u>						
Load sharing	<u>122</u>						
Line contactor control	<u>220</u>						
Output contactor control	<u>223</u>						
Positioning by limit switchesor sensors	<u>224</u>						
Stop at distance calculated after deceleration limit sw itch	<u>226</u>						
Parameter sw itching	229						
Motor or configuration switching	<u>232</u>						
Traverse control	<u>237</u>						
Stop configuration	<u>173</u>						

Safety functions/Fault management

Functions		Applic	Applications					
		Hoisting	Handling	Packing	Textiles	Wood	Process	
Safe Torque Off (STO) (Safety function, see dedicated document)	-							
Deferred stop on thermal alarm	<u>258</u>							
Alarm handling	<u>145</u>							
Fault management	<u>250</u>							
IGBT tests	<u>260</u>							
Catch a spinning load	<u>253</u>							
Motor protection with PTC probes	<u>250</u>							
Undervoltage management	<u>259</u>							
4-20 mA loss	<u>260</u>							
Uncontrolled output cut (output phase loss)	<u>256</u>							
Automatic restart	<u>252</u>							
Use of the "Pulse input" input to measure the speed of rotation of the motor	<u>265</u>							
Load variation detection	<u>267</u>							
Underload detection	<u>270</u>							
Overload detection	<u>272</u>							
Safety Integrated functions (see related documents page 12	2)							

Basic functions

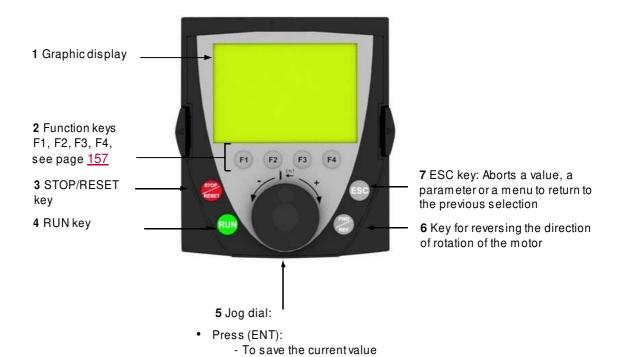
Drive ventilation

The fan starts automatically when the drive thermal state reaches 70% of the maximum thermal state and if the **[Fan Mode]** (FFM) is set to **[Standard]** (Std).

Graphic display terminal option

Description of the graphic display terminal

With the graphic displayterminal, which works with FLASH V1.1IE26 or higher, it is possible to displaymore detailed information than can be shown on the integrated displayterminal.



Note: Keys **3**, **4**, **5** and **6** can be used to control the drive directly, if control via the graphic display terminal is activated.

- To enter the selected menu orparameter

- To increase or decrease the reference if control via the graphic

- To increment or decrement a value - To go to the next or previous line

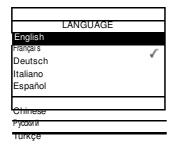
display terminal is activated

To activate the keys on the remote display terminal, you first have to configure **[Ref.1 channel]** (Fr1) = **[HMI]** (LCC). For more information, see page $\underline{154}$.

• Turn +/-:

Example configuration windows:

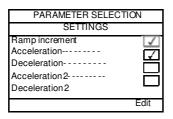
Single selection



When pow ering up the graphic display terminal for the first time, the user has to select the required language.

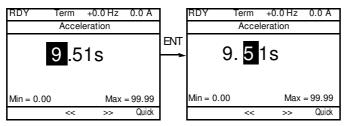
When only one selection is possible, the selection made is indicated by $\sqrt{}$. Example: Only one language can be chosen.

Multiple selection



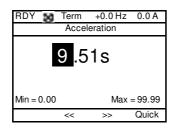
When multiple selection is possible, the selections made are indicated by $\sqrt{\ }$. Example: A number of parameters can be chosen to form the [USER MENU].

Example configuration window for one value:



The << and >> arrows (keys F2 and F3) are used to select the digit to be modified, and the jog dial is rotated to increase or decrease this number.

Example visualization of function blocks state:



OFF light: A valid function blocks program is in the ER24 in stop mode.

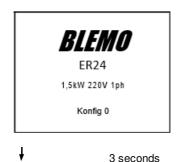
ON light: A valid function blocks program is in the ER24 in run mode. The
drive is considered as being in running state and configuration parameters
cannot be modified.

Powering up the drive with Graphic display terminal for the first time

When powering up the graphic displayterminal for the first time, the user has to select the required language.

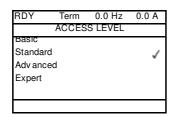


Display after the graphic display terminal has been powered up for the first time. Select the language and press ENT.

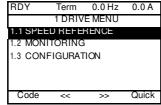


3 seconds

The drive's rating details will now appear.







Powering up the drive for the first time

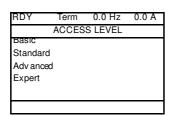
With the integrated displayterminal, when powering up the drive for the first time, the user immediately accesses to [Standard mot. freq] (bFr) (see page 86) in the menu (COnF > FULL > SIM).



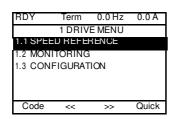
3 seconds

ENT

Display after the drive has been powered up for the first time.



The [ACCESS LEVEL] screen follows automatically.



Automatically switches to the [1 DRIVE MENU] menu after 3 seconds. Select the menu and press ENT.

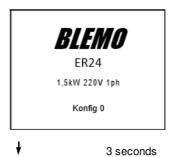


MAIN MENU
T DRIVE MENU
2 IDENTIFICATION
3 INTERFACE
4 OPEN / SAVE AS
5 PASSWORD

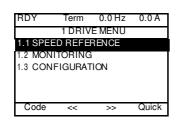
The MAIN MENU appears on the graphic display terminal if you press the ESC key.

Subsequent power-ups

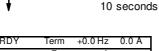
With the integrated display terminal, at subsequent power-ups of the drive for the first time, the user immediately accesses to the drive state (Same liste than [Drive state] (HS1) page 65). Example: Ready (rdY).

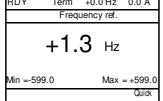


Display after powering up.



Automatically sw itches to the [1 DRIVE MENU] menu after 3 seconds. Select the menu and press ENT.





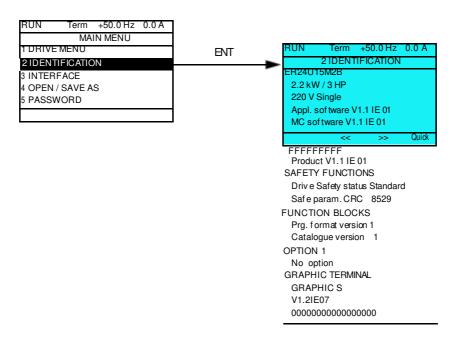
Automatically sw itches to the monitoring screen after 10 seconds.

Identification menu

The [IDENTIFICATION] (Old-) menu can only be accessed on the graphic display terminal.

This is a read-only menu that cannot be configured. It enables the following information to be displayed:

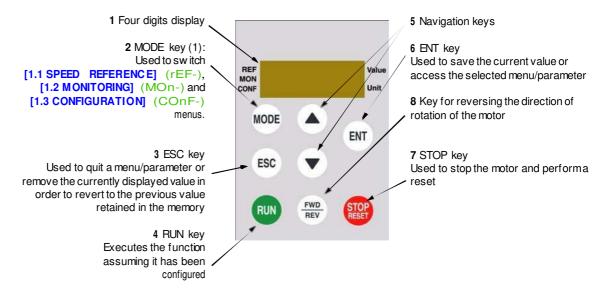
- Drive reference, power rating and voltage
- Drive software version
- Drive serial number
- · Safety function status and checks um
- Function blocks program and catalogue version
- Type of options present, with their software version
- Graphic display terminal type and version



Remote display terminal option

Description of the remote display terminal

This remote displayterminal is a local control unit which can be mounted on the door of the wall-mounted or floor-standing enclosure. It has a cable with connectors, which is connected to the drive serial link (see the documentation supplied with the remote displayterminal). With this remote displayterminal, up and down arrows are used for navigation rather than a jog dial.

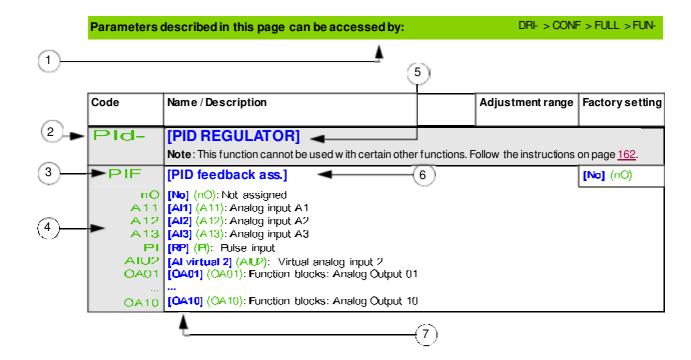


(1) If the drive is locked by a code ([PIN code 1] (COd) page $\underline{300}$), pressing the MODE key enables you to switch from the [1.2 MONITORING] (MOn-) menu to the [1.1 SPEED REFERENCE] (rEF-) menu and vice versa.

To activate the keys on the remote display terminal, you first have to configure [Ref.1 channel] (Fr1) = [HMI] (LCC). For more information, see page $\underline{154}$.

Structure of the parameter tables

The parameter tables contained in the descriptions of the various menus are organized as follows. Example:



- 1. Way to access the parameters described in this page
- 2. Submenu code on 4-digit 7-segment display
- 3. Parameter code on 4-digit 7-segment display
- 4. Parameter value on 4-digit 7-segment display
- 5. Name of submenu on graphic display terminal
- 6. Name of parameter on graphic display terminal
- 7. Value of parameter on graphic display terminal

Note: The text in square brackets [] indicates what you will see on the graphic display terminal.

A menu followed by the mention "(continued)" appears sometimes to locate you in the structure. Example:

FUn-	[APPLICATION FUNCT.] (continued)
Pld-	[PID REGULATOR]
	Note : This function cannot be used with certain other functions. Follow the instructions on page <u>162</u> .

In this case, the mention "(continued)" indicates that the [APPLICATION FUNCT.] submenu is above the [PID REGULATOR] submenu in the structure.

A parameter can contain some pictograms. Each pictogram has its legend at the end of the table. Main mictograms:



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



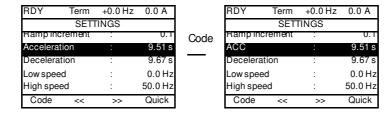
To change the assignment of this parameter, press the ENT key for 2 s.

Finding a parameter in this document

The following assistance with finding explanations on a parameter is provided:

- With the integrated display terminal and the remote display terminal: Direct use of the parameter code index, page 321, to find the page giving details of the displayed parameter.
- With the graphic displayterminal: Select the required parameter and press F1 F1: [Code]. The parameter code is displayed instead of its name while the key is held down.

Example: ACC

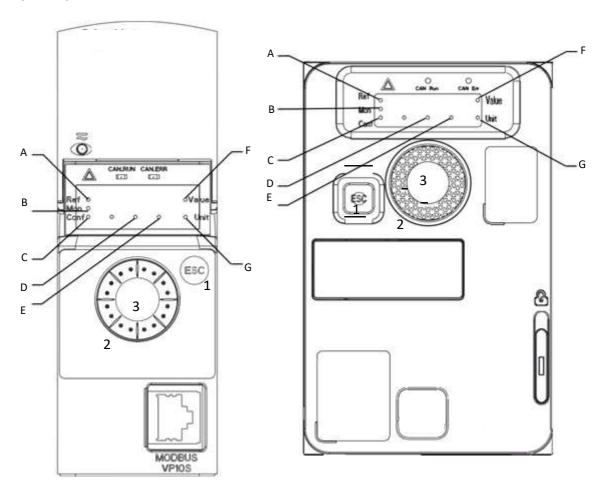


• Then use the parameter code index, page 321, to find the page giving details of the displayed parameter.

Description of the HMI

Functions of the Display and the Keys

- 1 The ESC key is used for menu navigation (backward) and parameters adjustment (cancel)
- 2 The **Jog dial** is used for menu navigation (up or down) and parameters adjustment (increase/decrease value or element choice). It can be used as Virtual analogic input 1 for drive frequency reference.
- 3 The **ENT** key (push on the Jog dial) is used for menu navigation (forward) and parameters adjustment (validate)



Α	REF mode selected (rEF-)	E	Dot used to display parameter value (1/10 unit)
В	MON mode selected (MOn-)	F	Current display is parameter value
С	CONF mode selected (COnF)	G	Current display is parameter unit
D	Dot used to display parameter value (1/100 unit)		

Normal display, with no error code displayed and no startup:

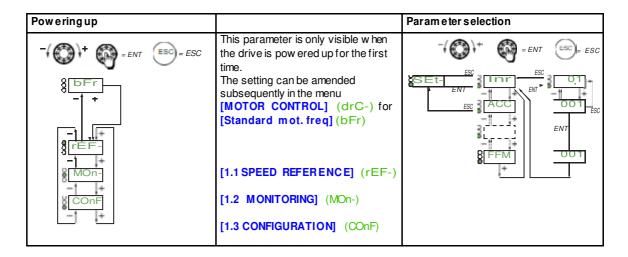
Displays the parameter selected in the [1.2 MONITORING] (MOn-) menu (default: [Frequency ref.] (FrH)).

- Initialization sequence (only on remote display terminal)
- tUN: Auto Tuning
- dCb: Injection braking
- rdY: Drive ready
- nSt: Freewheel stop control
- CL ■: Currentlimit
- FSt: Fast stop
- FLU: Fluxing function is activated
- nLP: Control is powered on but the DC bus is not loaded
- CtL: Controlled stop

- Obr: Adapted deceleration
- SOC: Stand by output cut
- USA: Undervoltage alarm
- SS1: Safety function SS1
- SLS: Safety function SLS
- StO: Safety function STO
- SMS: Safety function SMSGdL: Safety function GDL

In the event of a detected error, the display will flash to notify the user accordingly. If a graphic display terminal is connected, the name of the detected error will be displayed.

Structure of the menus



On the 7-segment display, a dash after menu and submenu codes is used to differentiate them from parameter codes.

Example: [APPLICATION FUNCT.] (FUn-) menu, [Acceleration] (ACC) parameter

Selection of multiple assignments for one parameter

Example: List of group 1 alarms in [INPUTS / OUTPUTS CFG] (I_O-) menu

A number of alarms can be selected by "checking" them as follows.

The digit on the right indicates:



The same principle is used for all multiple selections.

Setup

2

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Steps for setting-up the drive	<u>38</u>
Initial steps	<u>39</u>

Steps for setting-up the drive

INSTALLATION

1. Please refer to the installation manual.



PROGRAMMING

2. Apply input power to the drive, but do not give a run command.

3. Configure:

- The nominal frequency of the motor
 [Standard mot. freq] (bFr) page 86 if this is not 50 Hz.
- The motor parameters in the [MOTOR CONTROL] (drC-) menu, page 105, only if the factory configuration of the drive is not suitable.
 - The application functions in the [INPUTS / OUTPUTS CFG] (I__O-) menu, page 125, the [COMMAND] (CtL-) menu, page 154, and the [APPLICATION FUNCT.] (FUn-) menu, page 167, only if the factory configuration of the drive is not suitable.

Tips:

- Before beginning programming, complete the customer setting tables, page 321.
- Use the [Restore config.] (FCS) parameter, page 81, to return to the factory settings at any time.
- To locate the description of a function quickly, use the index of functions page 319.
- Before configuring a function, read carefully the "Function compatibility" section page 165.

Note: The following operations must be performed for optimum drive performance in terms of accuracy and response time:

- Enter the values indicated on the motor rating plate in the [MOTOR CONTROL] (drC-) menu, page 105.
- Perform auto-tuning with the motor cold and connected using the [Auto-tuning] (tUn) parameter, page 87.

4. In the [SETTINGS] (SEt—) menu, adjust the following parameters:

- [Acceleration] (ACC), page <u>87</u> and [Deceleration] (dEC), page <u>87</u>.
- [Low speed] (LSP), page <u>87</u> and [High speed] (HSP), page <u>89</u>.
- [Mot. therm.current] (tH), page 87.
- 5. Start the drive.

Initial steps

If the drive was not connected to mains for an extended period of time, the capacitors must be restored to their full performance before the motor is started.

NOTICE

REDUCED CAPACITOR PERFORMANCE

- Apply mains voltage to the drive for one hour before starting the motor if the drive has not been connected to mains for the following periods of time:
 - 12 months at a maximum storage temperature of +50°C (+122°F).
 - 24 months at a maximum storage temperature of +45°C (+113°F)
 - 36 months at a maximum storage temperature of +40°C (+104°F).
- Verify that no Run command can be applied before the period of one hour has elapsed.
- Verify the date of manufacture if the drive is commissioned for the first time and run the specified procedure if the date of manufacture is more than 12 months in the past.

Failure to follow these instructions can result in equipment damage.

If the specified procedure cannot be performed without a Run command because of internal mains contactor control, perform this procedure with the power stage enabled, but the motor being at a standstill so that there is no appreciable mains current in the capacitors.

Before powering up the drive

A WARNING

UNANTICIPATED EQUIPMENT OPERATION

Before switching on the device, verify that no unintended signals can be applied to the digital inputs that could cause unintended movements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Drive locked

If a Run command such as Run forward, Run reverse, DC injection is still active during:

- product reset to the factory settings,
- manual "Fault Reset" using [Fault Reset] (RsF),
- manual "Fault reset" by applying a product switched off and on again,
- stop command given by a channel that is not the active channel command (such as Stop key of the display terminal in 2/3 wires control).

The drive is in a blocking state and displays [Freewheel stop] (nSt). It will be necessary to deactivate all active Run commands prior to authorizing a new Run command.

Mains contactor

NOTICE

RISK OF DAMAGE TO THE DRIVE

Do not switch on the drive at intervals of less than 60 s.

Failure to follow these instructions can result in equipment damage.

Using a motor with a lower rating or dispensing with a motor altogether

With the factory settings, motor output phase loss detection is active ([Output Phase Loss] (OPL) = [Yes] (YES), page $\underline{256}$). To avoid having to use a motor with the same rating as the drive when testing the drive or during a maintenance phase, deactivate the motor output phase loss detection ([Output Phase Loss] (OPL) = [No] (nO)). This can prove particularly useful if very large drives are being tested with a small motor.

Set [Motor control type] (Ctt), page 105, to [Standard] (Std) in [Motor control menu] (drC-).

NOTICE

MOTOR OVERHEATING

Install external thermal monitoring equipment under the following conditions:

- If a motor with a nominal current of less than 20% of the nominal current of the drive is connected.
- If you use the function Motor Switching.

Failure to follow these instructions can result in equipment damage.

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

If output phase monitoring is disabled, phase loss and, by implication, accidental disconnection of cables, are not detected.

• Verify that the setting of this parameter does not result in unsafe conditions.

Failure to follow these instructions will result in death or serious injury.

Programming



What's in this Part?

This part contains the following chapters:

Chapter	Chapter Nam e	Page
4	Reference Mode (rEF)	<u>43</u>
5	Monitoring Mode (MOn)	<u>47</u>
6	Configuration Mode (ConF)	<u>77</u>
7	Interface (ItF)	<u>279</u>
8	Open / Save as (trA)	<u>295</u>
9	Passw ord (COd)	<u>299</u>
10	Multipoint Screen	<u>301</u>

Incorrect wiring, unsuitable settings or unsuitable data may trigger unanticipated movements, trigger signals or damage parts and disable monitoring functions.

WARNING

UNANTICIPATED EQUIPMENT OPERATION

- Do not operate the drive system with unknown settings or data.
- Never modify a parameter unless you fully understand the parameter and all effects of the modification.
- When commissioning the product, carefully run tests for all operating states and potential error situations.
- Verify that a functioning emergency stop push-button is within reach of all persons involved in running tests.
- Verify the functions after replacing the product and also after making changes to the settings or data.
- Anticipate movements in unintended directions or oscillation of the motor.
- Only operate the system if there are no persons or obstructions in the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If the power stage is disabled unintentionally, for example as a result of power outage, errors or functions, the motor is no longer decelerated in a controlled way.

AWARNING

MOVEMENT WITHOUT BRAKING EFFECT

Verify that movements without braking effect cannot cause injuries or equipment damage

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Reference Mode (rEF)

What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>44</u>
Organization tree	<u>45</u>
Menu	<u>46</u>

Introduction

Use the reference mode to monitor and, if the reference channel is the analog input 1 ([Ref.1 channel] (Fr1) page 154 set to [Al virtual 1] (AlU1)), adjust the actual reference value by modifying the analog input voltage value.

If local control is enabled ([Ref.1 channel] (Fr1) page 154 set to [HMI] (LCC)), the jog dial on the remote display terminal or the Up/Down Navigation keys on the remote display terminal acts as a potentiometer to change the reference value up and down within the limits preset by other parameters ([Low speed] (LSP) or [High speed] (HSP)).

There is no need to press the ENT key to confirm the change of the reference.

Organization tree

(1) Depending on the active reference channel

Possible values:

(AIU1) (LFr)

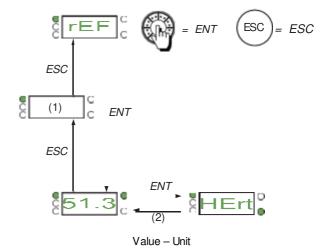
(MFr) (rPI)

(FrH)

(FrH) (rPC)

(2) 2 s or ESC

Displayed parameter value and unit of the diagramare given as examples.



DRI- > REF-

Menu

Code	Name / Description	Adjustment range	Factory setting
drl-	[1 DRIVE MENU]		
rEF-	[1.1 SPEED REFERENCE]		
	Displayed parameters depend on drive settings.		
AIU1	[Image input AIV1]	0 to 100% of HSP-LSP	0%
*	First virtual AI value.	dial	-
()	This parameter allows to modify the frequency reference with the embedded jog	diai.	
(1)			
LFr	[HMI Frequency ref.]	-599 to +599 Hz	0 Hz
*	HMI frequency reference (signed value).		<u>I</u>
()	This parameter allows to modify the frequency reference with the remote HMI.		
(1)			
MFr	[Multiplying coeff.]	0 to 100%	100%
*	Multiply frequency variable.) hard hard a second day the second	
()	Multiplying coefficient, can be accessed if [Multiplierref] (MA2,MA3) page 169	nas been assigned to the	grapnic terminai.
V2			
rPI	[Internal PID ref.]	0 to 32,767	150
*	PID: Internal reference PI.		•
()	This parameter allows to modify the PID internal reference with the jog dial. Internal PID reference is visible if [PID feedback] (PIF) is not set to [No] (nO).		
(1)			
FrH	[Frequency ref.]	-599 to +599 Hz	-
*	Frequency reference before ramp (signed value). Actual frequency reference applied to the motor regardless of which reference c read-only mode. Frequency reference is visible if the command channel is not HMI or virtual AI.	hannel has been selected.	This parameter is in
rPC	[PID reference]	0 to 65,535	-
*	PID: Setpoint value. PID reference is visible if [PID feedback] (PIF) is not set to [No] (nO).		•

(1) It is not necessary to press the $\pm NT$ key to confirm the modification of the reference.

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Parameter that can be modified during operation or when stopped.

Monitoring Mode (MOn)

What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>48</u>
Organization tree	<u>49</u>
Menu	<u>50</u>

Introduction

The parameters can be accessed when the drive is running or stopped.

Some functions have numerous parameters. In order to clarify programming and avoid having to scroll through endless parameters, these functions have been grouped in submenus. Like menus, submenus are identified by a dash after their code.

When the drive is running, the value displayed is one of the monitoring parameters. By default, the value displayed is the input frequency reference ([Frequency ref.] (FrH) parameter page 50).

While the value of the new monitoring parameter required is being displayed, press a second time on the jog dial key to display the units or press and hold down the jog dial (ENT) again (for 2 seconds) to confirm the change of monitoring parameter and store it. From then on, it is the value of this parameter that will be displayed during operation (even after powering down).

Unless the new choice is confirmed by pressing and holding down ENT again, the display will revert to the previous parameter after powering down.

Note: After the drive has been turned off or following a loss of supply mains, the parameter displayed is the drive status (example: [Ready] (rdY)). The selected parameter is displayed following a run command.

Organization tree

Displayed parameters of the diagram are given as examples. (1) Visible only with graphic display terminal

DRI- > MON-

Menu

Code	Name / Description	Unit	
MOn-	[1.2 MONITORING]		
AIU1	[Image input AIV1]	%	
()	First virtual AI value. This parameter is read-only. It enables you to display the speed reference applied to the motor.		
FrH	[Frequency ref.]	Hz	
	Frequency reference before ramp (signed value). This parameter is read-only. It enables you to display the speed reference applied to the motor, regardless of value channel has been selected.	v hich reference	
StFr	[Stator Frequency]	Hz	
	Displays the estimated stator frequency in Hz (signed value)		
LFr	[HMI Frequency ref.]	Hz	
	HMI frequency reference (signed value). This parameter only appears if the function has been enabled. It is used to change the speed reference from the ENT does not have to be pressed to enable a change of reference.	ne remote control.	
MFr	[Multiplying coeff.]	%	
*	Multiply frequency variable. Multiplying coefficient, can be accessed if [Multiplierref] (MA2,MA3) page 169 has been assigned.		
()	induliplying coefficient, carbe accessed in [multiplier ref] (MAZ, MAS) page 103 11as been assigned.		
MMF	[Measured output fr.]	Hz	
	Measured motor frequency (signed value) The measured motor speed is displayed if the speed monitoring card has been inserted. (VW3A3620)		
rFr	[Output frequency]	Hz	
	Estimated motor frequency (signed value).		
FqS	[Pulse in. work. freq.]	Hz	
*	Measured frequency of the "Pulse input" input (see page 265).		
ULn	[Mains voltage]	V	
	Main voltage (from DC bus). Mains voltage based on DC bus measurement, motor running or stopped.		
tHr	[Motor thermal state]	%	
	Motor thermal state. 100% = Nominal thermal state, 118% = "OLF" threshold (motor overload).		
tHd	[Drv.thermal state]	%	
	Drive thermal state. 100% = Nominal thermal state, 118% = "OHF" threshold (drive overload).		
MMO-	[MONIT. MOTOR]		
Spd	[Motor speed]	rpm	
	Motor speed in rpm. (Estimated value)		
UOP	[Motor voltage]	V	
	Motor voltage. (Estimated value)		
Opr	[Motor power]	%	
	Output pow er monitoring (100% = nominal motor pow er, estimated value based on current measure).		
Otr	[Motor torque]	%	
	Output torque value (100% = nominal motor torque, estimated value based on current measure).		
LCr	[Motor current]	Α	
	Estimated motor current. (Value measured)		

DRI- > MON- > IOM- > LIA-

Code	Name / Description	Unit
MOn-	[1.2 MONITORING] (continued)	
MMO-	[MONIT. MOTOR]	
I2tM	[l²t overload level]	%
	Monitoring of Pt overload level This parameter can be accessed if [Pt model activation] (■2tA) is set to [Yes] (YES) see page 219	
IOM-	[I/O MAP]	
LIA-	[LOGIC INPUT CONF.]	
	Logic input functions.	
LIA	[LI1 assignment] Read-only parameters, cannot be configured. It displays all the functions that are assigned to the logic input in order to check for multiple assignments. If no functions have been assigned, [No] (nO) is displayed. Use the jog dial to scroll through the functions. The use of graphic display terminal allows to see the delay [LI1 On Delay] (L1d). Possible values are the sam configuration menu page 127.	e than in
to LAA LA1A LA2A	[L assignment] All the logic inputs available on the drive are processed as in the example for LI1 above.	
LIS1	[State of logic inputs LI1 to LI6] Can be used to visualize the state of logic inputs LI1 to LI6 (display segment assignment: high = 1, low = 0). State 1	
LIS2	State 0 Safe Torque Off Can be used to visualize the state of LA1, LA2 and STO (Safe Torque Off) (display segment assignment: high = State 1	= 1, low = 0).
	Example above: LA1 and LA2 are at 0; STO (Safe Torque Off) is at 1.	

DRI- > MON- > IOM- > A IA-

Code	Name / Description	Unit
AIA-	[ANALOG INPUTS IMAGE]	<u> </u>
	Analog input functions.	
AI1C	[AI1]	V
	Al1 customer image: Value of analog input 1.	
Al1A	[Al1 assignment]	
	All functions assignment. If no functions have been assigned, [No] (nO) is displayed. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
	To onlow ing parameters are visible on the graphic display terminal by pressing the Livinkey on the parameter.	
	[No] (nO): Not assigned [Ref.1 channel] (Fr1): Reference source 1	
	[Ref.2 channel] (Fr2): Reference source 2	
	[Summing ref. 2] (SA2): Summing reference 2	
	[PID feedback] (PIF): Pl feedback (Pl control) [Torque limitation] (tAA): Torque limitation: Activation by an analog value	
dA2	[Subtract. ref. 2] (dA2): Subtracting reference 2	
	[Manual PID ref.] (PIM): Manual speed reference of the PI(D) regulator (auto-man)	
	[PID speed ref.] (FPI): Speed reference of the PI(D) regulator (predictive reference) [Summing ref. 3] (SA3): Summing reference 3	
Fr1b	[Ref.1B channel] (Fr1b): Reference source 1B	
	[Subtract. ref. 3] (dA3): Subtracting reference 3 [Forced local] (FLOC): Forced local reference source	
	[Ref. 2 multiplier] (MA2): Multiplying reference 2	
MA3	[Ref. 3 multiplier] (MA3): Multiplying reference 3	
	[Weight input] (PES): External weight measurement function [IA01] (IA01): Functions blocks: Analog Input 01	
	[IA10] (IA10): Functions blocks: Analog Input 10	T
UIL1	[Al1 min value]	V
	Voltage scaling parameter of 0%.	
UIH1	[Al1 max value]	V
	Voltage scaling parameter of 100%.	
Al1F	[Al1 filter]	S
	Interference filtering cut-off time of the low-filter.	
AIA-	[ANALOG INPUTS IMAGE] (continued)	
	Analog input functions.	
AI2C	[AI2]	V
	AI2 customer image: Value of analog input 2.	
Al2A	[Al2 assignment]	
	Al2 functions assignment. If no functions have been assigned, [No] (nO) is displayed.	
	Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
	Identical to [Al1 assignment] (Al1A) page <u>52</u> .	
UIL2	[Al2 min value]	V
	Voltage scaling parameter of 0%.	
UIH2	[Al2 max value]	V
	Voltage scaling parameter of 100%.	
Al2F	[Al2 filter]	S
	Interference filtering cutoff time of the low-filter.	

DRI- > MON- > IOM- > A IA- > A I3C

Code	Name / Description	Unit
AIA-	[ANALOG INPUTS IMAGE] (continued)	•
	Analog input functions.	
AI3C	[AI3]	V
	Aß customer image: Value of analog input 3.	
AI3A	[Al3 assignment]	
	AB functions assignment. If no functions have been assigned, [No] (nO) is displayed. Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
	Identical to [Al1 assignment] (Al1A) page <u>52</u> .	
CrL3	[Al3 min value]	mA
	Current scaling parameter of 0%.	
CrH3	[Al3 max value]	mA
	Current scaling parameter of 100%.	
Al3F	[Al3 filter]	S
	Interference filtering cutoff time of the low -filter.	
IOM-	[I/O MAP] (continued)	
AOA-	[ANALOG OUTPUTS IMAGE]	
	Analog output functions. Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
AO1C	[AO1C]	
()	AO1 customer image: Value of analog output 1.	
AO1	[AO1 assignment]	
	AO1 functions assignment. If no functions have been assigned, [No] (nO) is displayed.	
	Identical to [A01 assignment] (AO 1) page 144.	
UOL1	[AO1 min Output]	V
*	Voltage scaling parameter of 0%. Can be accessed if [AO1 Type] (AO1t) is set to [Voltage] (10U).	
110114	1004	Lv
UOH1 *	[AO1 max Output]	V
*	Voltage scaling parameter of 100%. Can be accessed if [AO1 Type] (AO1t) is set to [Voltage] (10U).	
AOL1	[AO1 min output]	mA
*	Current scaling parameter of 0%. Can be accessed if [AO1 Type] (AO1t) is set to [Current] (0A).	•
AOH1	[AO1 max output]	mA
*	Current scaling parameter of 100%. Can be accessed if [AO1 Type] (AO1t) is set to [Current] (0A).	
		T _o ,
ASL1	[Scaling AO1 max]	%
	Minimum scaling value for AO1.	_
ASH1	[Scaling AO1 min]	%
	Maximum scaling value for AO1.	
AO1F	[AO1 filter]	S
	Cutoff time of the low-filter.	

DRI- > MON- > IOM- > FSI-

I/O MAP (continued) FS	
Frequency signal image. This menu is visible only on graphic display terminal. PFrC [RP input] Filtered customer pulse input frequency reference. Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter. PIA [RP assignment] Pulse input assignment. If no functions have been assigned, [No] (nO) is displayed. Identical to [Al1 assignment] (Al1A) page 52. PIL [RP min value] RP minimum value. Pulse input scaling parameter of 0%. PFr [RP max value] RP maximum value Pulse input scaling parameter of 100%. PFI [RP filter] Interference filtering pulse input cutoff time of the low -filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
Filtered customer pulse input frequency reference. Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter. PIA [RP assignment] Pulse input assignment. If no functions have been assigned, [No] (nO) is displayed. Identical to [Al1 assignment] (Al1A) page 52. PIL [RP min value] RP minimum value. Pulse input scaling parameter of 0%. PFT [RP max value] RP maximum value Pulse input scaling parameter of 100%. PFI [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
Follow ing parameters are visible on the graphic display terminal by pressing the ENT key on the parameter. PIA [RP assignment] Pulse input assignment. If no functions have been assigned, [No] (nO) is displayed. Identical to [Al1 assignment] (Al1A) page 52. PIL [RP min value] RP minimum value. Pulse input scaling parameter of 0%. PFr [RP max value] RP maximum value Pulse input scaling parameter of 100%. PFil [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
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Identical to [Al1 assignment] (Al1A) page 52. PIL	
PIL [RP min value] RP minimum value. Pulse input scaling parameter of 0%. PFr [RP max value] RP maximum value Pulse input scaling parameter of 100%. PFIL [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
RP minimum value. Pulse input scaling parameter of 0%. PFr	
PFr [RP max value] RP maximum value Pulse input scaling parameter of 100%. PFI [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
RP maximum value Pulse input scaling parameter of 100%. [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
PFI [RP filter] Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
Interference filtering pulse input cutoff time of the low-filter. MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
MOn- [1.2 MONITORING] (continued) SAF- [MONIT. SAFETY]	
SAF- [MONIT. SAFETY]	
For more details on Integrated Safety Functions, please refer to dedicated Safety manual.	
StOS [STO status]	
Status of the Safe Torque Off safety function.	
Idle [Idle] (IdLE): STO not in progress StO [Safe stop] (StO): STO in progress	
FLt [Fault] (FLt): STO error detected	
SLSS [SLS status]	
Status of the Safely-limited speed safety function.	
nO [Not config.] (nO): SLS not configured	
IdLE [Idle] (IdLE): SLS not in progress WAIt [SLS wait time] (WAIt): SLS waiting for activation	
Strt [SLS start] (Strt): SLS in transient state	
SS1 [Safe ramp] (SS1): SLS ramp in progress SLS [Spd limited] (SLS): SLS speed limitation in progress	
StO [Safe stop] (StO): SLS safe torque off request in progress	
FLt [Fault] (FLt): SLS error detected	
SS1S [SS1 status] Status of the Safe Stop 1 safety function.	
IdLE [Idle] (IdLE): SS1 not in progress	
SS1 [Safe ramp] (SS1): SS1 ramp in progress	
StO [Safe stop] (StO): SS1 safe torque off request in progress FLt [Fault] (FLt): SS1 error detected	
SMSS [SMS status]	
Status of the Safe Maximum Speed safety function.	
nO [Not Set] (nO): SMS not set	
off [Active] (off): SMS active	
[Internal Err.] (Fti): SMS internal error Fto [Max Speed] (Fto): Maximum Speed reached	

DRI- > MON- > SAF-

Code	Name / Description	Unit
GdLS	[GDL status]	
	Status of the Guard Door Locking safety function.	
nO	[Not Set] (nO): GDL not set	
oFF		
Std	[Short Delay] (Std): Short Delay In Progress	
LGD	[Long Delay] (LGd): Long Delay In Progress	
LFt	[Active] (LGd): GDL active [Internal Err.] (LGd): GDL internal error	
SFFE	[Safety fault reg.]	
OITE	Safety function error register.	
	Bit0 = 1: Logic inputs debounce time-out (verify value of debounce time LIDT according to the application)	
	Bit1 Reserved Bit2 = 1: Motor speed sign has changed during SS1 ramp	
	Bit3 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp.	
	Bit4: Reserved	
	Bit5: Reserved Bit6 = 1: Motor speed sign has changed during SLS limitation	
	Bit7 = 1: Motor speed as grands charged during SE3 in thation Bit7 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp.	
	Bit8: Reserved	
	Bit9: Reserved	
	Bit10: Reserved Bit11: Reserved	
	Bit12: Reserved	
	Bit13 = 1: Not possible to measure the motor speed (verify the motor wiring connection)	
	Bit14 = 1: Motor ground short-circuit detected (verify the motor wiring connection) Bit15 = 1: Motor phase to phase short-circuit detected (verify the motor wiring connection)	
	Dicto = 1. Water priese to priese short electricated electrical writing connection)	
MOn-	[1.2 MONITORING] (continued)	
MFb-	[MONIT. FUN. BLOCKS]	
	For more details on Function Blocks, please refer to dedicated Function Blocks manual.	
FbSt	[FB status]	
	Function Block Status.	
1-0.5		
CHEC	[Idle] (IdLE): Idle state [Check prog.] (CHEC): Check program state	
StOP	[Stop] (StOP): STOP state	
InIt	[Init] (Initalization state	
rUn Err	[Run] (rUn): RUN state	
	[Error] (Err): Error state	
FbF t	[FB fault] Status of the function blocks execution.	
	Status of the function blocks execution.	
nO	[No] (nO): No error detected	
	[Internal] (Int): Internal error detected	
InP	[Binary file] (bln): Binary error detected [Intern para.] (InP): Internal parameter error detected	
PAr	[Para. RW] (PAr): Parameter access error detected	
CAL	[Calculation] (CAL): Calculation error detected	
tOAU	[TO AUX] (tOAU): TimeOut AUX task [TO synch] (tOPP): TimeOut in PRE/POST task	
AdL	[Bad ADLC] (AdL): ADLC with bad parameter	
In		
FbI-	[FB IDENTIFICATION]	
bUEr	[Program version]	
*	Program user version. Can be accessed if [FB status] (FbSt) is not set to [Idle] (IdLE).	
bnS	[Program size]	
*	Program file size. Can be accessed if [FB status] (FbSt) is not set to [Idle] (IdLE).	

DRI- > MON- > CMM-

Code	Name / Description Unit
bnU	[Prg. format version]
0+1.1	Binary format version of the drive. Can be accessed if [FB status] (FbSt) is not set to [Idle] (IdLE).
CtU	[Catalogue version] Catalog version of the drive.
MOn-	[1.2 MONITORING] (continued)
CMM-	[COMMUNICATION MAP]
	This menu is visible only on graphic display terminal, except for [COM. SCANNER INPUT MAP].(ISA-) and [COM SCAN MAP].(OSA-) menus.
CMdC	[Command channel] Active command channel.
HMI	[Terminals] (tErM): Terminals [HMI] (HMI): Graphic display terminal or remote display terminal
	[Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen®
tUd	[+/- speed] (tUd): +/- speed command
PS	[Com.card] (nEt): Communication card (if inserted) [PC tool] (PS): PC software
CMd	[Cmd value]
	DRIVECOM command register value. [Profile] (CHCF) is not set to [I/O profile] (IO), see page 154.
	Possible values in CiA402 profile, separate or not separate mode.
	Bit 0: "Sw itch on"/Contactor command Bit 1: "Disable voltage"/Authorization to supply ACpower
	Bit 2: "Quick stop"/Emergency stop
	Bit 3: "Enable operation"/Run command Bit 4 to Bit 6: Reserved (set to 0)
	Bit 7: "Fault reset"/error acknowledgment active on 0 to 1 rising edge Bit 8: Halt Stop according to the [Type of stop] (Stt) parameter without leaving the Operation enabled state
	Bit 9: Reserved (set to 0)
	Bit 10: Reserved (set to 0) Bit 11 to Bit 15: Can be assigned to a command
	Possible values in the VO profile. On state command [2 wire] (2C).
	Bit 0: Forw ard (on state) command
	= 0: No forward command = 1: Forw ard command
	The assignment of bit 0 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bit 0 (Cd00) is only active if the channel of this control word is active.
	Bit 1 to Bit 15: Can be assigned to commands.
	On edge command [3 wire] (3C).
	Bit 0: Stop (run authorization). = 0: Stop
	= 1: Run is authorized on a forward or reverse command
	Bit 1: Forw ard (on 0 to 1 rising edge) command The assignment of bits 0 and 1 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bits 0
	(Cd00) and 1 (Cd01) are only active if the channel of this control word is active. Bit 2 to Bit 15: Can be assigned to commands
rFCC	[Active ref. channel]
tErM	HMI reference channel. [Terminals] (tErM): Terminals
LOC	[Local] (LOC): Jog dial [HMI] (HMI): Graphic display terminal or remote display terminal
Mdb	[Modbus] (Mdb): Integrated Modbus
CAn tUd	[CANopen] (CAn): Integrated CANopen® [tUd] (tUd): +/- speed command
nEt	[Com.card] (nH): Communication card (if inserted)
FrH	[PC tool] (PS): PC software [Frequency ref.] Hz
	Frequency reference before ramp.

DRI- > MON- > CMM-

Code	Name / Description	Unit
EtA	[ETA state word]	
	DRIV ECOM status w ord.	
	Possible values in CiA402 profile, separate or not separate mode.	
	Bit 0: "Ready to switch on", aw aiting power section supply mains	
	Bit 1: "Sw itched on", ready	
	Bit 2: "Operation enabled", running Bit 3: "Fault"	
	= 0: No fault	
	= 1: Fault	
	Bit 4: "Voltage enabled", pow er section supply mains present	
	= 0: Pow er section supply mains absent	
	= 1: Pow er section supply mains present	
	When the drive is pow ered by the pow er section only, this bit is alw ays at 1. Bit 5: Quick stop/Emergency stop	
	Bit 6: "Sw itched on disabled", pow er section supply mains locked	
	Bit 7: Alarm	
	= 0: No alarm	
	= 1: Alarm	
	Bit 8: Reserved (= 0) Bit 9: Remote: command or reference via the netw ork	
	= 0: Command or reference via the graphic display terminal or the remote display terminal	
	= 1: Command or reference via the graphic display to mindred the reference display to mindred the reference via the network	
	Bit 10: Target reference reached	
	= 0: The reference is not reached	
	= 1: The reference has been reached	
	When the drive is in speed mode, this is the speed reference. Bit 11: "Internal limit active", reference outside limits	
	= 0: The reference is w ithin the limits	
	= 1: The reference is not w ithin the limits	
	When the drive is in speed mode, the limits are defined by the [Low speed] (LSP) and [High speed] (HSP) pa	rameters.
	Bit 12 and Bit 13: Reserved (= 0)	
	Bit 14: "Stop key", STOP via stop key	
	= 0: STOP key not pressed = 1: Stop triggered by the STOP key on the graphic display terminal or the remote display terminal	
	Bit 15: "Direction", direction of rotation	
	= 0: Forw ard rotation at output	
	= 1: Reverse rotation at output	
	The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the Communication	manuals).
	Possible values in the VO profile.	use is simplified
	Note: The value is identical in the CiA402 profile and the VO profile. In the VO profile, the description of the valued and does not refer to the CiA402 (Drivecom) state chart.	ues is simplified
	Bit 0: Reserved (= 0 or 1)	
	Bit 1: Ready	
	= 0: Not ready	
	= 1: Ready	
	Bit 2: Running = 0: The drive will not start if a reference other than zero is applied.	
	= 1: Running, if a reference other than zero is applied, the drive can start.	
	Bit 3: Fault	
	= 0: No fault	
	= 1: Fault	
	Bit 4: Pow er section supply mains present = 0: Pow er section supply mains absent	
	= 0. Fow et section supply mains absent = 1: Pow er section supply mains present	
	Bit 5: Reserved (= 1)	
	Bit 6: Reserved (= 0 or 1)	
	Bit 7: Alarm	
	= 0: No alarm	
	= 1: Alarm Bit 8: Pasaryad (- 0)	
	Bit 8: Reserved (= 0) Bit 9: Command via a network	
	= 0: Command via the terminals or the graphic display terminal	
	= 1: Command via a network	

DRI- > MON- > CMM-

Code	Name / Description	Unit
	Bit 10: Reference reached = 0: The reference is not reached = 1: The reference has been reached Bit 11: Reference outside limits = 0: The reference is w ithin the limits = 1: The reference is not w ithin the limits When the drive is in speed mode, the limits are defined by LSP and HSP parameters. Bit 12 and Bit 13: Reserved (= 0) Bit 14: Stop via STOP key	•
	 = 0: STOP key not pressed = 1: Stop triggered by the STOP key on the graphic display terminal or the remote display terminal Bit 15: Direction of rotation = 0: Forw ard rotation at output = 1: Reverse rotation at output 	
Mnd-	[MODBUS NETWORK DIAG] Modbus netw ork diagnostic.	
Mdb1	[COM LED] View of the Modbus Communication.	
M1Ct	[Mb NET frames nb.] Modbus networkframe counter: Number of processed frames.	
M1EC	[Mb NET CRC errors] Modbus network CRC error counter: Number of CRC errors.	
CMM-	[COMMUNICATION MAP] (continued)	
ISA-	[COM. SCANNER INPUT MAP] Used for CANopen® and Modbus Netw ork.	
nM1	[Com Scan In1 val.] Value of the 1st input w ord.	
nM2	[Com Scan In2 val.] Value of the 2nd input w ord.	
nM3	[Com Scan In3 val.] Value of the 3rd input w ord.	
nM4	[Com Scan In4 val.] Value of the 4th input w ord.	
nM5	[Com Scan In5 val.] Value of the 5th input w ord.	
nM 🖫	[Com Scan In6 val.] Value of the 6th input w ord.	
nM7	[Com Scan In7 val.] Value of the 7th input w ord.	
nM8	[Com Scan In8 val.] Value of the 8th input w ord.	
CMM-	[COMMUNICATION MAP] (continued)	
OSA-	[COM SCAN MAP]	
nC1	[Com Scan Out1 val.] Value of the 1st output w ord.	
nC2	[Com Scan Out2 val.] Value of the 2nd output w ord.	
nC3	[Com Scan Out3 val.] Value of the 3rd output w ord.	
nC4	[Com Scan Out4 val.] Value of the 4th output w ord.	
nC5	[Com Scan Out5 val.] Value of the 5th output w ord.	

DRI- > MON- > CMM- > OSA-

Code	Name / Description	Unit
nC6	[Com Scan Out6 val.]	•
	Value of the 6th output w ord.	
nC7	[Com Scan Out7 val.] Value of the 7th output w ord.	
nC8	[Com Scan Out8 val.] Value of the 8th output w ord.	
CMM-	[COMMUNICATION MAP] (continued)	
C 1-	[CMD. WORD IMAGE]	
01-	Command word image: Only accessible via graphic display terminal.	
CMd1	[Modbus cmd.] Modbus command word image.	
CMd2	[CANopen cmd.] CANopen® command w ord image.	
CMd3	[COM. card cmd.] Communication card command w ord image.	
CMM-	[COMMUNICATION MAP] (continued)	
rı-	[FREQ. REF. WORD MAP]	
•	Frequency reference image: Only accessible via graphic display terminal.	
LFr1	[Modbus ref.]	Hz
	Modbus frequency reference image.	
LFr2	[CANopen ref.]	Hz
	CANopen® frequency reference image.	
LFr3	[Com. card ref.]	Hz
	Communication card frequency reference image.	
CMM-	[COMMUNICATION MAP] (continued)	
CnM-	[CANopen MAP] CANopen® image: Only accessible via graphic display terminal.	
COn	[RUN LED]	
OOII	View of the CANopen® RUN Led Status.	
CAnE	[ERR LED] View of the CANopen® Error Led Status.	
PO1-	[PDO1 IMAGE]	
	View of the RPDO1 and TPDO1.	
rp11	[Received PDO1-1]	
*	First frame of the received PDO1.	
rp12	[Received PDO1-2]	
*	Second frame of the received PDO1.	
rp13	[Received PDO1-3]	
*	Third frame of the received PDO1.	
rp14	[Received PDO1-4]	
*	Fourth frame of the received PDO1.	
tp11	[Transmit PDO1-1]	
*	First frame of the transmit PDO1.	
	<u>I</u>	

DRI- > MON- > CMM- > CNM- > P01-

Code	Name / Description	Unit
tp12	[Transmit PDO1-2]	1
*	Second frame of the transmit PDO1.	
	T. U. DDG4 61	
tp13	[Transmit PDO1-3]	
*	Third frame of the transmit PDO1.	
tp14	[Transmit PDO1-4]	
*	Fourth frame of the transmit PDO1.	
CnM-	[CANopen MAP] (continued)	
_	CANopen® image: Only accessible via graphic display terminal.	
PO2-	[PDO2 IMAGE]	
	View of the RPDO2 and TPDO2: Same structure as [PDO1 IM AGE] (PO1-).	
rp21	[Received PDO2-1]	
*	First frame of the received PDO2.	
rp22	[Received PDO2-2]	
*	Second frame of the received PDO2.	
rp23	[Received PDO2-3]	
*	Third frame of the received PDO2.	
rp24	[Received PDO2-4]	
*	Fourth frame of the received PDO2.	
1 01	Transiti PROCAL	
tp21	[Transmit PDO2-1] First frame of the transmit PDO2.	
•	First frame of the transmit PDO2.	
tp22	[Transmit PDO2-2]	
*	Second frame of the transmit PDO2.	
tp23	[Transmit PDO2-3]	
*	Third frame of the transmit PDO2.	
715	Third traile of the transmit 1 Doz.	
tp24	[Transmit PDO2-4]	
*	Fourth frame of the transmit PDO2.	
CnM-	[CANopen MAP] (continued)	
OI IIVI-	CANopen® image: Only accessible via graphic display terminal.	
PO3-	[PDO3 IMAGE]	
. 00	View of the RPDO3 and TPDO3: Same structure as [PDO1 IM AGE] (PO1-).	
rp31	[Received PDO3-1]	
*	First frame of the received PDO3.	
rp32	[Received PDO3-2]	
*	Second frame of the received PDO3.	
rp33	[Received PDO3-3]	
*	Third frame of the received PDO3.	
rp34	[Received PDO3-4]	
*	Fourth frame of the received PDO3.	
	<u></u>	

DRI- > MON- > CMM- > CNM- > P03-

Code	Name / Description	Unit
tp31	[Transmit PDO3-1]	
*	First frame of the transmit PDO3.	
tp32	[Transmit PDO3-2]	
*	Second frame of the transmit PDO3.	
tp33	[Transmit PDO3-3]	
*	Third frame of the transmit PDO3.	
tp34	[Transmit PDO3-4]	
*	Fourth frame of the transmit PDO3.	
CnM-	[CANopen MAP] (continued)	
	CANopen® image: Only accessible via graphic display terminal.	
nMtS	[Canopen NMT state]	
	Drive NMT State of the CANopen® slave.	
bOOt	[Boot] (bOOt): Bootup	
	[Stopped] (StOP): Stopped [Operation] (OPE): Operational	
	[Pre-op] (POPE): Pre-Operational	
nbtp	[Number of TX PDO] Number of transmit PDO.	
nbrp	[Number of RX PDO] Number of receive PDO.	
ErCO	[Error code] CANopen® error register (from 1 to 5).	
rEC1	[RX Error Counter] Controller Rx error counter (not stored at pow er off).	
tEC1	[TX error counter] Controller Tx error counter (not stored at pow er off).	

DRI- > MON- > MPI-

Code	Name / Description	Unit
MOn-	[1.2 MONITORING] (continued)	
Mp I − *	[MONIT. PI] PID management. Visible if [PID feedback ass.] (PIF) is not set to [No] (nO).	
rPI () *	[Internal PID ref.] Internal PID reference: As a process value.	
rpE *	[PID error] PID error value.	
rpF *	[PID feedback] PID feedback value.	
rpC *	[PID reference] PID setpoint value via graphic display terminal.	
rpO	[PID Output] PID output value with limitation.	Hz
MOn-	[1.2 MONITORING] (continued)	
pEt-	[MONIT. POWER TIME]	
АрН	[Consumption] Energy consumption in Wh, kWh or MWh (accumulated consumption).	Wh, kWh, MWh
rtH	[Run time] Run elapsed time display (resetable) in seconds, minutes or hours (length of time the motor has been switched	s, min, h d on).
ptH	[Power on time] Pow er elapsed time display in seconds, minutes or hours (length of time the drive has been switched on).	s, min, h
rpr ()	[Operating t. reset] Reset of run elapsed time.	
APH rt H	<pre>[No] (nO): Reset operation not in progress [Reset kWh] (APH): Clear [Reset kWh] (APH) [rst. runtime] (rtH): Clear [rst. runtime] (rtH) [rst. P On t.] (PtH): Clear [rst. P On t.] (PtH)</pre>	
MOn-	[1.2 MONITORING] (continued)	
CnFS	[Config. active] View of the active configuration.	
CnF0 CnF1	[In progress] (nO): Transitory state (configuration changing) [Config. n°0] (CnF0): Configuration 0 active [Config. n°1] (CnF1): Configuration 1 active [Config. n°2] (CnF2): Configuration 2 active	
CFpS *	[Utilised param. set] Configuration parameter status (can be accessed if parameter switching has been enabled, see page 229).	
CFP1	[None] (nO): Not assigned [Set N°1] (CFP1): Parameter set 1 active [Set N°2] (CFP2): Parameter set 2 active [Set N°3] (CFP3): Parameter set 3 active	

DRI- > MON-

Code	Name / Description Unit
ALGr	[Alarm groups]
	Current impacted alarm group numbers.
	Group of alarms could be user defined in [INPUTS / OUTPUTS CFG] (I_O-) page 125.
	[] (): No alarm group impacted
1	[1] (1): Alarm group 1
	[-2-] (-2-): Alarm group 2
12-	[12-] (12-): Alarmgroup 1 and 2
3	[3] (3): Alarm group 3
1-3	[1-3] (1-3): Alarmgroup 1 and 3
	[-23] (-23): Alarmgroup 2 and 3
	[123] (123): Alarm group 1, 2 and 3
SPd1 or	[Cust. output value]
SPd2	[Cust. output value] (SPd1), [Cust. output value] (SPd2) or [Cust. output value] (SPd3) depending on the [Scale factor
or	display] (SdS) parameter, page 104 ([Cust. output value] (SPd3) in the factory setting)
QSPd3	with the factory setting)
ALr-	[ALARMS]
ALI-	
	List of current alarms.
	If an alarm is present, a
	[No alarm] (nOAL)
	[PTC alarm] (PtCL) [External fault] (EtF)
	[UnderV.al.] (USA)
	[I attained] (CtA)
	[Freq. Th. attain.] (FtA)
	[Freq. Th. 2 attained] (F2A)
	[Freq.ref.att] (SrA)
	[Th.mot. att.] (tSA)
	[Th.mot2 att.] (tS2)
	[Th.mot3 att.] (tS3) [Underv. prev.] (UPA)
	[HSP attain.] (FLA)
	[Al. °C drv] (tHA)
	[Alarm group 1] (AG1)
	[Alarm group 2] (AG2)
AG3	[Alarm group 3] (AG3)
	[PID error al] (PEE)
	[PID fdbk al.] (PFA)
	[AI3 AI. 4-20m A] (AP3)
	[Lim T/I att.] (SSA) [Th.drv.att.] (tAd)
	[IGBT alarm] (tJA)
	[Brake R. al.] (bOA)
	[Underload. Proc. Al.] (ULA)
	[Overload. Proc. Al.] (OLA)
rSdA	[Rope slack alarm] (rSdA)
	[High torque alarm] (ttHA)
	[Low torque alarm] (ttLA)
	[Dynamic load alarm] (dLdA) [Freq. meter Alarm] (FqLA)
rqLA	[FTEN. III ETET AIGHT] (FYLA)

DRI- > MON- > SST-

Code	Name / Description Unit
SSt-	[OTHER STATE]
	List of secondary states.
	This menu is visible only on graphic display terminal.
FL PtCl	[In motor fluxing] (FL) [PTC Alarm] (PtCL)
FSt	[Fast stop in prog.] (FSt)
	[Current Th. attained] (CtA)
	[Freq. Th. attained] (FtA) [Freq. Th. 2 attained] (F2A)
SrA	[Frequency ref. att.] (SrA)
	[Motor th. state att.] (tSA)
	[External fault alarm] (EtF) [Auto restart] (AUtO)
FtL	[Remote] (FtL)
	[Auto-tuning] (tUn)
	[Undervoltage] (USA) [Config. 1 act.] (CnF1)
	[Config. 2 act.] (CnF2)
	[HSP attained] (FLA)
	[Set 1 active] (CFP1) [Set 2 active] (CFP2)
	[Set 3 active] (CFP3)
brS	[In braking] (brS)
	[DC bus loading] (dbL) [High torque alarm] (ttHA)
	[Low torque alarm] (ttLA)
	[Forward] (MFrd)
	[Reverse] (MrrS) [Freq. metre Alarm] (FqLA)
dGt-	[DIAGNOSTICS]
	This menu is visible only on graphic display terminal.
pFH-	[FAULT HISTORY]
	Show s the 8 last detected faults.
dP1	[Past fault 1]
	Fault record 1 (1 is last).
nOF	[No fault] (nOF): No detected fault stored
ASF	[Angle error] (ASF): Angle setting detected fault
	[Brake control] (bLF): Brake's motor 3-phases loss [Brake feedback] (brF): Brake contactor detected error
	[Incorrect config.] (CFF): Invalid configuration at power on
CFI2	[Bad conf] (CFI2): Configuration transfer detected error
	[Com.network] (CnF): NET option communication interruption [CAN com.] (COF): CANopen® communication interruption
	[Capa.charg] (CrF): Load relay detected fault
	[Ch.sw. fault] (CSF): Channel sw itching detected error
	[Load fault] (dLF): Dynamic load detected error [Control EEprom] (⊞F1): Control EEprom detected error
	[Power Eeprom] (EEF2): Power EEprom detected error
	[External fault LI/Bit] (EPF1): External detected fault from LI or local link
	[External fault com.] (EPF2): External interruption from communication board [FB fault] (FbE): Function block detected error
	[FB stop fly.] (FbES): Function block stop detected error
FCF1	[Out. contact. stuck] (FCF1): Output contactor: closed contactor
	[Out. contact. open.] (FCF2): Output contactor: opened contactor [Cards pairing] (HCF): Hardw are configuration detected error
HdF	[IGBT desaturation] (HdF): Hardware detected error
ILF	[Option int link] (ILF): Option internal link interruption
	[Rating error] (InF1): Unknown drive rating [PWR Calib.] (InF2): Unknown or incompatible power board
	[Int.serial link] (InF3): Internal serial link communication interruption
InF4	[Int.Mfg area] (InF4): Invalid industrialization zone
	[Internal-option] (InF⊋): Unknown or incompatible option board [Internal-Imeasure] (InF9): Current measurement circuit detected error
InEd	

	Name / Description	Unit
InFA	[Internal-mains circuit] (InFA): Input phase loss circuit detected error	
	[Internal-th.sensor] (InFb): Thermal sensor detected error (OC or SC)	
	[Internal-CPU] (InFE): CPU detected fault (ram, flash, task)	
LCF	[Input contactor] (LCF): Line contactor detected error	
LFF3	[Al3 4-20m A loss] (LFF3): Al3 4-20 mA loss	
	[Overbraking] (ObF): Overbraking	
	[Overcurrent] (OCF): Overcurrent	
	[Drive overheat] (OHF): Drive overheating	
	[Proc.Overload Flt] (OLC): Torque overload	
	[Motor overload] (OLF): Motor overload	
	[1 output phase loss] (OPF1): Motor 1-phase loss	
	[3out ph loss] (OPF2): Motor 3-phases loss	
	[Mains overvoltage] (OSF): Oversupply detected fault	
	[PTC fault] (OtFL): Motor overheating detected error from PTCL: standard product [Input phase loss] (PHF): Main input 1-phase loss	
	[LI6=PTC probe] (PtFL): PTCL detected error (OC or SC)	
	[Safety] (SAFF): Safety function	
	[Motorshort circuit] (SCF1): Motor short circuit (hard detection)	
	[Ground short circuit] (SCF3): Direct ground short-circuit (hard detection)	
	[IGBT short circuit] (SCF4): IGBT short-circuit (hard detection)	
	[Motorshort circuit] (SCF5): Load short-circuit during Igon load sequence (hard detection)	
	[Modbus com.] (SLF1): Modbus local serial communication interruption	
SLF2	[PC com.] (SLF2): PC Software communication interruption	
SLF3	[HMI com.] (SLF3): Remote terminal communication interruption	
	[Overspeed] (SOF): Overspeed	
	[Speed fdback loss] (SPF): Speed feedback loss	
	[Torque/current lim] (SSF): Torque current limitation detected fault	
	[IGBT overheat] (tJF): IGBT overheating	
	[Auto-tuning] (tnF): Tune detected fault	
	[Pr.Underload Fit] (ULF): Torque underload	
	[Undervoltage] (USF): Undervoltage	
HS1	[Drive state]	
	HMI Status of the detected fault record 1.	
tl lo	([Auto tuning] (tl.ln): Auto tuning	
	[Auto-tuning] (tUn): Auto-tuning [In DC inject.] (dCb): Injection braking	
	[Ready] (rdY): Drive ready	
	[Freew heel] (nSt): Freew heel stop control	
	[Drv running] (rUn): Motor in steady state or run command present and zero reference	
	TIII accei, (ACC). Acceleration	
UEU	[In accel.] (ACC): Acceleration [In decel.] (dEC): Deceleration	
	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit	
	[In decel.] (dEC): Deceleration	
CLI FSt	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop	
CLI FSt FLU	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated	
FSt FLU nLP	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded	
FSt FLU nLP CtL	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop	
FSt FLU nLP CtL Obr	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration	
FSt FLU nLP CtL Obr SOC	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut	
FSt FLU nLP CtL Obr SOC USA	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm	
FSt FLU nLP CtL Obr SOC USA tC	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated	
FSt FLU nLP CtL Obr SOC USA tC	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress	
FSt FLU nLP CtL Obr SOC USA tC St FA	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot.fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated	
FSt FLU nLP CtL Obr SOC USA tC St FA YES	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 SLS	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 SLS StO	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS [STO active] (StO): Safety function STO	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 SLS StO SMS	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function STO [SMS active] (SMS): Safety function SMS	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 SLS StO SMS	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS [STO active] (StO): Safety function STO	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 StO SMS GdL	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test OK [eeprom test] (EP): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function STO [SMS active] (SMS): Safety function SMS	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 SLS StO SMS	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [UnderV.al.] (USA): Undervoltage alarm [In mfg. test] (IC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS [STO active] (SMS): Safety function SMS [GdL active] (Gdl): Safety function GdL [ETA state word]	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 StO SMS GdL	[In decel.] (dEC): Deceleration [Current lim.] (CLI): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [Ino mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [Under V.al.] (USA): Undervoltage alarm [In mfg. test] (tC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS [STO active] (SIO): Safety function STO [SMS active] (SMS): Safety function SMS [GdL active] (Gdl): Safety function GdL [ETA state word] DRIVECOM status register of detected fault record 1 (same as [ETA state word] (EtA) page 57).	
FSt FLU nLP CtL Obr SOC USA tC St FA YES EP FLt SS1 StO SMS GdL	[In decel.] (dEC): Deceleration [Current lim.] (CL): Current limit (in case of using a synchronous motor, if the motor does not start, follow the procedure page 112) [Fast stop] (FSt): Fast stop [Mot. fluxing] (FLU): Fluxing function is activated [no mains V.] (nLP): Control is powered on but the DC bus is not loaded [control.stop] (CtL): Controlled stop [Dec. adapt.] (Obr): Adapted deceleration [Output cut] (SOC): Stand by output cut [UnderV.al.] (USA): Undervoltage alarm [In mfg. test] (IC): TC indus mode activated [in autotest] (St): Self test in progress [autotesterr] (FA): Self test detected error [Autotest OK] (YES): Self test Eeprom detected error [In fault] (FLt): Product has detected a fault [SS1 active] (SS1): Safety function SS1 [SLS active] (SLS): Safety function SLS [STO active] (SMS): Safety function SMS [GdL active] (Gdl): Safety function GdL [ETA state word]	

DRI- > MON- > DGT- > PFH-

Code	Name / Description	Unit
CMP1	[Cmd word] Command register of detected fault record 1 (same as [Cmd word] (CMd) page 56).	•
LCP1	[Motor current]	Α
	Estimated motor current of detected fault record 1 (same as [Motor current] (LCr) page 50).	
rFp1	[Output frequency]	Hz
	Estimated motor frequency of detected fault record 1 (same as [Output frequency] (r = r) page 50).	
rtp1	[Elapsed time]	h
	Bapsed run time of detected fault record 1 (same as [Elapsed time] (rtH) page 62).	
ULp1	[Mains voltage]	V
о " р.	Main voltage of detected fault record 1 (same as [Mains voltage] (ULn) page 50).	
tHP1	[Motor thermal state]	%
	Motor thermal state of detected fault record 1 (same as [Motor thermal state] (tHr) page 50).	
dCC1	[Command Channel]	
	Command channel of detected fault record 1 (same as [Command channel] (CMdC) page 56).	
drC1	[Channel ref. active]	
	Reference channel of detected fault record 1 (same as [Channel ref. active] (rFCC) page 56).	
Sr11	[Saf01 Reg n-1] SAF1 Register x (1 is last)	
Sr21	[Saf02 Reg n-1] SAF2 Register x (1 is last)	
SrA1	[SF00 Reg n-1] SF00 Register x (1 is last)	
Srb1	[SF01 Reg n-1] SF01 Register x (1 is last)	
SrC1	[SF02 Reg n-1] SF02 Register x (1 is last)	
Srd1	[SF03 Reg n-1] SF03 Register x (1 is last)	
SrE1	[SF04 Reg n-1] SF04 Register x (1 is last)	
SrF1	[SF05 Reg n-1] SF05 Register x (1 is last)	
SrG1	[SF06 Reg n-1] SF06 Register x (1 is last)	
SrH1	[SF07 Reg n-1] SF07 Register x (1 is last)	
Srl1	[SF08 Reg n-1] SF08 Register x (1 is last)	
SrJ1	[SF09 Reg n-1] SF09 Register x (1 is last)	
srk1	[SF10 Reg n-1] SF10 Register x (1 is last)	
SrL1	[SF11 Reg n-1] SF11 Register x (1 is last)	

DRI- > MON- > DGT- > PFH-

Code	Name / Description	Unit
pFH-	[FAULT HISTORY] (continued) Show s the 8 last detected faults.	
dP2	[Past fault 2] [Saf1 Reg n-2] (Sr12), [Saf2 Reg n-2] (Sr22), [SF00 Reg n-2] (SrA2), [SF01 Reg n-2] (Srb2), and [SF02 Reg n-2] (SrC2) to [SF11 Reg n-2] (SrL2) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP3	[Past fault 3] [Saf1 Reg n-3] (Sr13), [Saf2 Reg n-3] (Sr23), [SF00 Reg n-3] (SrA3), [SF01 Reg n-3] (Srb3), and [SF02 Reg n-3] (SrC3) to [SF11 Reg n-3] (SrL3) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP4	[Past fault 4] [Saf1 Reg n-4] (Sr14), [Saf2 Reg n-4] (Sr24), [SF00 Reg n-4] (SrA4), [SF01 Reg n-4] (Srb4), and [SF02 Reg n-4] (SrC4) to [SF11 Reg n-4] (SrL4) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP5	[Past fault 5] [Saf1 Reg n-5] (Sr15), [Saf2 Reg n-5] (Sr25), [SF00 Reg n-5] (SrA5), [SF01 Reg n-5] (Srb5), and [SF02 Reg n-5] (SrC5) to [SF11 Reg n-5] (SrL5) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP6	[Past fault 6] [Saf1 Reg n-6] (Sr1), [Saf2 Reg n-6] (Sr2), [SF00 Reg n-6] (SrA), [SF01 Reg n-6] (Srb), and [SF02 Reg n-6] (SrC) to [SF11 Reg n-6] (SrL) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP7	[Past fault 7] [Saf1 Reg n-7] (Sr17), [Saf2 Reg n-7] (Sr27), [SF00 Reg n-7] (SrA7), [SF01 Reg n-7] (Srb7), and [SF02 Reg n-7] (SrC7) to [SF11 Reg n-7] (SrL7) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	
dP8	[Past fault 8] [Saf1 Reg n-8] (Sr18), [Saf2 Reg n-8] (Sr28), [SF00 Reg n-8] (SrA8), [SF01 Reg n-8] (Srb8), and [SF02 Reg n-8] (SrC8) to [SF11 Reg n-8] (SrL8) may be visible with this parameter. Identical to [Past fault 1] (dP1) page 64.	

DRI- > MON- > PFL-

Code	Name / Description	Unit
dGt-	[DIAGNOSTICS] (continued)	
PFL-	[CURRENT FAULT LIST]	
nOF	[No fault] (nOF): No detected fault stored	
	[Angle error] (ASF): Angle setting detected fault	
	[Brake control] (bLF): Brake's motor 3-phases loss	
	[Brake feedback] (brF): Brake contactor detected error [Incorrect config.] (CFF): Invalid configuration at power on	
	[Bad conf] (CF12): Configuration transfer detected error	
	[Com.network] (CnF): NET option communication interruption	
	[CAN com.] (COF): CANopen® communication interruption	
	[Capa.charg] (CrF): Load relay detected fault	
	[Ch.sw. fault] (CSF): Channel sw itching detected error [Load fault] (dLF): Dynamic load detected error	
	[Control EEprom] (EEF1): Control EEprom detected error	
	[Power Eeprom] (EEF2): Power EEprom detected error	
EPF1	[External fault Ll/Bit] (EPF1): External detected fault from Ll or local link	
	[External fault com.] (EPF2): External interruption from communication board	
	[FB fault] (FbE): Function block detected error	
	[FB stop fly.] (FbES): Function block stop detected error [Out. contact. stuck] (FCF1): Output contactor: closed contactor	
	[Out. contact. open.] (FCF2): Output contactor: opened contactor	
	[Cards pairing] (HCF): Hardw are configuration detected error	
	[IGBT desaturation] (HdF): Hardware detected error	
	[Option int link] (ILF): Option internal link interruption	
	[Rating error] (InF1): Unknown drive rating [PWR Calib.] (InF2): Unknown or incompatible power board	
	[Int.serial link] (InF3): Internal serial link communication interruption	
	[Int.Mfg area] (InF4): Invalid industrialization zone	
InF 📮	[Internal-option] (InFa): Unknown or incompatible option board	
	[Internal-Imeasure] (InF9): Current measurement circuit detected error	
	[Internal-mains circuit] (InFA): Input phase loss circuit detected error [Internal-th.sensor] (InFb): Thermal sensor detected error (OC or SC)	
	[Internal-CPU] (In FE): CPU detected fault (ram, flash, task)	
LCF	[Input contactor] (LCF): Line contactor detected error	
	[Al3 4-20m A loss] (LFF3): Al3 4-20 mA loss	
	[Overbraking] (ObF): Overbraking	
	[Overcurrent] (OCF): Overcurrent [Drive overheat] (OHF): Drive overheating	
	[Proc.Overload Fit] (OLC): Torque overload	
	[Motor overload] (OLF): Motor overload	
	[1 output phase loss] (OPF1): Motor 1-phase loss	
	[3out ph loss] (OPF2): Motor 3-phases loss	
	[Mains overvoltage] (OSF): Oversupply detected fault [PTC fault] (OtFL): Motor overheating detected error from PTCL: standard product	
	[Input phase loss] (PHF): Main input 1-phase loss	
	[LI6=PTC probe] (PtFL): PTCL detected error (OC or SC)	
	[Safety] (SAFF): Safety function	
	[Motor short circuit] (SCF1): Motor short circuit (hard detection)	
	[Ground short circuit] (SCF3): Direct ground short-circuit (hard detection) [IGBT short circuit] (SCF4): IGBT short-circuit (hard detection)	
	[Motor short circuit] (SCF5): Load short-circuit during Igon load sequence (hard detection)	
	[Modbus com.] (SLF1): Modbus local serial communication interruption	
	[PC com.] (SLF2): PC Software communication interruption	
	[HMI com.] (SLF3): Remote terminal communication interruption	
	[Overspeed] (SOF): Overspeed [Speed fdback loss] (SPF): Speed feedback loss	
	[Torque/current lim] (SSF): Torque current limitation detected fault	
tJF	[IGBT overheat] (tJF): IGBT overheating	
	[Auto-tuning] (tnF): Tune detected fault	
	[Pr.Underload Fit] (ULF): Torque underload	
USF	[Undervoltage] (USF): Undervoltage	

DRI- > MON- > A FI-

Code	Name / Description	Unit
AFI-	[MORE FAULT INFO]	
	Additional detected fault information.	
CnF	[Network fault] Communication option card fault code. This parameter is read-only. The fault code remains saved in the parameter, even if the cause disappears. The parameter the drive is disconnected and then reconnected. The values of this parameter depend on the network car manual for the corresponding card.	
ILF1	[Internal link fault 1] Communication interruption betw een option card 1 and drive. This parameter is read-only. The fault code remains saved in the parameter, even if the cause disappears. The parameter the drive is disconnected and then reconnected.	arameter is reset
SFFE	[Safety fault reg.] (1) Safety function fault error register.	
	Bit0 = 1: Logic inputs debounce time-out (verify value of debounce time LIDT according to the application) Bit1 Reserved Bit2 = 1: Motor speed sign has changed during SS1 ramp Bit3 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp. Bit4: Reserved Bit5: Reserved Bit6 = 1: Motor speed sign has changed during SLS limitation Bit7 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp. Bit8: Reserved Bit9: Reserved Bit10: Reserved Bit11: Reserved Bit11: Reserved Bit12: Reserved Bit12: Reserved Bit14 = 1: Not possible to measure the motor speed (verify the motor w iring connection) Bit14 = 1: Motor ground short-circuit detected (verify the motor w iring connection) Bit15 = 1: Motor phase to phase short-circuit detected (verify the motor w iring connection)	
SAF1	[Safety fault Reg1] (1) Safety fault register 1. Application control error register. Bit0 = 1: PWRM consistency detected error Bit1 = 1: Safety functions parameters detected error Bit2 = 1: Application auto test has detected an error Bit3 = 1: Diagnostic verification of safety function has detected an error Bit4 = 1: Logical input diagnostic has detected an error Bit5 = 1: SMS or GDL safety functions detected error (Details in [SAFF Subcode 4] SF04 register page 71) Bit6 = 1: Application w atchdog management active Bit7 = 1: Motor control detected error Bit8 = 1: Internal serial link core detected error Bit9 = 1: Logical input activation detected error Bit10 = 1: Safe Torque Off function has triggered an error Bit11 = 1: Application interface has detected an error of the safety functions Bit12 = 1: Safe Stop 1 function has detected an error of the safety functions Bit13 = 1: Safely Limited Speed function has triggered an error Bit14 = 1: Motor data is corrupted	
	Bit15 = 1: Internal serial link data flow detected error	

(1) Hexadecimal values are displayed on the Graphic display terminal

Example:

SFFE = 0x0008 in Hexadecimal

Code	Name / Description	Unit
SAF2	[Safety fault Reg2] (1) Safety fault register 2 Motor Control error register Bit0 = 1 : Consistency stator frequency verification has detected an error Bit1 = 1 : Stator frequency estimation detected error Bit2 = 1 : Motor control watchdog management is active Bit3 = 1 : Motor control hardw are watchdog is active Bit4 = 1 : Motor control auto test has detected an error Bit5 = 1 : Chain testing detected error Bit6 = 1 : Internal serial link core detected error Bit7 = 1 : Direct short-circuit detected error Bit8 = 1 : PWM driver detected error Bit9 = 1 : GDL internal detected error Bit10 : Reserved Bit11 = 1 : Application interface has detected an error of the safety functions Bit12 = 1 : Reserved Bit13: Reserved Bit13: Reserved Bit14 = 1 : Motor data is corrupted Bit15 = 1 : Internal serial link data flow detected error	
SF00	[SAFF Subcode 0] (1) Safety fault subregister 00 Appplication auto test error register Bit0 : Reserved Bit1 = 1 : Ram stack overflow Bit2 = 1 : Ram address integrity error Bit3 = 1 : Ram data access error Bit4 = 1 : Flash Checksum Error Bit5 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 : Reserved Bit8 : Reserved Bit9 = 1 : Fast task overflow Bit10 = 1 : Slow task overflow Bit11 = 1 : Application task overflow Bit12 : Reserved Bit13 : Reserved Bit13 : Reserved Bit14 = 1 : PWRM line is not activated during initialization phase Bit15 = 1 : Application hardw are Watch Dog is not running after initialization	
SF01	[SAFF Subcode 1] (1) Safety fault subregister 01 Logical input diagnostics error register Bit0 = 1 : Management - state machine error Bit1 = 1 : Data required for test management are corrupted Bit2 = 1 : Channel selection detected error Bit3 = 1 : Testing - state machine detected error Bit4 = 1 : Test request is corrupted Bit5 = 1 : Pointer to test method is corrupted Bit6 = 1 : Incorrect test action provided Bit7 = 1 : Detected Error in results collecting Bit8 = 1 : LI3 detected error. Cannot activate safe function Bit9 = 1 : LI4 detected error. Cannot activate safe function Bit10 = 1 : LI5 detected error. Cannot activate safe function Bit11 = 1 : LI6 detected error. Cannot activate safe function Bit12 = 1 : Test sequence updated w hile a diagnostic is in progress Bit13 = 1 : Detected error in test pattern management Bit14 : Reserved Bit15 : Reserved	

Example:

SFFE = 0x0008 in Hexadecimal

Code	Name / Description	Unit
SF02	[SAFF Subcode 2] (1)	
	Safety fault subregister 02	
	Application Watchdog Management detected error register	
	Bit0 = 1: Fast task detected error	
	Bit1 = 1: Slow task detected error	
	Bit2 = 1 : Application task detected error Bit3 = 1 : Background task detected error	
	Bit4 = 1 : Safety fast task/input detected error	
	Bit5 = 1 : Safety slow task/input detected error	
	Bit6 = 1: Safety app task/input detected error	
	Bit7 = 1 : Safety app task/treatment detected error	
	Bit8 = 1 : Safety background task detected error	
	Bit9 : Reserved Bit10 : Reserved	
	Bit11: Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
SF03	[SAFF Subcode 3] (1)	
	Safety fault subregister 03	
	Bit0 = 1 : Debounce time out	
	Bit1 = 1: Input not consistent Bit2 = 1: Consistency check - state machine detected error	
	Bit3 = 1 : Consistency check - debounce timeout corrupted	
	Bit4 = 1 : Response time data detected error	
	Bit5 = 1: Response time corrupted	
	Bit6 = 1 : Undefined consumer queried	
	Bit7 = 1 : Configuration detected error	
	Bit8 = 1 : Inputs are not in nominal mode Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
SF04	[SAFF Subcode 4] (1)	
31-04	Safety fault subregister 04	
	[Safe Torque Off] StO detected error register	
	Bit0 = 1: No signal configured	
	Bit1 = 1 : State machine detected error	
	Bit2 = 1 : Internal data detected error	
	Bit3 : Reserved	
	Bit4 : Reserved	
	Bit5 : Reserved Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 = 1 : SMS overspeed detected error	
	Bit9 = 1 : SMS internal detected error	
	Bit10 : Reserved	
	Bit11 = 1 : GDL internal detected error 1	
	Bit12 = 1 : GDL internal detected error 2	
	Bit13 : Reserved Bit14 : Reserved	
	Bit15 : Reserved	
(4) 11 1 1	Il values are displayed on the Granhic display terminal	

Example:

SFFE = 0x0008 in Hexadecimal

Code	Name / Description	Unit
SF05	[SAFF Subcode 5] (1)	
	Safety fault subregister 05	
	[Safe Stop 1] SS1 detected error register	
	Bit0 = 1 : State machine detected error	
	Bit1 = 1: Motor speed sign changed during stop	
	Bit2 = 1: Motor speed reached trigger area	
	Bit3 = 1 : Theoretical motor speed corrupted	
	Bit4 = 1: Unauthorized configuration	
	Bit5 = 1: Theoretical motor speed computation detected error	
	Bit6 : Reserved	
	Bit7 = 1 : Speed sign check: consistency detected error Bit8 = 1 : Internal SS1 request corrupted	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
SF0 🖁	[SAFF Subcode 6] (1)	
	Safety fault subregister 06	
	[Safely Limited Speed] SLS detected error register	
	Bit0 = 1: State machine error register	
	Bit1 = 1: Motor speed sign changed during limitation	
	Bit2 = 1: Motor speed has reached the frequency limit threshold	
	Bit3 = 1: Data corruption	
	Bit4 : Reserved Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved Bit15 : Reserved	
	DITS . neserved	
0507	[O AFE Out and 7] (4)	
SF07	[SAFF Subcode 7] (1)	
	Safety fault subregister 07 Application Watchdog Management detected errorregister	
	Bit0 : Reserved	
	Bit1 : Reserved	
	Bit2 : Reserved	
	Bit3 : Reserved	
	Bit4 : Reserved	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved Bit10 : Reserved	
	Bit11: Reserved	
	Bit12: Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	

Example:

SFFE = 0x0008 in Hexadecimal

Code	Name / Description	Unit
SF08	[SAFF Subcode 8] (1) Safety fault subregister 08 Application Watchdog Management detected error register Bit0 = 1 : PWM task detected error Bit1 = 1 : Fixed task detected error Bit2 = 1 : ATMC w atchdog detected error Bit3 = 1 : DYNFCT w atchdog detected error Bit4 : Reserved Bit5 : Reserved Bit6 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 : Reserved Bit9 : Reserved Bit10 : Reserved Bit11 : Reserved Bit11 : Reserved Bit12 : Reserved Bit13 : Reserved Bit14 : Reserved Bit15 : Reserved Bit15 : Reserved Bit10 : Reserved Bit11 : Reserved Bit11 : Reserved Bit12 : Reserved Bit13 : Reserved Bit14 : Reserved Bit15 : Reserved	
SF09	[SAFF Subcode 9] (1) Safety fault subregister 09 Motor control Auto Test detected error register Bit0 : Reserved Bit1 = 1 : Ram stack overflow Bit2 = 1 : Ram address integrity detected error Bit3 = 1 : Ram data access detected error Bit4 = 1 : Flash Checksum detected error Bit5 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 : Reserved Bit8 : Reserved Bit9 = 1 : 1 ms task overflow Bit10 = 1 : PWM task overflow Bit11 = 1 : Fixed task overflow Bit12 : Reserved Bit13 : Reserved Bit13 : Reserved Bit14 = 1 : Unw anted interruption Bit15 = 1 : Hardw are WD is not running after initialization	
SF10	[SAFF Subcode 10] (1) Safety fault subregister 10 Motor control direct short-circuit detected error register Bit0 = 1 : Ground short circuit - Configuration detected error Bit1 = 1 : Phase to phase short circuit - Configuration detected error Bit2 = 1 : Ground short circuit Bit3 = 1 : Phase to phase short circuit Bit4 : Reserved Bit5 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 : Reserved Bit9 : Reserved Bit10 : Reserved Bit11 : Reserved Bit11 : Reserved Bit12 : Reserved Bit13 : Reserved Bit14 : Reserved Bit15 : Reserved Bit16 : Reserved Bit17 : Reserved Bit19 : Reserved Bit19 : Reserved Bit10 : Reserved Bit10 : Reserved Bit11 : Reserved Bit11 : Reserved Bit12 : Reserved Bit13 : Reserved Bit14 : Reserved Bit15 : Reserved	

Example:

SFFE = 0x0008 in Hexadecimal

Code	Name / Description	Unit
SF11	[SAFF Subcode 11] (1) Safety fault subregister 11 Motor Control dynamic check of activity detected error register Bit0 = 1: Application requested a diagnostic of direct short circuit Bit1 = 1: Application requested consistency verification of stator frequency estimation (voltage and current) Bit2 = 1: Application requested diagnostic of SpdStat provided by Motor Control Bit3 : Reserved Bit4 : Reserved Bit5 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 = 1: Motor Control safe diagnostic of direct short circuit is enabled Bit9 = 1: Motor Control consistency check of stator frequency estimation is enabled Bit10 = 1: Motor Control diagnostic of SpdStat provided by Motor Control is enabled Bit11 : Reserved Bit12 : Reserved Bit13 : Reserved Bit14 : Reserved Bit15 : Reserved Bit15 : Reserved Bit15 : Reserved	
dGt-	[DIAGNOSTICS] (continued)	
tAC	[IGBT alarm counter] Transistor alarm time counter (length of time the "IGBT temperature" alarm has been active).	
tAC2	[Min. freq time] Transistor alarm time counter at minimum switching frequency (length of time the "IGBT temperature" alarm has the drive has automatically reduced the switching frequency to the minimum value).	been active after
ntJ	[IGBT alarm Nb]	
*	Transistor alarm counter: number detected during lifecycle. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr).	
SEr-	[SERVICE MESSAGE]	
	See page 289.	
rFLt	[Reset past faults] Reset all resetable previous detected faults.	
	[No] (nO): Reset not active [YES] (YES): Reset in progress	

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

(1) Hexadecimal values are displayed on the Graphic display terminal Example:

SFFE = 0x0008 in Hexadecimal SFFE = Bit 3

Code	Name / Description Unit
MOn-	[1.2 MONITORING] (continued)
COd-	[PASSWORD]
	HMI Password.
CS t	If you have lost your code, please contact BLEMO.
USL	[State] Status of the drive (lock/unlock). Information parameter, cannot be modified.
	[Locked] (LC): The drive is locked by a password [Unlocked] (ULC): The drive is not locked by a password
COd	[PIN code 1]
	Confidential code.
	Enables the drive configuration to be protected using an access code.
	When access is locked by means of a code, only the parameters in the [1.2 MONITORING] (MOn-) and [1.1 SPEED REFERENCE] (rEF-) menus can be accessed. The MODE key can be used to switch between menus.
	Note: Before entering a code, do not forget to make a careful note of it.
OFF	[OFF] (OFF): No access locking codes.
	 To lock access, enter a code (2 to 9,999). The display can be incremented using the jog dial. Then press ENT. [ON] (On) appears on the screen to indicate that access has been locked.
On	[ON] (On): A code is locking access (2 to 9,999).
	- To unlock access, enter the code (incrementing the display using the jog dial) and press ENT. The code remains on the display and access is unlocked until the next time the drive is turned off. Access will be locked again the next time the drive
	is turned on.
	 If an incorrect code is entered, the display changes to [ON] (On), and access remains locked. Access is unlocked (the code remains on the screen).
	- To reactivate locking with the same code when access has been unlocked, return to [ON] (On) using the jog dial and then
	press ENT. [ON] (On) remains on the screen to indicate that access has been locked. - To lock access with a new code when access has been unlocked, enter the new code (increment the display using the jog
	dial) and then press ENT. [ON] (On) appears on the screen to indicate that access has been locked. - To clear locking when access has been unlocked, return to [OFF] (OFF) using the jog dial and then press ENT.
	[OFF] (OFF) remains on the display. Access is unlocked and will remain so until the next restart.
COd2	[PIN code 2]
*	Confidential code 2. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr).
	The value [OFF] (OFF) indicates that no passw ord has been set [Unlocked] (ULC).
On	The value [ON] (On) indicates that the drive configuration is protected and an access code must be entered in order to unlock it. Once the correct code has been entered, it remains on the display and the drive is unlocked until the next time the power supply
	is disconnected.
8888	PIN code 2 is an unlock code known only to BLEMO Product Support.
ULr	[Upload rights]
ULr0	[Permitted] (ULr0): Means that SoMove or the graphic display terminal can save the whole configuration (password,
	protections, configuration). When the configuration is edited, only the non protected parameters will be accessible.
ULr1 dLr	[Not allowed] (ULr1): Means that SoMove or the graphic display terminal cannot save the configuration [Download rights]
GLI	[Download rights]
dLr0	[Locked drv] (dLr0): Locked drive: means that the configuration can be downloaded only in a locked drive which configuration be the same password. If the passwords are different, download is not paywitted.
dLr1	has the same password. If the passwords are different, download is not permitted. [Unlock.drv] (dLr1): Unlocked drive: means that the configuration can be dow nloaded only in a drive w ithout active password
dLr2	[Not allowed] (dLr2): Not allowed: the configuration cannot be downloaded
dLr3	[Lock/unlock] (dLr3): Lock. + Not: download is permitted following case 0 or case 1



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

Configuration Mode (ConF)

5

What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>78</u>
Organization tree	<u>79</u>
My Menu	<u>80</u>
Factory Settings	<u>81</u>
Macro Configuration	<u>82</u>
Full	<u>85</u>

Introduction

Configuration mode includes 4 parts:

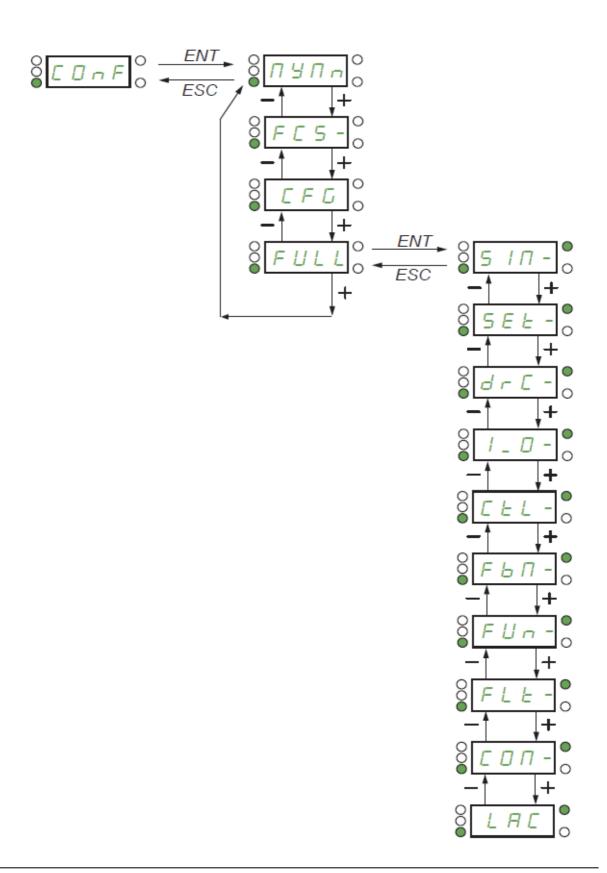
- 1. "My Menu" menu includes up to 25 parameters available for user customization using the graphic display terminal or SoMove software.
- 2. Store/recall parameter set: These 2 functions are used to store and recall customer settings.
- 3. [Macro configuration] (CFG) parameter which allows to load predefined values for applications (see page 82).
- 4. FULL: This menu provides access to all other parameters. It includes 10 sub-menus:
 - [SIMPLY START] (SIM-) page 85
 [SETTINGS] (SEt-) page 89
 [MOTOR CONTROL] (drC-) page 105
 [INPUTS / OUTPUTS CFG] (I_O-) page 125
 [COMMAND] (CtL-) page 154
 [FUNCTION BLOCK] (FbM-) page 158
 [APPLICATION FUNCT.] (FUn-) page 167
 [FAULT MANAGEMENT] (FLt-) page 250
 [COMMUNICATION] (COM-) page 275

- [ACCESS LEVEL] (LAC) page 280

Organization tree

Displayed parameter values are given as examples.





DRI- > CONF > MYMN-

My Menu

Code	Name / Description
COnF	[1.3 CONFIGURATION]
MYMn	[MY MENU]
	This menu contains the parameters selected in the [3.4 DISPLAY CONFIG.] (dCF-) menu on page 287.

DRI- > CONF > FCS-

Factory Settings

Code	Name / Description	Factory setting
COnF	[1.3 CONFIGURATION]	
FCS-	[FACTORY SETTINGS]	
FCSI	[Config. Source]	[Macro-Conf] (ImI)
*	Choice of source configuration. If the configuration switching function is configured, it will not be possible to access [Config 1] ([Config 2] (CFG2). Note: To load the drive's presettings previously stored ([Config 1] (Str1) or [Config 2] (Str1) configuration [Config. Source] (FCSI) = [Config 1] (CFG1) or [Config 2] (CFG2) follow [Goto FACTORY SETTINGS] (GFS) = [YES] (YES).	r2)), select the source
CFG1	[Macro-Conf] (Iril): Factory configuration, return to selected macro configuration [Config 1] (CFG1): Configuration 1 [Config 2] (CFG2): Configuration 2	
FrY-	[PARAMETER GROUP LIST]	
	Selection of menus to be loaded. See the multiple selection procedure on page 33 for the integrated display terminal and page 24 for the integrated display terminal and page	
	[AII] (ALL): All parameters (the function blocks program will also be erased) [Drive configuration] (drM): The [1 DRIVE MENU] (drl—) menu without [COMMUNICATIO [2.4 DISPLAY CONFIG.] menu, [Return std name] (GSP) page 289 returns to [No] (nO).	N] (COM-). In the
MOt	[Motor param] (MOt): Motor parameters, see page 297.	
	The following selections can only be accessed if [Config. Source] (FCSI) is set to [Macro-Con [Comm.menu] (COM): The [COMMUNICATION] (COM-) menu without either [Scan. In1 is [Scan. In8 address] (nMA8) or [Scan.Out1 address] (nCA1) to [Scan.Out8 address] (nCA1) to [Scan.Out8 address] (nCA1)	address] (nMA1) to
GFS	[Display config.] (dlS): The [3.3 MONITORING CONFIG.] (MCF-) menu [Goto FACTORY SETTINGS]	
* 2 s	WARNING UNANTICIPATED EQUIPMENT OPERATION Verify that restoring the factory settings is compatible with the type of wiring used. Failure to follow these instructions can result in death, serious injury, or equi It is only possible to revert to the factory settings if at least one group of parameters has previous	
	[No] (nO): No [Yes] (YES): The parameter changes back to [No] (nO) automatically as soon as the operation	is complete
SCSI	[Save config]	[No] (nO)
*	The active configuration to be saved does not appear for selection. For example, if it is [Config 1] (Str1) and [Config 2] (Str2) appear. The parameter changes back to [No] (nC complete.	
Str0 Str1	[No] (nO): No [Config 0] (Str0): Press and hold down the ENT key for 2 s [Config 1] (Str1): Press and hold down the ENT key for 2 s [Config 2] (Str2): Press and hold down the ENT key for 2 s	



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF

Macro Configuration

Code	Name / Description	Factory setting
COnF	[1.3 CONFIGURATION] (continued)	
CFG	[Macro configuration]	[Start/Stop] (StS)
*	▲ WARNING	
₹2 s	UNANTICIPATED EQUIPMENT OPERATION Verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify that the selected macro configuration is compatible with the type of verify the selected macro configuration is compatible with the type of verify the selected macro configuration is configuration.	· ·
HdG HS t GEn Pld	[Start/Stop] (StS): Start/stop [M.handling] (HdG): Handling [Hoisting] (HSt): Hoisting [Gen. Use] (GEn): General use [PID regul.] (PId): PID regulation [Network C.] (nEt): Communication bus	



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



To change the assignment of this parameter, press the ENT key for 2 s.

Example of total return to factory settings

- [Config. Source] (FCS ▮) is set to [Macro-Conf] (In ▮)
- [PARAMETER GROUP LIST] (FrY-) is set to [AII] (ALL)
- [Goto FACTORY SETTINGS] (GFS) is set to [Yes] (YES)

Assignment of the inputs/outputs

Input/	[Start/Stop]	[M. handling]	[Gen. Use]	[Hoisting]	[PID regul.]	[Network C.]
Output [Al1]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel] (PID reference)	[Ref.2 channel] ([Ref.1 channel] = integrated Modbus) (1)
[AI2]	[No]	[Summing ref. 2]	[Summing ref. 2]	[No]	[PID feedback]	[No]
[AI3]	[No]	[No]	[No]	[No]	[No]	[No]
[AO1]	[No]	[No]	[No]	[No]	[No]	[No]
[R1]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]
[R2]	[No]	[No]	[No]	[Brk control]	[No]	[No]
[LI1] (2-wire)	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]
[Ll2] (2-wire)	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]
[Ll3] (2-wire)	[No]	[2 preset speeds]	[Jog]	[Fault reset]	[PID integral reset]	[Ref. 2 switching]
[LI4] (2-wire)	[No]	[4 presetspeeds]	[Fault reset]	[External fault]	[2 preset PID ref.]	[Fault reset]
[Ll5] (2-wire)	[No]	[8 presetspeeds]	[Torque limitation]	[No]	[4 preset PID ref.]	[No]
[Ll6] (2-wire)	[No]	[Fault reset]	[No]	[No]	[No]	[No]
[LI1] (3-wire)	[Drive running]	[Drive running]	[Drive running]	[Drive running]	[Drive running]	[Drive running]
[Ll2] (3-wire)	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]
[LI3] (3-wire)	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]
[LI4] (3-wire)	[No]	[2 preset speeds]	[Jog]	[Fault reset]	[PID integral reset]	[Ref. 2 switching]
[Ll5] (3-wire)	[No]	[4 preset speeds]	[Fault reset]	[External fault]	[2 preset PID ref.]	[Fault reset]
[Ll6] (3-wire)	[No]	[8 presetspeeds]	[Torque limitation]	[No]	[4 preset PID ref.]	[No]
[LO1]	[No]	[No]	[No]	[No]	[No]	[No]
	1	G	iraphic display termina	lkeys	I	1
F1 key	[No]	[No]	[No]	[No]	[No]	Control via graphic display terminal
F2, F3, F4 keys	[No]	[No]	[No]	[No]	[No]	[No]

In 3-w ire control, the assignment of inputs LI1 to LI6 shifts.

(1) To start with, integrated Modbus [Modbus Address] (Add) must first be configured, page 276.

 $\textbf{Note:} \ \ \textbf{These assignments are reinitialized every time the macro configuration changes}.$

Other configurations and settings

In addition to the assignment of inputs/outputs, other parameters are assigned **only in the Hoisting macro configuration**.

Hoisting:

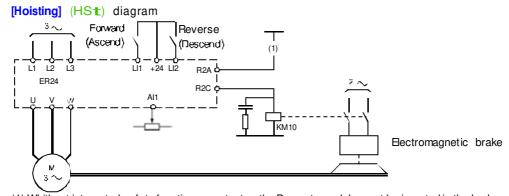
- [Movement type] (bSt) is set to [Hoisting] (UEr) page 194
- [Brake contact] (bCl) is set to [No] (nO) page 194
- [Brake impulse] (b IP) is set to [Yes] (YES) page 194
- [Brake release IFW] (Ibr) is set to 0 A page 194
- [Brake Release time] (brt) is set to 0 s page 194
- [Brake release freq] (blr) is set to [Auto] (AUtO) page 195
- [Brake engage freq] (bEn) is set to [Auto] (AUtO) page 195
- [Brake engage time] (bEt) is set to 0 s page 195
- [Engage at reversal] (bEd) is set to [No] (nO) page 195
- [Jump at reversal] (JdC) is set to [Auto] (AUtO) page 195
- [Time to restart] (ttr) is set to 0 s page 196
- [Current ramp time] (brr) is set to 0 s page 198
- [Low speed] (LSP) is set to Rated motor slip calculated by the drive, page 87
- [Output Phase Loss] (OPL) is set to [Yes] (YES) page 256
 No further modifications can be made to this parameter.
- [Catch on the fly] (FLr) is set to [No] (nO) page 253
 No further modifications can be made to this parameter.

Return to factory settings:

Returning to factory settings with [Config. Source] (FCSI) is set to [Macro-Conf] (InI) page 81 will return the drive to the selected macro configuration. The [Macro configuration] (CFG) parameter does not change, although [Customized macro] (CCFG) disappears.

Note: The factory settings that appear in the parameter tables correspond to **[Macro configuration]** (CFG) = **[Start/Stop]** (StS). This is the macro configuration set at the factory.

Example diagrams for use with the macro configurations



(1) Whithout integrated safety function, a contact on the Preventa module must be inserted in the brake control circuit to engage it when the "Safe Torque Off" safety function is activated (see connection diagrams in the Installation manual).

DRI- > CONF > FULL > SIM-

Full

Code	Name / Description Adjustment range Factory setting
COnF	[1.3 CONFIGURATION]
FULL	[FULL]
SIM-	[SIMPLY START]
tCC	[2/3 wire control] [2 wire] (2C)
🔀 2 s	▲ WARNING
	UNANTICIPATED EQUIPMENT OPERATION
	If this parameter is changed, the parameters [Reverse assign.] (rrs) and [2 wire type] (tct) and the assignments of the digital inputs are reset to the factory setting.
	Verify that this change is compatible with the type of wiring used.
	Failure to follow these instructions can result in death, serious injury, or equipment damage.
	See [2/3 wire control] (tCC) page 125.
2C	[2 wire] (2C) 2-wire control (level commands): This is the input state (0 or 1) or edge (0 to 1 or 1 to 0), w hich controls running or stopping.
	Example of "source" wiring:
	+24 LI1 Lix Li1: forward
	Lk: reverse
3C	[3 wire] (3C) 3-wire control (pulse commands): A "forward" or "reverse" pulse is sufficient to command starting, a "stop" pulse is sufficient to command stopping.
	Example of "source" w iring:
	LI1: stop Li2: forward Lix: reverse
CFG	[Macro configuration] [Start/Stop] (StS)
*	▲ WARNING
₹2 s	UNANTICIPATED EQUIPMENT OPERATION
•	Verify that the selected macro configuration is compatible with the type of wiring used. Failure to follow these instructions can result in death, serious injury, or equipment damage.
	See [Macro configuration] (CFG) page 82.
	[Start/Stop] (StS): Start/stop
HSt	[M.handling] (HdG): Handling [Hoisting] (HSt): Hoisting
	[Gen. Use] (GEn): General use [PID regul.] (PId): PID regulation
	[Network C.] (nEt): Communication bus

Code	Name / Description	Adjustment range	Factory setting
CCFG	[Customized macro]		
*	Read-only parameter, only visible if at least one macro configuration parameter	neter has been modifie	ed.
	[No] (nO): No [Yes] (YES): Yes		
bFr	[Standard mot. freq]		[50Hz IEC] (50)
	This parameter modifies the presets of the following parameters: [Rated m 87, [Freq. threshold] (Ftcl) page $\underline{102}$, [Rated motor freq.] (FrS) and [I		
50 20	[50Hz IEC] (50): Drive 50 Hz [60Hz NEM A] (
IPL	[Input phase loss]		Yes or No, according to drive rating
*	This parameter is only accessible in this menu on 3-phase drives. If one phase disappears, the drive sw itches to fault mode [Input phase los continues to operate until it trips on an undervoltage detected fault (the drivinput phase loss and if this leads to performance decrease). See [Input phase loss] (IPL) page 256.		
	$\begin{tabular}{l} \textbf{[Ignore] (nO):} Detected fault ignored, to be used when the drive is supplied [Freewheel] (YES): With freewheel stop \end{tabular}$	d via a single-phase s	upply or by the DC bus
nPr	[Rated motor power]		According to drive rating
*	Rated motor power given on the nameplate, in kW if [Standard mot. fre [Standard mot. freq] (bFr) is set to [60Hz NEMA] (0). See [Rated motor power] (nPr) page 107.	eq] (bFr) is set to [5	OHz IEC] (50), in HP if
UnS	[Rated motor volt.]	100 to 480 V	According to drive rating
*	Rated motor voltage given on the nameplate. ER24K/B: 100 to 240 V – ER24/4K/B: 200 to 480 V. See [Rated motor volt.] (UnS) page 107.		
nCr	[Rated mot. current]	0.25 to 1.5 ln (1)	According to drive rating and [Standard mot. freq] (bFr)
*	Rated motor current given on the nameplate. See [Rated mot. current] (nCr) page 107.		
FrS	[Rated motor freq.]	10 to 800 Hz	50 Hz
*	Rated motor frequency given on the nameplate. The factory setting is 50 Hz, or preset to 60 Hz if [Standard mot. freq] (b) This parameter is not visible if [Motor control type] (Ctt) page 105 is set See [Rated motor freq.] (FrS) page 107.		ſn).
nSP	[Rated motor speed]	0 to 65,535 rpm	According to drive rating
	Rated motor speed given on the nameplate. This parameter is not visible if [Motor control type] (Ctt) page 105 is set See [Rated motor speed] (nSP) page 107. 0 to 9,999 rpm then 10.00 to 60.00 krpm on the integrated display terminal. If, rather than the rated speed, the nameplate indicates the synchronous speed as follows:		
*	Nominal speed = Synchronous speed x $\frac{100 - \text{slip as a } \%}{100}$ or $50 - \text{slip in Hz}$		
	Nominal speed = Synchronous speed x $\frac{50 - \text{slip in Hz}}{50}$ (50 Hz motors)		
	or Nominal speed = Synchronous speed x $\frac{60 - \text{slip in Hz}}{60}$ (60 Hz motors)		

Code	Name / Description	Adjustment range	Factory setting
tFr	[Max frequency]	10 to 599 Hz	60 Hz
	The factory setting is 60 Hz, or preset to 72 Hz if [Standard mot.freq] (bf The maximum value is limited by the following conditions: It must not exceed 10 times the value of [Rated motorfreq.] (FrS).	r) is set to 60 Hz.	
	See [Max frequency] (t⊢r) page 105.		
tUn	[Auto tuning]		[No action] (nO)
O	For asynchronous motors, see page <u>108</u> . For synchronous motors, see page <u>113</u> .		
tUS	[Auto tuning state]		[Not done] (tAb)
	This parameter is not saved at drive power off. It shows the Autotuning state See [Auto tuning state] (tUS) page $\underline{108}$.	tus since last power c	on.
tAb PEnd PrOG FAIL dOnE	[Not done] (tAb): Autotune is not done [Pending] (PEnd): Autotune has been requested but not yet performed [In Progress] (PrOG): Autotune is in progress [Failed] (FAIL): Autotune has detected a fault [Done] (dOnE): The stator resistance measured by the auto-tuning function	n is used to control the	e motor
StUn	[Tune selection]		[Default] (tAb)
	See [Tune selection] (StUn) page 108.		
MEAS	[Default] (tAb): The default stator resistance value is used to control the [Measure] (MEAS): The stator resistance measured by the auto-tuning fun [Custom] (CUS): The stator resistance set manually is used to control the	ction is used to contro	ol the motor
ItH	[Mot. therm. current]	0.2 to 1.5 ln (1)	According to drive rating
O	Motor thermal protection current, to be set to the rated current indicated on tSee [Mot. therm. current] ($ t $) page $\underline{90}$.	he motor nameplate.	
ACC	[Acceleration]	0.00 to 6,000 s (2)	3.0 s
O	Time to accelerate from 0 to the [Rated motor freq.] (FrS) (page $\underline{86}$). To parameter must be set according to the possibility of the application. See [Acceleration] (ACC) page $\underline{89}$.	have repeatability in r	amps, the value of this
dEC	[Deceleration]	0.00 to 6,000 s (2)	3.0 s
O	Time to decelerate from the [Rated motor freq.] (FrS) (page $\underline{86}$) to 0. To I parameter must be set according to the possibility of the application. See [Deceleration] (dEC) page $\underline{89}$.	nave repeatability in r	amps, the value of this
LSP	[Low speed]	0 to 599 Hz	0
O	Motor frequency at minimum reference, can be set between 0 and [High s See [Low speed] (LSP) page 89 .	peed] (HSP).	
HSP	[High speed]	0 to 599 Hz	50 Hz
O	Motor frequency at maximum reference, can be set between [Low speed] (I setting changes to 60 Hz if [Standard mot.freq] (bFr) is set to [60Hz See [High speed] (HSP) page 89.		uency] (tFr). The factory

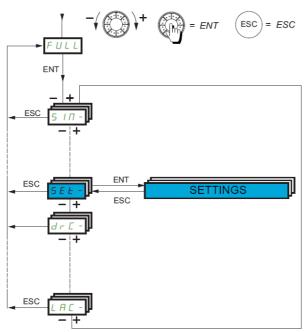
- (1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- (2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] ($I \cap r$) page $\underline{170}$.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.
- To change the assignment of this parameter, press the ENT key for 2 s.

Settings

With integrated display terminal

It is recommend to stop the motor before modifying any of the settings.

From [_ n F menu



The adjustment parameters can be modified with the drive running or stopped.

Code	Name / Description	Adjustment range	Factory setting
FULL	[FULL] (continued)	<u>-</u>	-
SEt-	[SETTINGS]		
Inr	[Ramp increment]		0.1
O	This parameter is valid for [Acceleration] (ACC), [Deceleration 2] (dE2). See [Ramp increment] (Inr) page		C2) and
0.01 0.1 1	[0,1]: Ramp up to 999.9 seconds		
ACC	[Acceleration]	0.00 to 6,000 s (1)	3.0 s
\circ	Time to accelerate from 0 to the [Rated motor freq.] (FrS) page must be set according to the possibility of the application. See [A		s, the value of this parameter
dEC	[Deceleration]	0.00 to 6,000 s (1)	3.0 s
O	Time to decelerate from the [Rated motor freq.] (FrS) page 86 t must be set according to the possibility of the application. See [I		, the value of this parameter
AC2	[Acceleration 2]	0.00 to 6,000 s (1)	5 s
*	Time to accelerate from 0 to the [Rated motor freq.] (FrS) page must be set according to the possibility of the application. See [A		
dE2	[Deceleration 2]	0.00 to 6,000 s (1)	5 s
*	Time to decelerate from the [Rated motor freq.] (FrS) page 86t	, ,	
0	must be set according to the possibility of the application. See [I		
tA1	[Begin Acc round]	0 to 100%	10%
* ()	Rounding of start of acceleration ramp as a % of the [Acceleration		(C2) ramp time. Visible if
\			
tA2	[End Acc round]	0 to 100%	10%
*	Rounding of end of acceleration ramp as a % of the [Accelerat	ion] (ACC) or [Acceleration 2] (A	C2) ramp time.
()	Can be set between 0 and 100% - [Begin Accround] (tA1). Visible if [Ramp type] (r > t) is set to [Customized] (CUS). Set	ee [End Acc round] (tA2) page	<u>171</u> .
tA3	[Begin Dec round]	0 to 100%	10%
*	Rounding of start of deceleration ramp as a % of the [Decele [Ramp type] (rPt) is set to [Customized] (CUS). See [Begin		2] (dE2) ramp time. Visible if
tA4	[End Dec round]	0 to 100%	10%
*	Rounding of end of deceleration ramp as a% of the [Decelera		(dE2) ramp time.
O	Can be set between 0 and 100% - [Begin Dec round] (tA3). Visible if [Ramp type] (rPt) is set to [Customized] (CUS). Set		
LSP	[Low speed]	0 to 599 Hz	0 Hz
()	Motor frequency at minimum reference, can be set between 0 a page 87.	and [High speed] (HSP) page 87	. See [Low speed] (LSP)
HSP	[High speed]	0 to 599 Hz	50 Hz
()	Motor frequency at maximum reference, can be set between [Low setting changes to 60 Hz if [Standard mot.freq] (bFr) is set		

Code	Name / Description	Adjustment range	Factory setting
HSP2	[High speed 2]	0 to 599 Hz	50 Hz
*	Visible if [2 High speed] (SH2) is not set to [No] (nO). See [High speed]	eed 2] (HSP2) page <u>244</u> .	•
()			
HSP3	[High speed 3]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (SH4) is not set to [No] (nO). See [High speed]	eed 3] (HSP3) page <u>244</u> .	<u>'</u>
()			
HSP4	[High speed 4]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (SH4) is not set to [No] (nO). See [High speed]	eed 4] (HSP4) page <u>244</u> .	
()			
ItH	[Mot. therm. current]	0.2 to 1.5 ln (2)	According to drive rating
()	Motor thermal protection current, to be set to the rated current indicated of See [Mot. therm. current] (It I—I)page 87.	on the motor nameplate.	•
UFr	[IR compensation]	0 to 200%	100%
()	IR compensation. See [IR comprensation] (UFr) page 118.		
SLP	[Slip compensation]	0 to 300%	100%
*	Slip compensation. See [Slip compensation] (SLP) page 118.		
()			
SFC	[K speed loop filter]	0 to 100	65
*	Speed filter coefficient. See [Kspeed loop filter] (SFC) page 118.		•
()			
SIt	[Speed time integral]	1 to 65,535 ms	63 ms
*	Speed loop integral time constant. See [Speed time integral] (SIt) pag	je <u>118</u> .	
()			
SPG	[Speed prop. gain]	0 to 1,000%	40%
*	Speed loop proportional gain. See [Speed prop. gain] (SPG) page 118.		<u> </u>
O			
SPGU	[UF inertia comp.]	0 to 1,000%	40%
*	Inertia factor. See [UF inertia comp.] (SPGU) page 118.		
O			

- (1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] (Irr) page $\underline{170}$.
- $(2) \ \ \text{In corresponds to the rated drive current indicated in the Installation manual or on the drive nameplate}.$
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.

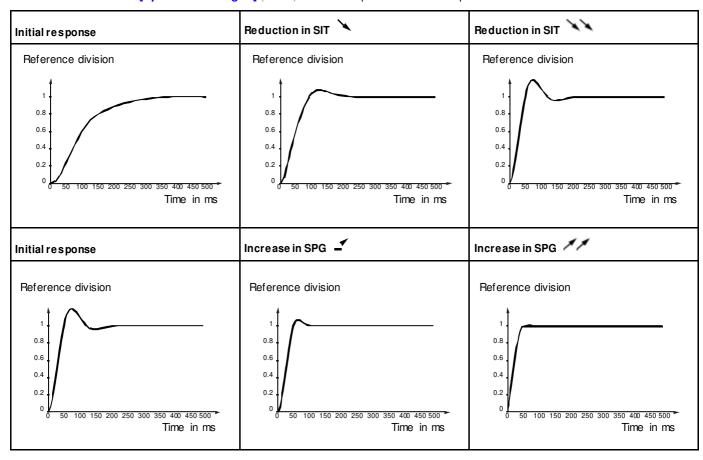
Parameter settings for [K speed loop filter] (SFC), [Speed prop. gain] (SPG) and [Speed time integral] (SIt)

The following parameters can be accessed if [Motor control type] (\subset tt) page $\underline{105}$ is set to [SVCV] (UUC), [Sync. mot.] (SYn) or [Energy Sav.] (nLd).

General Case: Setting for [K speed loop filter] (SFC) = 0

The regulator is an "IP" type with filtering of the speed reference, for applications requiring flexibility and stability (hoisting or high inertia, for example).

- [Speed prop. gain] (SPG) affects excessive speed.
- [Speed time integral] (SIt) affects the passband and response time.



Special case: Parameter [K speed loop filter] (SFC) is not 0

This parameter must be reserved for specific applications that require a short response time (trajectory positioning or servo control).

- When set to 100 as described above, the regulator is a "PI" type, without filtering of the speed reference.
- Settings between 0 and 100 will obtain an intermediate function between the settings below and those on the previous page.

Example: Setting for [K speed loop filter] (SFC) = 100

- [Speed prop. gain] (SPG) affects the passband and response time.
- [Speed time integral] (SIt) affects excessive speed.

Initial response	Reduction in SIT	Reduction in SIT
Reference division	Reference division	Reference division
1 0.8 0.6 0.4 0.2 0.2 0.50 100 150 200 250 300 350 400 450 500 Time in ms	1 0.8 0.6 0.4 0.2 0 50 100 150 200 250 300 350 400 450 500 Time in ms	1 0.8 0.6 0.4 0.2 0 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial response	Increase in SPG	Increase in SPG 💉
ilitiarresponse	increase in SPG =	increase in SPG
Reference division	Reference division	Reference division

de	Name / Description	Adjustment range	Factory setting
dCF	·	0 to 10	4
	[Ramp divider]		4
*	Deceleration ramp time reduction. See [Ram p divi	der] (dCF) page 1/3.	
()			
IdC	[DC inject. level 1]	0.1 to 1.41 ln (1)	0.64 ln (1)
*	Level of DC injection braking current activated via logic input or selected as stop mode. See [DC inject. level 1] (IdC) page		
()	<u>174</u> .		
()			
tdl	[DC injection time 1]	0.1 to 30 s	0.5 s
*	Maximum current injection time [DC inject. level 1]		ecomes
25	[DC inject. level 2] (IdC2). See [DC injection	time 1] (td1) page <u>174</u> .	
()			
dC2	[DC inject. level 2]	0.1 In to 1.41 In (1)	0.5 ln (1)
*	Injection current activated by logic input or selected as	s stop mode, once period of time [DC injection	time 1] (tdl) has elapsed
44	See [DC inject. level 2] (IdC2) page 175.		• (
()			
tdC	[DC injection time 2]	0.1 to 30 s	0.5 s
*	Maximum injection time [DC inject.level2] (IdC	2) for injection selected as stop mode only	
	See [DC injection time 2] (tdC) page 175.	2) for injection selected as stop mode only.	
()			
SdC1	[Auto DC inj. level 1]	0 to 1.2 ln (1)	0.7 ln (1)
oue i	[Auto Do III]. level 1]	0 0 112 11 (1)	017 (1)
		NOTIOE	
		NOTICE	
*	OVERHEATING AND DAMAGE TO THE N	OTOR	
	Verify that the connected motor is properly r	•	plied in terms of amou
()	and time in order to avoid overheating and o	•	
	Failure to follow these instructions carrie	esuit iii equipinent damage.	
	Level of standatill DC injection current [Auto DC in	is ation 1 (AdC) is not [No.] (pC)	
	Level of standstill DC injection current [Auto DC in] See page 176.	ection (Ado) is not [No] (no).	
tdC1	[Auto DC inj. time 1]	0.1 to 30 s	0.5 s
		L	<u> </u>
		NOTICE	
	OVERHEATING AND DAMAGE TO THE N		
*	Verify that the connected motor is properly r		ipiiea iii terins oramoui
~	and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.		
	Failure to follow these instructions can re		
()	Failure to follow these instructions can re	esuit in equipment dumage.	
			to [No] (nO).
	Standstill injection time. This parameter can be acc If [Motor control type] (Ctt) page 105 is set to [Stime.	essed if [Auto DC injection] (AdC) is not set	to [No] (nO). ne zero speed maintenance

DRI- > CONF > FULL > SET-Parameters described in this page can be accessed by: Code Name/Description Adjustment range Factory setting SdC2 [Auto DC inj. level 2] 0 to 1.2 ln (1) 0.5 ln (1) NOTICE OVERHEATING AND DAMAGE TO THE MOTOR * Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. () Failure to follow these instructions can result in equipment damage. 2nd level of standstill DC injection current. This parameter can be accessed if [Auto DC injection] (AdC) is not [No] (nO). See page 177. tdC2 [Auto DC inj. time 2] 0 to 30 s 0 s NOTICE OVERHEATING AND DAMAGE TO THE MOTOR * Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. () Failure to follow these instructions can result in equipment damage. 2nd standstill injection time. This parameter can be accessed if [Auto DC injection] (AdC) is set to [Yes] (YES). See page 177. 2 to 16 kHz 4.0 kHz SFr [Switching freq.] NOTICE DAMAGE TO THE MOTOR Verify that the switching frequency of the drive does not exceed 4 kHz if the EMC filter is disconnected for () operation of the drive in an IT mains. Failure to follow these instructions can result in equipment damage. This applies to the following drive versions: ER24-...K/B Sw itching frequency setting. See page 119. Adjustment range: The maximum value is limited to 4 kHz if [Motor surge limit] (SUL) parameter, page 120 is configured. Note: In the event of excessive temperature rise, the drive will automatically reduce the switching frequency and reset it once the temperature returns to normal. CL 0 to 1.5 ln (1) 1.5 ln (1) [Current Limitation] **NOTICE** OVERHEATING AND DAMAGE TO THE MOTOR Verify that the motor is properly rated for the maximum current to be applied to the motor. Consider the duty cycle of the motor and all factors of your application including derating requirements in ()

determining the currentlimit.

Used to limit the motor current. See page 218.

Failure to follow these instructions can result in equipment damage.

(see page <u>256</u>). If it is less than the no-load motor current, the motor cannot run.

Note: If the setting is less than 0.25 in, the drive may lock in [Output Phase Loss] (OPL) fault mode if this has been enabled

Parameters d	lescribed in this page can be accessed by:	DRI- >	> CONF > FULL > SET-	
Code	Name / Description	Adjustment range	Factory setting	
CL2	[I Limit. 2 value]	0 to 1.5 ln (1)	1.5 ln (1)	
			•	
	NOTICE			
	OVERHEATING AND DAMAGE TO THE MOTOR			
*				
()	• Consider the duty cycle of the motor and all factors of your application including derating required determining the currentlimit.			
	See page <u>218</u> .			
	Note: If the setting is less than 0.25 ln, the drive may lock in [Outp		is has been enabled	
FLU	(see page <u>256</u>). If it is less than the no-load motor current, the mot [Motor fluxing]	or cannotrun.	[No] (FnO)	
	[most manage			
	A DANG) E D		
	A AANG	iEK		
	HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC			
*	If the parameter [Motor fluxing] (FLU) is set to [Contin motor does not run.	uous] (FCT), fluxing is always a	ctive, even if the	
()	Verify that using this setting does not result in unsafe of			
	Failure to follow these instructions will result in death	n or serious injury.		
-	NOTICE			
₹2 s				
	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the flu	x current to be applied in order to a	avoid overheating	
	and damage to the motor.	• • • • • • • • • • • • • • • • • • • •	.void o voimodamig	
	Failure to follow these instructions can result in equip	oment damage.		
	The parameter is visible if [Motor control type] (Ctt) page 105	s not set to [Sync. mot.] (SYn)		
	In order to obtain rapid high torque on startup, magnetic flux needs	s to already have been established in the	ne motor.	
	In [Continuous] (FC+t) mode, the drive automatically builds up fluin [Not cont.] (FnC) mode, fluxing occurs when the motor start	s up.		
	The flux current is greater than [Rated mot. current] (nOr) when magnetizing current. See page 189.	the flux is established and is then adjust	sted to the motor	
FnC				
FCt	[Continuous] (FCt): Continuous mode. This option is not poss	sible if [Auto DC injection] (AdC) pag	e <u>176</u> is [Yes] (YES)	
FnO	or if [Type of stop] (Stt) page 173 is [Freewheel] (nSt). [No] (FnO): Function inactive. This option is not possible if [Bra	ke assignment] (bLC) page 194 is r	not [No] (nO).	
tLS	[Low speed time out]	0 to 999.9 s	0 s	
	Maximum operating time at [Low speed] (LSP) (see page <u>87</u>). Follow ing operation at LSP for a defined period, a motor stop is real.	guested automatically. The meter will r	enstart if the reference	
()	is greater than LSP and if a run command is still present. See page		estartii tile rererence	
4. F	Note: A value of 0 indicates an unlimited period of time. Note: If [Low speed time out] (tLS) is not 0, [Type of stop] (S	itt) page 173 is forced to [Ramp stop]	(rMP) (only if a	
	ramp stop can be configured).			
JGF	[Jog frequency]	0 to 10 Hz	10 Hz	
*	Reference in jog operation. See page 178.			
()				

Code	Name / Description	Adjustment range	Factory setting
JGt	[Jog delay]	0 to 2.0 s	0.5 s
*	Anti-repeat delay betw een 2 consecutive jog operations. See page 179.		
()			

DRI- > CONF > FULL > SET-Parameters described in this page can be accessed by: Code Name / Description Adjustment range **Factory setting** 0 to 599 Hz 10 Hz SP2 [Preset speed 2] * Preset speed 2. See [Preset speed 2] (SP2) page 181. () SP3 0 to 599 Hz 15 Hz [Preset speed 3] * Preset speed 3. See [Preset speed 3] (SP3) page 181. () SP4 0 to 599 Hz 20 Hz [Preset speed 4] * Preset speed 4. See [Preset speed 4] (SP4) page 181. () SP5 0 to 599 Hz 25 Hz [Preset speed 5] * Preset speed 5. See [Preset speed 5] (SP5) page 181. () 0 to 599 Hz 30 Hz SP 📱 [Preset speed 6] * Preset speed 6. See [Preset speed 6] (SP) page 181. () SP7 0 to 599 Hz [Preset speed 7] 35 Hz * Preset speed 7. See [Preset speed 7] (SP7) page 181. () SP8 [Preset speed 8] 0 to 599 Hz 40 Hz * Preset speed 8. See [Preset speed 8] (SP8) page 182. () 0 to 599 Hz 45 Hz SP9 [Preset speed 9] * Preset speed 9. See [Preset speed 9] (SP9) page 182. () SP10 [Preset speed 10] 0 to 599 Hz 50 Hz * Preset speed 10. See [Preset speed 10] (SP10) page 182. () SP11 0 to 599 Hz 55 Hz [Preset speed 11] * Preset speed 11. See [Preset speed 11] (SP11) page 182. () **SP12** [Preset speed 12] 0 to 599 Hz 60 Hz * Preset speed 12. See [Preset speed 12] (SP12) page 182. ()

Code	Name / Description	Adjustment range	Factory setting
SP13	[Preset speed 13]	0 to 599 Hz	70 Hz
*	Preset speed 13. See [Preset speed 13] (SP13) page 182.		•
()			
SP14	[Preset speed 14]	0 to 599 Hz	80 Hz
*	Preset speed 14. See [Preset speed 14] (SP14) page <u>182</u> .		
()			
SP15	[Preset speed 15]	0 to 599 Hz	90 Hz
*	Preset speed 15. See [Preset speed 15] (SP15) page <u>182</u> .		•
()			
SP1	[Preset speed 16]	0 to 599 Hz	100 Hz
*	Preset speed 16. See [Preset speed 16] (SP 0) page 182.		•
()			
MFr	[Multiplying coeff.]	0 to 100%	100%
*	Multiplying coefficient, can be accessed if [Multiplierref.] (MA2, Noterminal. See page 46.	MA3) page 169 has been assigned	to the graphic display
()			
SrP	[+/-Speed limitation]	0 to 50%	10%
*	Limitation of +/- speed variation. See page 187.		•
()			

*

()

Preset PID reference. See page 214.

DRI- > CONF > FULL > SET-Parameters described in this page can be accessed by: Name / Description Code Adjustment range Factory setting 0.01 to 100 rPG [PID prop. gain] * Proportional gain. See page 211. () rIG 0.01 to 100 [PID integral gain] * Integral gain. See page 211. () rdG [PID derivative gain] 0.00 to 100 * Derivative gain. See page 211. () PrP 0 to 99.9 s [PID ramp] * PID acceleration/deceleration ramp, defined to go from [Min PID reference] (PIP1) to [Max PID reference] (PIP2) and viceversa. See page 211. () POL -599 to 599 Hz 0 Hz [Min PID output] * Minimum value of regulator output in Hz. See page 211. () POH [Max PID output] 0 to 599 Hz 60 Hz * Maximum value of regulator output in Hz. See page 211. () PAL See page 211 (2) 100 [Min fbk alarm] * Minimum monitoring threshold for regulator feedback. See page 211. () 1,000 PAH [Max fbk alarm] See page <u>212</u>(2) * Maximum monitoring threshold for regulator feedback. See page 212. () PEr [PID error Alarm] 0 to 65,535 (2) 100 * Regulator error monitoring threshold. See page 212. () PSr 1 to 100% 100% [Speed input %] * Multiplying coefficient for predictive speed input. See page 212. () rP2 [Preset ref. PID 2] See page <u>214</u>(2) 300

Code	Name / Description	Adjustment range	Factory setting
rP3	[Preset ref. PID 3]	See page <u>214</u> (2)	600
*	Preset PID reference. See page 214.		•
()			
rP4	[Preset ref. PID 4]	See page <u>214</u> (2)	900
*	Preset PID reference. See page 214.		•
()			

tLIG

[Gen. torque lim]

DRI- > CONF > FULL > SET-Parameters described in this page can be accessed by: Code Name / Description Adjustment range Factory setting 0.0 A lbr 0 to 1.36 ln (1) [Brake release | FW] * Brake release current threshold for lifting or forward movement. See page 194. () 0 to 1.36 ln (1) 0.0 A Ird [Brake release I Rev] * Brake release current threshold for lowering or reverse movement. See page 194. () 0 to 5.00 s brt [Brake Release time] 0 s * Brake release time delay. See page 194. () [Auto] (AUtO) blr [Brake release freq] [Auto] (AUtO) 0 to 10 Hz * See page <u>195</u>. () **AUtO** [Auto] (AUtO): Nominal value [Auto] (AUtO) [Auto] (AUtO) bEn [Brake engage freq] 0 to 10 Hz * Brake engage frequency threshold. See page 195. () 0 to 5.00 s 0 s tbE [Brake engage delay] * Time delay before request to engage brake. See page 195. () bEt [Brake engage time] 0 to 5.00 s 0 s * Brake engage time (brake response time). See page 195. () JdC [Auto] (AUtO) [Auto] (AUtO) [Jump at reversal] 0 to 10 Hz * See page 195. () **AUtO** [Auto] (AUtO): Nominal value ttr 0.00 to 15.00 s0.00 s[Time to restart] * Time between the end of a brake engage sequence and the start of a brake release sequence. See page 196. () 0 to 300% 100% **tLIM** [Motoring torque lim] * Torque limitation in motor mode, as a % or in 0.1% increments of the rated torque in accordance with the [Torque increment] (IntP) parameter, page 216. () See page 216.

0 to 300%

100%

Code	Name / Description	Adjustment range	Factory setting
*	Torque limitation in generator mode, as a % or in 0.1% increments	of the rated torque in accordance wit	h the
()	[Torque increment] (IntP) parameter, page 216. See page 216.		
trH	[Traverse freq. high]	0 to 10 Hz	4 Hz
*	Traverse high. See page <u>242</u> .		
()			
trL	[Traverse freq. low]	0 to 10 Hz	4 Hz
*	Traverse low . See page 242.		
()			
qSH	[Quick step High]	0 to [Traverse freq. high] (trH)	0 Hz
*	Quick step high. See page <u>242</u> .		•
()			
qSL	[Quick step Low]	O to [Traverse freq. low] (trl	0 Hz
*	Quick step low . See page 242.		
()			
Ctd	[Current threshold]	0 to 1.5 ln (1)	In (1)
()	Current threshold for [I attained] (CtA) function assigned to a rela	ay or a logic output (see page 138). Se	e page <u>252</u> .
ttH	[High torque thd.]	-300% to +300%	100%
()	High torque threshold for [High tq. att.] (TTHA) function assigned rated motor torque. See page 253.	to a relay or a logic output (see page	138), as a % of the
ttL	[Low torque thd.]	-300% to +300%	50%
()	Low torque threshold for [Low tq. att.] (ttLA) function assigned to motor torque. See page 253.		
FqL	[Pulse warning thd.]	0 Hz to 20,000 kHz	0 Hz
*	Speed threshold measured by the [FREQUENCY METER] (FqF-(see page 138). See page 253.		
Ftd	[Freq. threshold]	0.0 to 599 Hz	HSP
()	Motor frequency threshold for [Freq.Th.att.] (FtA) function assign [PARAM. SET SWITCHING] (MLP—) function, page 230. See page	ge <u>253</u> .	
F2d	[Freq. threshold 2]	0.0 to 599 Hz	HSP
()	Motor frequency threshold for [Freq. th.2attained] (F2A) function by the [PARAM. SET SWITCHING] (MLP-) function, page 230. S	See page <u>253</u> .	ee page <u>138</u>), or used
FFt	[Freewheel stop Thd]	0.2 to 599 Hz	0.2 Hz
*	Speed threshold below which the motor will switch to freewheel st. This parameter supports switching from a ramp stop or a fast stop. It can be accessed if [Type of stop] (Stt) is set to [Fast stop] (bLC) and [Auto DC injection] (AdC) are not configured. See p.	to a freewheel stop below a low spee St) or [Ramp stop] (rMP) and if [I	
ttd	[Motor therm. level]	0 to 118%	100%
()	Threshold for motor thermal alarm (logic output or relay). See page	<u>255</u> .	•
JPF	[Skip Frequency]	0 to 599 Hz	0 Hz
()	Skip frequency. This parameter helps to prevent prolonged operation. This function can be used to help to prevent a speed, which would render it inactive. See page 183.		
JF2	[Skip Frequency 2]	0 to 599 Hz	0 Hz
J	Family (codenous) =1		

Code	Name / Description	Adjustment range	Factorysetting
()	2nd skip frequency. This parameter helps to prevent prolonged ope frequency. This function can be used to help to prevent a speed, w function to 0 renders it inactive. See page 183.	hich would cause resonance, being rea	ached. Setting the
JF3	[3rd Skip Frequency]	0 to 599 Hz	0 Hz
()	3rd skip frequency. This parameter helps to prevent prolonged oper frequency. This function can be used to help to prevent a speed, w function to 0 renders it inactive. See page 183.		
JFH	[Skip.Freq.Hysteresis]	0.1 to 10 Hz	1 Hz
*	Parameter visible if at least one skip frequency [Skip Frequenc [3rd Skip Frequency] (JF3) is different from 0. Skip frequency range: between (JPF-JFH) and (JPF+JFH)) for example	or
	This adjustment is common to the 3 frequencies (JPF, JF2, JF		Tara
LUn	[Unld.Thr.Nom.Speed]	20 to 100% of [Rated mot. current] (nCr)	60%
*	Underload threshold at rated motor frequency ([Rated motor freq. Visible only if [Unid T. Del. Detect] (ULt) page 270 is not set to 0 See page 270.	(FrS) page 86 , as a % of the rated r	I notor torque.
LUL	[Unld.Thr.0.Speed]	0 to [Unid.Thr.Nom.Speed] (LUn)	0%
*	Underload threshold at zero frequency, as a % of the rated motor to Visible only if [Unid T. Del. Detect] (ULt) page 270 is not set to 0. See page 270.	•	
rMUd	[Unid. Freq.Thr. Det.]	0 to 599 Hz	0 Hz
*	Underload detection minimum frequency threshold. See page <u>270</u> .		
O			
Srb	[Hysteresis Freq.Att.]	0.3 to 599 Hz	0.3 Hz
*	Maximum deviation between the frequency reference and the motor See page 270.	r frequency, which defines steady stat	e operation.
FtU	[Underload T.B.Rest.]	0 to 6 min	0 min
* ()	Minimum time permitted betw een an underload being detected and In order for an automatic restart to be possible, the value of [Max. reparameter by at least one minute. See page 271.		ceed that of this
LOC	[Ovld Detection Thr.]	70% to 150% of [Rated mot. current] (nCr)	110%
*	Overload detection threshold, as a % of the rated motor current [Re	ated mot. current] (nCr). This value n	nust be less than the
()	limit current in order for the function to w ork. See page 272. Visible only if [Ovld Time Detect.] (tOL) is not set to 0. This parameter is used to detect an "application overload". This is n	not a motor or drive thermal overload.	
FtO	[Overload T.B.Rest.]	0 to 6 min	0 min
*	Minimum time permitted betw een an overload being detected and a In order for an automatic restart to be possible, the value of [Max. reparameter by at least one minute. See page 272.		ceed that of this
LbC	[Load correction]	0 to 599 Hz	0 Hz
*	Rated correction in Hz. See [Load correction] (LbC) page 122.		ı
O			

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting
FFM	[Fan Mode]	•	[Standard] (Std)
	If [Fan Mode] (FFM) is set to [Never] (Stp	o), the fan of the drive is disabled.	
	Service life of electronic component is red	uced.	
()		NOTICE	
4.6	DAMAGE TO THE DRIVE		
	The ambient temperature must be limited Failure to follow these instructions car		
	railure to follow these instructions car	result in equipment damage.	
Sto rUr StF	[Always] (rUn): The fan is started	matically according to the drive thermal state	
SdS	[Scale factor display]	0.1 to 200	30
	Used to display a value in proportion to the output fi	requency [Output frequency] (rFr): the machine	speed, the motor speed, etc.
	The display will show		
		splay] (SdS) x [Output frequency] (rFr) to	o 2 decimal places
		1000	
	If [Scale factor display] (SdS) y 1, [Cust. outple)	out value] (SPd1) is displayed (possible definiti	on =0.01)
	• If 1 < [Scale factordisplay] (SdS) y 10, [Cust	output value] (SPd2) is displayed (possible d	lefinition = 0.1)
44	• If [Scale factor display] (SdS) > 10, [Cust. ou		
()	• If [Scale factor display] (SdS) > 10 and [Sca	le factor display] (SdS)x[Output frequency] (r	⊢ r) > 9,999:
	example: for 24,223, display will show 24.22		
	- If [Scale factor display] (SdS) > 10 an locked at 65.54	d [Scale factor display] (SdS) x [Output frequen	$(r \vdash r) > 65,535$, display
	Example: Display motor speed for		
	4-pole motor, 1,500 rpm at 50 Hz (synd	chronous speed):	
	[Scale factor display] (SdS) = 30 [Cust. output value] (SPd3) = 1,500 a	at [Output_frequency] (rFr) = 50 Hz	

- (1) In corresponds to the rated drive current indicated in the Installation manual or on the drive nameplate.
- (2) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, example: 15.65 for 15,650.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for $2\,\mathrm{s}$.

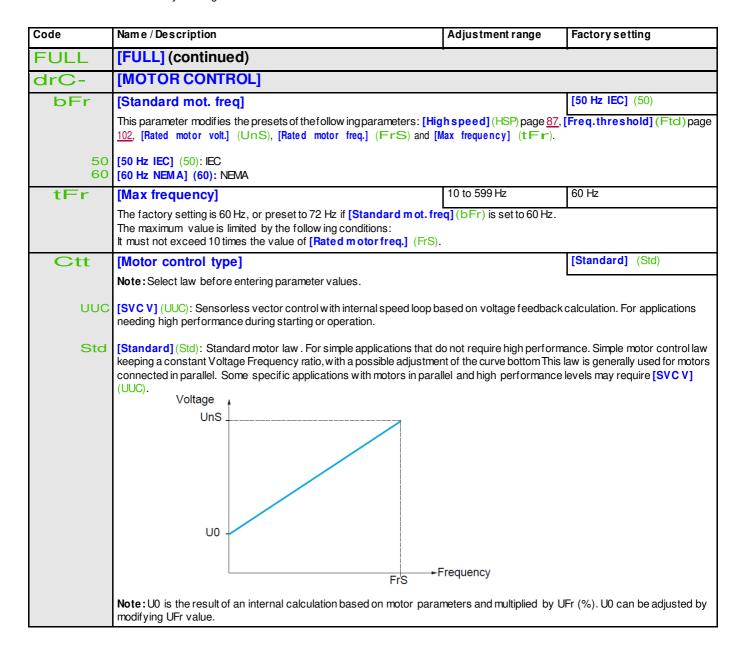
DRI- > CONF > FULL > DRC-

Motor control

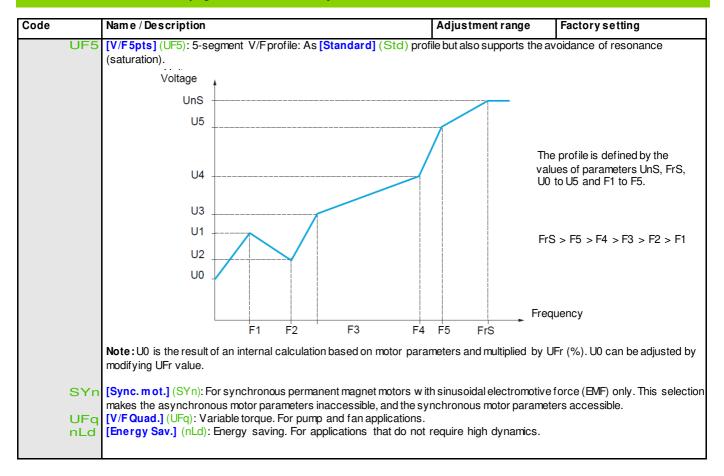
The parameters in the [MOTOR CONTROL] (drC-) menu can only be modified when the drive is stopped and no run command is present, with the following exceptions:

- [Auto tuning] (tUn) page 113, which may cause the motor to start up.
- Parameters containing the sign () in the code column, which can be modified with the drive running or stopped.

Note: We recommend to perform auto-tuning if one of the following parameters are modified from their factory setting.



DRI- > CONF > FULL > DRC- > ASY-



DRI- > CONF > FULL > DRC- > ASY-

Asynchronous motor parameters

Code	Name / Description	Adjustment range	Factory setting
ASY-	[ASYNC. MOTOR]	•	
	Only visible if [Motor control type] (Ctt) page 105 is not set to [Sy	rnc. mot.] (SYn).	
nPr	[Rated motor power]	According to drive rating	According to drive rating
*	This parameter cannot be accessed if [Motor control type] (Ctt) p Rated motor power given on the nameplate, in kW if [Standard m [Standard mot.freq] (bFr) is set to [60Hz NEM A] (0).		
COS	[Motor 1 Cosinus Phi]	0.5 to 1	According to drive rating
*	Nominal motor cos phi. This parameter can be accessed if [Motor param choice] (MPC) is a	set to [Mot Cos] (COS).	
UnS	[Rated motor volt.]	100 to 480 V	According to drive rating and [Standard mot. freq] (bFr)
*	This parameter cannot be accessed if [Motor control type] (Ctt) parameter motor voltage given on the nameplate.	page 105 is set to Sync. m	ot.] (SYn).
nCr	[Rated mot. current]	0.25 to 1.5 ln (1)	According to drive rating and [Standard mot. freq] (bFr)
*	This parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Motor control type] (M	page 105 is set to Sync. m	ot.] (SYn).
FrS	[Rated motor freq.]	10 to 800 Hz	50 Hz
*	This parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter cannot be accessed if [Motor control type] (Ctt) parameter motor frequency given on the nameplate. The factory setting is 50 Hz, or preset to 60 Hz if [Standard motor frequency]		ot.] (SYn).
nSP	[Rated motor speed]	0 to 65,535 rpm	According to drive rating
	This parameter cannot be accessed if [Motor control type] (Ctt) properties that the name of the name of the synchron speed as follows:	rminal.	. ,
*	Nominal speed = Synchronous speed x $\frac{100 - \text{slip as a } \%}{100}$ or		
	Nominal speed = Synchronous speed x $\frac{50 - \text{slip in Hz}}{50}$ (50 Hz motor	ors)	
	Nominal speed = Synchronous speed x $\frac{60 - \text{slip in Hz}}{60}$ (60 Hz moto	ors).	

DRI- > CONF > FULL > DRC- > ASY-

Code	Name / Description	Adjustment range	Factory setting	
tUn	[Auto tuning]		[No] (nO)	
()	▲ WARNING			
	UNEXPECTED MOVEMENT			
₹2 s	Autotuning moves the motor in order to tune the control loops.			
<u>A</u> 2 5	Only start the system if there are no persons or obstructions in the zone of operation. Failure to follow these instructions can result in death, serious injury, or equipment damage.			
	During autotuning, the motor makes small movements, noise development and oscillations of the system are normal.			
	 - Auto-tuning is only performed if no stop command has been acti assigned to a logic input, this input must be set to 1 (active at 0 - Auto-tuning takes priority over any run or prefluxing commands).	·	
	sequence. If auto-tuning detects a fault, the drive displays [No action] (no [Autotune fault mgt] (tnL) page 268. may switch to [Auto-tune fault mgt] (tnL)	ning] (tnF) fault mode.	-	
	- Auto-tuning may last for 1 to 2 seconds. Do not interrupt the pro	ocess. Wait for the display	to change to [No action] (nO).	
	Note: Motor thermal state has a big influence on tune result. Make the tune with the motor stopped and cold. To redo a tune of the motor, wait that it is completely stopped and cold. Set first [Auto tuning] (tUn) to [Erase tune] (CLr),			
	then redo the motor tuning. The use of the motor tuning without doing a [Erase tune] (CLr) first is used to get the thermal state estimation of the motor. In any case, the motor has to be stopped before performing a tune operation. Cable length has an influence on the Tune result. If the cabling is modified, it is necessary to redo the tune operation.			
YES	[No action] (nO): Auto-tuning not in progress [Do tune] (YES): Auto-tuning is performed immediatly if possible, then the parameter automatically changes to [No action] (nO). If the drive state does not allow the tune operation immediately, the parameter changes to [No] (nO) and the operation must be done again. [Erase tune] (CLr): The motor parameters measured by the auto-tuning function are reseted. The default motor parameters			
	values are used to control the motor. [Auto tuning status] (tUS) i	is set to [Not done] (tAb)		
tUS	[Auto tuning state]		[Not done] (tAb)	
	(for information only, cannot be modified) This parameter is not saved at drive pow er off. It shows the Autotun	ing status since last powe	ron.	
	[Not done] (tAb): Autotune is not done	- waa a		
	[Pending] (PEnd): Autotune has been requested but not yet performance [In Progress] (Prog): Autotune is in progress	ormea		
FAIL	[Failed] (FAIL): Autotune has detected a fault [Done] (dOnE): The motor parameters measured by the auto-tuning	function aroused to contr	al the motor	
StUn	[Tune selection]	Tunction are used to conti	[Default] (tAb)	
0.011	(for information only, cannot be modified)			
	[Default] (tAb): The default values are used to control the motor	11	_	
	[Measure] (MEAS): The values measured by the auto-tuning function are used to control the motor [Custom] (CUS): The values set manually are used to control the motor Note: Tune of the motor will increase significantly the performances.			
tUnU	[Auto tuning usage]		[Therm Mot] (tM)	
	This parameter shows the way used to modify the motor parameters	according to its estimated	thermal state.	
nO	[No] (nO): No thermal state estimation			
tM	[Therm Mot] (tM): Statoric thermal state estimation based on nominal current and current consumed by the motor [Cold tun] (Ct): Statoric thermal state estimation based on statoric resistance measured at the first cold tune and tune done at each pow erup			

DRI- > CONF > FULL > DRC- > ASY Parameters described in this page can be accessed by: Code Name/Description Adjustment range Factory setting AU_t [Automatic autotune] [No] (nO) **WARNING** () UNEXPECTED MOVEMENT If this function is activated, autotuning is performed each time the drive is switched on. Verify that activating this function does not result in unsafe conditions. ₹2s Failure to follow these instructions can result in death, serious injury, or equipment damage. The motor must be stopped when switching on the drive. [Automatic autotune] (AUt) is forced to [Yes] (YES) if [Auto tuning usage] (tUnU) is set to [Cold tun] (Ct). The value of motor statoric resistance measured during the tune is used to estimate the thermal state of the motor at pow er up. nO [No] (nO): Function deactivated [Yes] (YES): A tune is automatically done at each pow er up YES [No] (FnO) **FLU** [Motor fluxing] A A DANGER HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH If the parameter [Motor fluxing] (FLU) is set to [Continuous] (FCt), fluxing is always active, even if the * motor does notrun. Verify that using this setting does not result in unsafe conditions. Failure to follow these instructions will result in death or serious injury. (1) NOTICE ₹2 s OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the flux current to be applied in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage. If [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (SYn), the factory setting is replaced by [Not cont.] (FnC). In order to obtain rapid high torque on startup, magnetic flux needs to already have been established in the motor. In [Continuous] (FCt) mode, the drive automatically builds up flux when it is powered up. In [Not cont.] (FnC) mode, fluxing occurs when the motor starts up. The flux current is greater than [Rated mot. current] (nCr) (configured rated motor current) when the flux is established and is then adjusted to the motor magnetizing current. FnC [Not cont.] (FnC): Non-continuous mode

FCt [Continuous] (FCt): Continuous mode. This option is not possible if [Auto DC injection] (AdC) page 176 is [Yes] (YES)

If [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (SYn), the [Motor fluxing] (FLU) parameter causes the

FnO [No] (FnO): Function inactive. This option is not possible if [Brake assignment] (bLC) page 194 is not [No] (nO).

If [Brake assignment] (bLC) page 194 is not [No] (nO), the [Motor fluxing] (FLU) parameter has no effect.

or if [Type of stop] (Stt) page 173 is [Freewheel] (nSt).

alignment of the rotor and not the fluxing.

DRI- > CONF > FULL > DRC- > ASY

Code	Name / Description	Adjustment range	Factory setting
MPC	[Motor param choice]	•	[Mot Power] (nPr)
*			
nPr COS	[Mot Power] (nPr) [Mot Cos] (COS)		

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for $2\,\mathrm{s}$.

DRI- > CONF > FULL > DRC- > ASY-

Asynchronous motor parameters: Expert mode

Code	Name / Description	Adjustment range	Factory setting					
ASY-	[ASYNC. MOTOR]	•						
rSA	[Cust stator resist.]	[Cust stator resist.] 0 to 65,535 mOhm 0 mOhm						
* (1)	Cold state stator resistance (per winding), modifiable value. The factory setting is replaced by the result of the auto-tuning	operation, if it has been performed	d.					
LFA	[Lfw]	0 to 655.35 mH	0 mH					
*	Cold state leakage inductance, modifiable value. The factory setting is replaced by the result of the auto-tuning	operation, if it has been performed	i.					
IdA	[ldw]	0 to 6,553.5 A	0 A					
*	Customer adjusted magnetizing current. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.							
trA	[Cust. rotor t const.]	0 to 65,535 ms	0 ms					
*	Customer adjusted rotor time constant. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.							

(1) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,000 to 65,535).

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > DRC- > SYN

Synchronous motor parameters

These parameters can be accessed if [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (SYn). In this case, the asynchronous motor parameters cannot be accessed.

Once the drive is chosen:

1- Enter the motor nameplate.

2 - Perform the tune.

- Do an [Auto tuning] (tUn)
- Check the state of the synchronous motor saliency (See page 113.)

If [Saliency mot. state] (SMOt) displays [Med salient] (MLS) or [High salient] (HLS)

- follow the procedure below "3 Improve the tune result" and
- follow the the procedure below "4 Adjust PHS"

Or if [Saliency mot. state] (SMOt) displays [Low salient] (LLS)

- follow the the procedure below "4 - Adjust PHS"

3 - Improve the tune results.

NOTICE

OVERHEATING AND DAMAGE TO THE MOTOR

- Verify that the motor is properly rated for the maximum current to be applied to the motor.
- Consider the duty cycle of the motor and all factors of your application including derating requirements in determining the current limit.

Failure to follow these instructions can result in equipment damage.

- Set [PSI align curr. max] (MCr) conforming to the maximum motor current. The maximum value of [PSI align curr. max] (MCr)) is limited by [Current Limitation] (CLI). Without information set [PSI align curr. max] (MCr) to [Auto] (AUtO) (see page 116)
- Do a second (tUn) after the (MCr) modification.

4 - Adjust PHS.

Adjust [Syn. EMF constant] (PHS) to have optimal behavior (See page 116.)

- Start the motor at minimal stable frequency available on the machine (without load).
- Check and note the [% error EMF sync] (rdAE) value. (See page 117)
 - If the [% error EMF sync] (rdAE) value is lower than 0%, then [Syn. EMF constant] (PHS) may be increased.
 - If the [% error EMF sync] (rdAE) value is upper than 0%, then [Syn. EMF constant] (PHS) may be reduced.

[% error EMF sync] (rdAE) value should be closed to 0%.

• Stop the motor for modify PHS in accordance with the value of the rdAE (previously noted).

Advices:

The drive must be chosen to have enough current according to the need of behavior, but not too much, to have enough accuracy in the current measurement, especially with the high frequency signal injection (see **[HF inj. activation]** (HF \blacksquare) page <u>116</u>).

Performances may be higher on high saliency motors by activating high frequency injection function (see [HF inj. activation] (HF I) page 116).

Code	Name / Description Adjustment range		Factory setting			
drC-	[MOTOR CONTROL] (continued)					
SYN-	[SYNCHRONOUS MOTOR]					
nCrS	[Nominal I sync.]	According to drive rating				
*	Rated synchronous motor current given on the nameplate.					
PPnS	[Pole pairs]	According to drive rating				
*	Number of pairs of poles on the synchronous motor.					
nSPS	[Nom motor spdsync]	0 to 48,000 rpm	According to drive rating			
*	Rated motor speed given on the nameplate.					
(2)						
tqS	[Motor torque]	0.1 to 6,553.5 Nm	According to drive rating			
*	Rated motor torque given on the nameplate.					
tUn	[Auto tuning]		[No] (nO)			
75	A MADAUNI	~				
()	▲ WARNING	J				
	UNEXPECTED MOVEMENT					
₹2s	Autotuning moves the motor in order to tune the control loops. Only start the system if there are no persons or obstructions in the	ne zone of operation.				
-	Failure to follow these instructions can result in death, serio		ent damage.			
	During autotuning, the motor makes small movements, noise development	nt and oscillations of the	system are normal.			
	- Auto-tuning is only performed if no stop command has been activated.	lf a "freewheel stop" or "f	ast stop" function has been			
	assigned to a logic input, this input must be set to 1 (active at 0). - Auto-tuning takes priority over any run or prefluxing commands, w hich	n will be taken into accou	nt after the auto-tuning			
	sequence.					
	 If auto-tuning detects a fault, the drive displays [No action] (nO) and, [Autotune fault mgt] (tnL) page 268, may switch to [Auto-tuning] 	(tnF) fault mode.				
	- Auto-tuning may last for 1 to 2 seconds. Do not interrupt the process.	Wait for the display to ch	ange to [No action] (nO).			
	Note: Motor thermal state has a big influence on tune result. Make the tune To redo a tune of the motor, w ait that it is completely stopped and cold. Set					
	then redo the motor tuning.					
	The use of the motor tuning without doing a [Erase tune] (CLr) first is used in any case, the motor has to be stopped before performing a tune operatio	•	estimation of the motor.			
	Cable length has an influence on the Tune result. If the cabling is modified,		ne tune operation.			
nO	[No action] (nO): Auto-tuning not in progress					
YES	[Do tune] (YES): Auto-tuning is performed immediatly if possible, then the p to [No action] (nO). If the drive state does not allow the tune operation imm	parameter automatically ediately, the parameter	changes changes to [No] (n○) and			
	the operation must be done again.					
CLr	[Erase tune] (CLr): The motor parameters measured by the auto-tuning furvalues are used to control the motor. [Auto tuning status] (tUS) is set to		default motor parameters			
tUS	[Auto tuning state]		[Not done] (tAb)			
	(for information only, cannot be modified)					
	This parameter is not saved at drive pow er off. It shows the Autotuning stat	us since last power on.				
	[Not done] (tAb): Autotune is not done					
	[Pending] (PEnd): Autotune has been requested but not yet performed [In Progress] (PrOG): Autotune is in progress					
FAIL dOnE	[Failed] (FAIL): Autotune has detected a fault [Done] (dOnE): The motor parameters measured by the auto-tuning function	on are used to control the	motor			
dOnE	parameters measured by the auto-tuning function	maie useu lo control Me	TINIOI			

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting				
StUn	[Tune selection]		[Default] (tAb)				
	(for information only, cannot be modified) Note: Tune of the motor will increase significantly the performances.						
MEAS	[Default] (tAb): The default values are used to control the motor [Measure] (MEAS): The values measured by the auto-tuning function are u [Custom] (CUS): The values set manually are used to control the motor	sed to control the moto	or				
tUnU	[Auto tuning usage]		[Therm Mot] (tM)				
	This parameter shows the way used to modify the motor parameters accord	This parameter shows the way used to modify the motor parameters according to its estimated thermal state.					
tM	[No] (nO): No thermal state estimation [Therm Mot] (tM): Statoric thermal state estimation based on nominal curre [Cold tun] (Ct): Statoric thermal state estimation based on statoric resistar at each pow erup						
AUt	[Automatic autotune]		[No] (nO)				
	▲ WARNING	G					
()	UNEXPECTED MOVEMENT						
	If this function is activated, autotuning is performed each time the						
₹2s	Verify that activating this function does not result in unsafe con Failure to follow these instructions can result in death, serious can result in death, se		nent damage.				
	The motor must be stopped when switching on the drive. [Automatic autotune] (AUt) is forced to [Yes] (YES) if [Autotuning us of motor statoric resistance measured during the tune is used to estimate the						
YES	[No] (nO): Function deactivated [Yes] (YES): A tune is automatically done at each power up						
SMOt	[Saliency mot. state]						
*	(for information only, cannot be modified) Information on synchronous motor saliency. This parameter can be accessed if [Tune selection] (StUN) is set to [Note: In case of motor with low saliency, the standard control law is advised.						
nO	[No] (nO): Tune not done						
	[Low salient] (LLS): Low saliency level (Recommended configuration: [Angle setting type] (ASt) = [PSI align] (PSI) o				
MLS	[PSIO align] (PSIO) and [HF inj. activation] (HFI) = [No] (nO)). [Med salient] (MLS): Medium saliency level ([Angle setting type] (AS	t) =[SPM align] (SPM	A) is possible.				
	[HF inj. activation] (HFI) = [Yes] (YES) could work). [High salient] (HLS): High saliency level ([Angle setting type] (ASt) =						
FILS	[HF inj. activation] (HFI) = [Yes] (YES) is possible).	- [ir w angri] (ii wizi)	в роззіліє.				
ASt	[Angle setting type]		[PSIO align.] (PSIO)				
*	Mode for measuring the phase-shift angle. Visible only if [Motor control type [PSI align] (PSI) and [PSIO align] (PSIO) are working for all type of syncle [IPM align] (IPMA) increase performances depending on the type of syncle	nchronous motors. [S					
IPMA	[IPM align] (IPMA): Alignment for IPM motor. Alignment mode for Interior-to of motor has a high saliency level). It uses high frequency injection, which is						
SPMA	[SPM align] (SPMA): Alignment for SPM motor. Mode for Surface-mounte	d Permanent Magnet n	notor (usually, this kind of				
PSI	motor has a medium or low saliency level). It uses high frequency injection, [PSI align] (PSI): Pulse signal injection. Standard alignment mode by puls		standard alignment mode.				
	[PSIO align] (PSIO): Pulse signal injection - Optimized. Standard optimize		ulse signal injection. The				
nO	phase shift angle measurement time is re duced after the first run order or tune operation, even if the drive has been to [No align] (nO): No alignment	urned off.					

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting		
HFI	[HF inj. activation]	•	[No] (nO)		
	Activation of high frequency signal injection in RUN. This function allows to at low speed without speed feedback.	estimate the motor spe	ed in a view to have torque		
	Note: The more the saliency is high, the more the [HF inj. activation] (HF in order to ensure the performances, it could be necessary to adjust the spe [Speed time integral] (SIt) and [Speed prop. gain] (SPG), see page 1	ed loop parameters ([K	speed loop filter] (SFC),		
*	(Expert parameters [HF pll bandwith] (SPb) and [HF pll dump.factor] (SPF), see page 116). High frequency injection is not efficient with low saliency motors (see [Saliency mot. state] (SMOt) page 114). It is advised to have 4 kHz of pw mfrequency ([Switching freq.] (SFr)).				
	In case of instability with no load, it is advised to decrease [Speed prop. gain] (SPG) and [HF pll bandwith] (SPb). Then, adjust the speed loop parameters to have the dynamic behavior and the PLL gains to have a good speed estimation at low speed.				
	In case of instability w ith load, it could help to increase the [Angle error Co	omp.] (PEC) parameter ((mainly for SPM motor).		
nO	[No] (nO): Function deactivated				
YES	[Yes] (YES): High frequency injection is used for speed estimation				

- (1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- (2) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,000 to 65,536).
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.
- To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > DRC- > SYN-

Synchronous motor: Expert mode

Code	Name / Description	Adjustment range	Factory setting			
SYN-	[SYNCHRONOUS MOTOR]	•	-			
rSAS	[Cust. stator R syn]	0 to 65,535 mOhm	0 mOhm			
*	Cold state stator resistance (perwinding). The factory setting is rep	placed by the result of the auto-tu	ning operation, if it has been			
()	performed. The value can be entered by the user, if he knows it.					
(1)	[Autotomo I diovid]	0 to 655.35 mH	0 mH			
LdS	[Autotune L d-axis]	0 (0 000.00 11111	U IIIIn			
*	Axis "d" stator inductance in mH (per phase). On motors withsmooth poles [Autotune Ld-axis] (LdS) = [Autotune Ld-axis] (LdS) (LdS) = [Autotune Ld-axis] (LdS)		inductance L.			
LqS	[Autotune L q-axis]	0 to 655.35 mH	0 mH			
*	Axis "q" stator inductance in mH (per phase). On motors withsmooth poles [Autotune Ld-axis] (LdS) = [Autotune Ld-axis] (LdS) (LdS) = [Autotune Ld-axis] (LdS) (inductance L.			
PHS	[Syn. EMF constant]	0 to 6,553.5 mV/rpm	0 mV/rpm			
*	Synchronous motor EMF constant, in mV per rpm (peak voltage po					
(1)	PHS adjustment allows to reduce the current in operation without	load.				
FrSS	[Nominal freq sync.]	10 to 800 Hz	nSPS * PPnS / 60			
*	Nominal motor frequency for synchronous motor in Hz unit. Automatically updated according to					
()	[Nom motor spdsync] (nSPS) and [Pole pairs] (PPnS) data.					
SPb	[HF pll bandwith]	0 to 100 Hz	25 Hz			
*	Bandw idth of the stator frequency PII.					
SPF	[HF pll dump. factor]	0 to 200%	100%			
*	Dumping factor of the stator frequency PII.	L	I			
PEC	[Angle error Comp.]	0 to 500%	0%			
g	Error compensation of the angle position in high frequency mode. It increases performances at low speed in generator and motor mo	ode, particularly for SPM motors.	-			
AUtO			<u> </u>			
FrI	[HF injection freq.]	250 to 1,000 Hz	500 Hz			
*	Frequency of the high frequency injection signal. It has an influence estimation accuracy.	ce on the noise during angle shift	t measurement and speed			
Hlr	[HF current level]	0 to 200%	25%			
*	Ratio for the current level of the high frequency injection signal. It has and speed estimation accuracy.	as an influence on the noise durir	ng angle shift measurement			
MCr	[PSI align curr. max]	[Auto] (AUtO) to 300%	[Auto] (AUtO)			
*	Current level in % of [Nominal Isync.] (nCrS) for [PSI align] modes. This parameter has an impact on the inductor measurement this current must be equal or higher than the maximum current lever lif [PSI align curr. max] (MCr) is set to [Auto] (AUtO), [PSI align curing the tune operation and 100% of [Nominal Isync.] (nCr alignment ([PSI align] (PSI)) or [PSI0 align] (PSIO)).	ent. [PSI align curr.max] (MCr el of the application, otherwise in curr.max] (MCr) = 150% of [I) is used for tune operation. istability may occur.			
ILr	[Injection level align]	0 to 200%	50%			
*	Current level in % of [Nominal I sync.] (nCrS) for high frequency	y phase-shift angle measuremen	t IPMA type.			

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting			
SIr	[Boost level align.]	0 to 200%	100%			
*	Current level in % of [Nom inal I sync.] (nCrS) for high frequency phase-shift angle measurement SPMA type.					
rdAE	[% error EMF sync]	-3276.7 to 3275.8 %	-			
	Ratio D-Axis Current Use rdAE to asjust [Syn. EMF constant] (PHS), rdAE should be closed to 0. If the [% error EMF sync] (rdAE) value is lower than 0%, then [Syn. EMF constant] (PHS), may be increase If the [% error EMF sync] (rdAE) value is upper than 0%, then [Syn. EMF constant] (PHS), may be reduced					

(1) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,000 to 65,536).



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

Code	Name / Description	Adjustment range	Factory setting
drC-	[MOTOR CONTROL] (continued)		
SPG	[Speed prop. gain]	0 to 1,000%	40%
*	Speed loop proportional gain.	2+-1\ [V/E Ente] /	Oradi (LIE-er)
()	Visible if [Motor control type] (Ctt) is not set to [Standard] (S	Sta, [v/r spis] (UFS) or [v/r	duad.j (OFQ).
SPGU	[UF inertia comp.]	0 to 1,000%	40%
*	Inertia factor for following motor control laws.	N. D. E. C. L. (UEO) DVE O	
()	Visible if [Motor control type] (Ctt) is set to [Standard] (Sto	i), [V/F Spts] (UFS) or [V/F Qua	1 a.] (UFQ).
SIt	[Speed time integral]	1 to 65,535 ms	63 ms
* ()	Speed loop integral time constant. Visible if [Motor control type] (Ctt) is not set to [Standard] (S	Std), [V/F 5pts] (UFS) or [V/F	Quad.] (UFq).
SFC	[K speed loop filter]	0 to 100	65
*	Speed filter coefficient (0(IP) to 100(PI)).		I .
()			
FFH	[Spd est. filter time]	0 to 100 ms	6.4 ms
*	Accessible in Expert mode only. Frequency to filter the estimated speed.		
CrtF	[Cur. ref. filter time]	0 to 100 ms	3.2 ms
*	Accessible in Expert mode only. Filter time of the current reference filter [of control law (if [No] (new part)].	O): stator natural frequency)].	
UFr	[IR compensation]	0 to 200%	100%
()	Used to optimize torque at very low speed, or to adapt to special c [IR compensation] (UFr)). If there is insufficient torque at low can avoid the motor to start (locking) or change the current limiting	speed, increase [IR compensation	
SLP	[Slip compensation]	0 to 300%	100%
*	This parameter cannot be accessed if [Motor control type] (Ct This parameter is written at 0% when [Motor control type] (Ct Adjusts the slip compensation around the value set by the rate The speeds given on motor nameplates are not necessarily exact if slip setting is low er than actual slip: The motor is not rotating at the reference. If slip setting is higher than actual slip: The motor is overcompen	is set to [VF Quad.] (UFq). ed motor speed. ct. t the correct speed in steady sta	te, but at a speed low er than
U1	[U1]	0 to 800 V according to ra	ating 0 V
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt)	is set to [V/F 5pts] (UF5).	•
F1	[F1]	0 to 599 Hz	0 Hz
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt)		•
U2	[U2]	0 to 800 V according to ra	ating 0 V
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt)	is set to [V/F 5pts] (UF5).	
F2	[F2]	0 to 599 Hz	0 Hz
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt)	is set to [V/F 5pts] (UF5).	

Code	Name / Description	Adjustment range	Factory setting				
U3	[U3]	0 to 800 V according to rating	0 V				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).					
F3	[F3]	0 to 599 Hz	0 Hz				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).					
U4	[U4]	0 to 800 V according to rating	0 V				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).					
F4	[F4]	0 to 599 Hz	0 Hz				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).					
U5	[U5]	0 to 800 V according to rating	0 V				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).	•				
F5	[F5]	0 to 599 Hz	0 Hz				
*	V/F profile setting. This parameter can be accessed if [Motor control type] (Ctt) is set	to [V/F 5pts] (UF5).					
CLI	[Current Limitation]	0 to 1.5 ln (1)	1.5 ln (1)				
	NOTICE						
*	OVERHEATING AND DAMAGE TO THE MOTOR						
O	Verify that the motor is properly rated for the maximum cu Consider the duty cycle of the motor and all factors of your determining the currentlimit. Failure to follow these instructions can result in equipment	r application including derat	ing requirements in				
	Note: If the setting is less than 0.25 ln, the drive may lock in [Output] (see page <u>256</u>). If it is less than the no-load motor current, the motor c						
SFt	[Switch. freq type]		[SFR type 1] (HF1)				
	The motor switching frequency will be modified (reduced) when the int [SFR type 1] (HF1): Heating optimization Allows the system to adapt the switching frequency according to the m [SFR type 2] (HF2): Motor noise optimization (for high switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen switching frequency [State of the system to keep a constant chosen s	notor frequency. quency) witching freq.](SFr) whateve tching frequency.					
SFr	[Switching freq.]	2 to 16 kHz	4 kHz				
\circ	1 3 41						
\ ''	NOTICE						
	DAMAGE TO THE MOTOR Verify that the switching frequency of the drive does not exceed 4 kHz if the EMC filter is disconnected for operation of the drive in an IT mains. Failure to follow these instructions can result in equipment damage. This applies to the following drive versions: ER24K/B switching frequency setting. Adjustment range: The maximum value is limited to 4 kHz if [Motor surge limit] (SUL) parameter page 120 is configured.						
	Note: In the event of excessive temperature rise, the drive will automathe temperature returns to normal. In case of high speed motor, it is advised to increase the Pulse Width I at 8, 12 or 16 kHz.						

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting			
nrd	[Noise reduction]	•	[No] (nO)			
	Random frequency modulation helps to prevent any resonance, which	n may occur at a fixed frequer	ncy.			
nO YES	[No] (nO): Fixed frequency [Yes] (YES): Frequency with random modulation					
bOA	[Boost activation] [Dynamic] (dYnA)					
dYnA StAt	[Inactive] (nO): No boost [Dynamic] (dYnA): Dynamic boost [Static] (StAt): Static boost					
bOO	[Boost]	-100 to 100%	0%			
*	This parameter can be accessed if [Boost activation] (bOA) is not see Adjustment of the motor magnetizing current at low speed, as a % of to increase or reduce the time taken to establish the torque. It allows grass [Action Boost] (FAb). Negative values apply particularly to tapered resolved the magnetizing current Positive [Boost] (bOO) Rated magnetizing current Negative [Boost] (bOO) [Action Boost] (FRb)	he rated magnetizing current adual adjustment up to the free otor motors. Frequency				
FAb	[Action Boost]	0 to 599 Hz	0 Hz			
*	This parameter can be accessed if [Boost activation] (bOA) is not se		V 1 12			
•	Frequency above w hich the magnetizing current is no longer affected					
SUL	[Motor surge limit.]		[No] (nO)			
	This function limits motor overvoltages and is useful in the following at NEMA motors - Japanese motors - Spindle motors - Rew ound motors This parameter can remain set to [No] (nO) for 230/400 V motors use the motor does not exceed: - 4 m with unshielded cables - 10 m with shielded cables Note: When [Motor surge limit.] (SUL) is set to [Yes](YES), the mis modified, see page 120.	d at 230 V, or if the length of o				
	[No] (nO): Function inactive [Yes] (YES): Function active					
SOP	[Volt surge limit. opt]		10 μs			
*	Optimization parameter for transient overvoltages at the motor terminal (SUL) is set to [Yes] (YES).	s. This parameter can be acce	essedif [Motor surge limit.]			
6 8 10	Set to 6, 8 or 10 μs, according to the follow ing table.					
	Note: This parameter is useful for ER24/4K/B.					



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

()

Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > DRC-

The value of the **[Volt surge limit. opt]** (SOP) parameter corresponds to the attenuation time of the cable used. It is defined to help to prevent the superimposition of voltage wave reflections resulting from long cable lengths. It limits overvoltages to twice the DC bus rated voltage.

The tables on the following page give examples of correspondence between the **[Volt surge limit. opt]** (SOP) parameter and the length of the cable between the drive and the motor. For longer cable lengths, an output of the filter or a dV/dt protection filter must be used.

For motors in parallel, the sum of all the cable lengths must be taken into consideration. Compare the length given in the table row corresponding to the power for one motor with that corresponding to the total power, and select the shorter length.

Example: Two 7.5 kW (10 HP) motors

Take the lengths on the 15 kW (20 HP) table row, which are shorter than those on the 7.5 kW (10 HP) row, and divide by the number of motors to obtain the length per motor (with unshielded "GORSE" cable and SOP = 6, the result is 40/2 = 20 m maximum for each 7.5 kW (10 HP) motor).

In special cases (for example, different types of cable, different motor powers in parallel, different cable lengths in parallel, etc.), we recommend using an oscilloscope to check the overvoltage values obtained at the motor terminals.

To retain the overall drive performance, do not increase the SOP value unnecessarily.

Tables giving the correspondence between the SOP parameter and the cable length, for 400 V supply mains

ER24	Mo	otor		cross- n (min)	Maximum cable length in meters								
Reference	Pow e	er			Unshielded Type H07			Shielded " Type GVC			Shielded " Type 2950		cable
	kW	HP	in mm²	AWG	SOP = 10	SOP = 8	SOP = 6	SOP = 10	SOP = 8	SOP = 6	SOP = 10	SOP = 8	SOP = 6
ER24-0.37/4K/B	0.37	0.50	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-0.55/4K/B	0.55	0.75	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-0.75/4K/B	0.75	1	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-1.1/4K/B	1.1	1.5	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-1.5/4K/B	1.5	2	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-2.2/4K/B	2.2	3	1.5	14	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-3.0/4K/B	3	-	1.5	14	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-4.0/4K/B	4	5	2.5	12	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-5.5/4K	5.5	7.5	4	10	120 m	65 m	45 m	105 m	85 m	65m	50 m	40 m	30 m
ER24-7.5/4K	7.5	10	6	8	120 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ER24-11.0/4K	11	15	10	8	115 m	60 m	45 m	100 m	75 m	55 m	50 m	40 m	30 m
ER24-15.0/4K	15	20	16	6	105 m	60 m	40 m	100 m	70 m	50 m	50 m	40 m	30 m

For 230/400 V motors used at 230 V, the [Motor surge limit.] (SUL) parameter can remain set to [No] (nO).

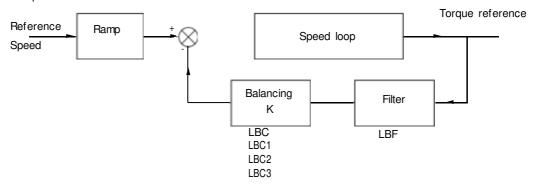
Code	Name / Description	Adjustment range	Factory setting
Ubr	[Braking level]	335 to 820 V	According to drive rating voltage
\circ	Braking transistor command level.		
LbA	[Load sharing]		[No] (nO)
* nO		do this, it varies the speed	based on the torque.
YES LbC	[Yes] (YES): Function active [Load correction]	0 to 599 Hz	To Hz
* ()	Rated correction in Hz. This parameter can be accessed if [Load sharing] (LbA) is set to Torque Nominal torque Nominal torque Nominal torque	o [Yes] (YES).	

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

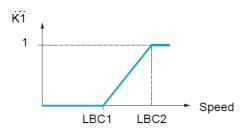
Parameter that can be modified during operation or when stopped.

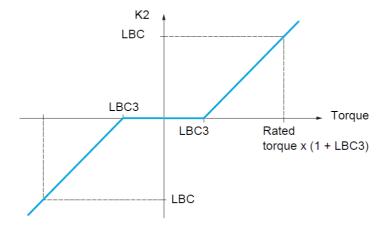
Load sharing, parameters that can be accessed at expert level

Principle:



The load sharing factor K is determined by the torque and speed, with two factors K1 and K2 ($K = K1 \times K2$).





DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting				
LbC1	[Correction min spd]	0 to 598.9 Hz	0 Hz				
*	This parameter can be accessed if [Load sharing] (LbA) is set to [Yes] (YES).						
0	Minimum speed for load correction in Hz. Below this threshold, no correct speed if this would hamper rotation of the motor.	tions are made. Used to ca	ancel correction at very low				
LbC2	[Correction max spd]	[Correction min spd] (LbC1) + 0.1 at 599 Hz	0.1 Hz				
*	This parameter can be accessed if [Load sharing] (LbA) is set to [Yes	(YES).					
()	Speed threshold in Hz above w hich maximum load correction is applied.						
LbC3	[Torque offset]	0 to 300%	0%				
*	This parameter can be accessed if [Load sharing] (LbA) is set to [• ' '	•				
()	Minimum torque for load correction as a % of the rated torque. Below this torque instabilities when the torque direction is not constant.	threshold, no corrections	are made. Used to avoid				
LbF	[Sharing filter]	0 to 20 s	100 ms				
*	This parameter can be accessed if [Load sharing] (LbA) is set to	• • •					
O	Time constant (filter) for correction in ms. Used in the event of flexible me	chanical coupling in order	to avoid instabilities.				



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > I_O-

Inputs / outputs CFG

The parameters in the [INPUTS / OUTPUTS CFG] (I_O -) menu can only be modified when the drive is stopped and no run command is present.

Code	Name / Description		Adjustment range	Factory setting	
FULL	[FULL] (continued)			•	
I_O-	[INPUTS / OUTPUTS CFG]				
tCC	[2/3 wire control]			[2 wire] (2C)	
_					
🛣 2 s		A WARNING	3		
	UNANTICIPATED EQUIPMENT (
	If this parameter is changed, the passignments of the digital inputs			ype] (tCt) and the	
	Verify that this change is compatil	ole with the type of wiring used	•		
	Failure to follow these instruction	ons can result in death, serio	us injury, or equipm	ent damage.	
2C	[2 wire] (2C)				
	2-wire control (level commands): This	is the input state (0 or 1) or edge (0	to 1 or 1 to 0) which co	ontrols running or stopping.	
	Example of "source" wiring:				
	ER24				
	'o Llx: reve	rse			
30	[2 wire] (3C)				
30	[3 wire] (3C) 3-wire control (pulse commands): A "f	orward" or "reverse" pulse is suffici	ent to command starting	, a "stop" pulse is sufficient	
	to command stopping.				
	Example of "source" wiring:				
	ER24 LI1 LI2 LIX LI1: Stop				
	Li2: forw				
tCt	[2 wire type]			[Transition] (trn)	
*		A WARNING	3		
_	UNANTICIPATED EQUIPMENT (PERATION			
🛣 2 s					
	Failure to follow these instruction	ons can result in death, serio	us injury, or equipm	ent damage.	
LEL	[Level] (L⊟_): State 0 or 1 is taken into	account for run (1) or stop (0)			
trn	[Transition] (trn): A change of state (to		tiate operation, in order	to avoid accidental restarts	
PFO	after a break in the power supply [Fwd priority] (PFO): State 0 or 1 is take	en into account for run or stop, but	the "forward" input take	s priority over the "reverse"	
	input				

DRI- > CONF > FULL > I_O-

Code	Name / Description	Adjustment range	Factory setting
rUn	[Drive Running]		[No] (nO)
*	Assignment of the stop command. Visible only if [2/3 wire control] (tCC) is set to [3 wire] (3C).		
	[LI1] (LI1): Logical input LI1 if not in [I/O profile] (IO) [Cd00] (Cd00): In [I/O profile] (IO), can be switched with possible logical [OL01] (OL01): Function blocks: Logical Output 01	gic inputs	
OL10	[OL10] (OL10): Function blocks: Logical Output 10		
Frd	[Forward]		[L11] (L_11)
	Assignment of the forw ard direction command.		
	[LI1] (LI1): Logical input LI1 if not in [I/O profile] (IO) [Cd00] (Cd00): In [I/O profile] (IO), can be switched with possible logical [OL01] (OL01): Function blocks: Logical Output 01	gic inputs	
OL10	[OL10] (OL10): Function blocks: Logical Output 10		
rrS	[Reverse assign.]		[LI2] (L_I2)
	Assignment of the reverse direction command.		
nO LI1 	[No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		

DRI- > CONF > FULL > I_O- > L1-

Code	Name / Description	Adjustment range	Factory setting
L1-	[LI1 CONFIGURATION]		
L1A	[LI1 assignment]		
	Read-only parameter, cannot be configured.		
	It displays all the functions that are assigned to input LI1 in order to check for	or multiple assignments.	
nO	[No] (nO): Not assigned		
	[Run] (rUn): Run Enable		
	[Forward] (Frd): Forward operation [Reverse] (rrS): Reverse operation		
	[Ramp switching] (rPS): Ramp switching		
JOG	[Jog] (JOG): Jog operation		
	[+Speed] (USP): + speed		
	[-speed] (dSP):-speed [2presetspeeds] (PS2):2 Preset speeds		
PS4	[4 preset speeds] (PS4): 4 Preset speeds		
	[8 preset speeds] (PS8): 8 Preset speeds		
	[Ref. 2 switching] (rFC): Reference switching [Freewheel stop] (nSt): Freewheel stop		
	[DC injection] (dCl): Injection DC stop		
	[Fast stop] (FSt): Fast stop		
	[Forced local] (FLO): Forced local mode [Fault reset] (rSF): Fault reset		
	[Auto-tuning] (tUL): Auto-tuning		
SPM	[Ref.memo.] (SPM): Save reference		
	[Pre Fluxing] (FLI): Motor fluxing		
	[Auto/manual] (PAU): Pl(D) auto-manu [PID integral reset] (PIS): Integral shunting Pl(D)		
	[2 preset PID ref.] (Pr2): 2 Preset PI(D) references		
	[4 preset PID ref.] (Pr4): 4 Preset PI(D) references		
	[Torque limitation] (tLA): Permanent torque limitation [External fault] (EtF): External fault		
	[Output contact. fdbk] (rCA): Downstream contactor feedback		
CnF1			
	[3 config. switching] (CnF2): Configuration switching 2 [2 parameter sets] (CHA1): Parameter switching 1		
	[3 parameter sets] (CHA2): Parameter switching 2		
tLC	[Activ. Analog torque limitation] (tLC): Torque limitation: Activation (anal	og input) by a logic inpu	t
	[Cmd switching] (CCS): Command channel switching [Fault inhibition] (InH): Fault inhibition		
	[16 preset speeds] (PS1 2: 16 preset speeds		
LC2	[Current limit 2] (LC2): Current limitation sw itching		
	[Ref 1B switching] (rCb): Reference channel switching (1 to 1B) [Traverse control] (★ ►C): Traverse control		
trC bCl	[Brake contact] (bC 1): Brake logic input contact		
SAF	[Stop FW limit sw.] (SAF): Stop switch forward		
	[Stop RV limit sw.] (SAr): Stop switch reverse		
dAr	[Slowdown forward] (dAF): Slowdown attained forward [Slowdown reverse] (dAr): Slowdown attained reverse		
CLS	[Disable limitsw.] (CLS): Limits switches clearing		
	[Drive lock (Line contact. ctrl)] (LES): Emergency stop		
	[Init. traverse ctrl.] (rtr): Reload traverse control [Counterwobble] (SnC): Counterwobble synchronization		
	[Prod. reset] (rPA): Reset Product		
	[2 HSP] (SH2): High Speed 2		
	[4 HSP] (SH4): High Speed 4 [Preset spd2] (FPS1): Function key preset speed 1 assignment		
FPS2	[Preset spd3] (FPS2): Function key preset speed 2 assignment		
FPr1	[PID ref. 2] (FPr1): Function key preset PI 1 assignment		
	[PID ref. 3] (FPr2): Function key preset PI 2 assignment [+Speed] (FUSP): Function key faster assignment		
	[-Speed] (FdSP): Function key laster assignment		
Ft	[T/K] (Ft): Function key bumpless assignment		
	[+speed around ref.] (USI): + Speed around ref		
uSI	[-speed around ref.] (dSI): - Speed around ref		

Code	Name / Description	Adjustment range	Factory setting	
USI dSI IL01 IL10 FbrM SLS1 SLS2	[-speed around ref.] (dSI):- Speed around ref [IL01] (IL01): Function blocks: Logical Input 1 [IL10] (IL10): Function blocks: Logical Input 10 [FB start] (FbrM): Function blocks: Run mode [SLS ch.1] (SLS1): SLS safety function Channel 1 [SLS ch.2] (SLS2): SLS safety function Channel 2			
SS11 SS12 StO1 StO2 SMS1 SMS2				
L1d	[LI1 On Delay]	0 to 200 ms	0 ms	
2.0	This parameter is used to take account of the change of the logic input to st and 200 milliseconds, in order to filter out possible interference. The change			
I_O-	[INPUTS / OUTPUTS CFG] (continued)			
L2-	[Lix CONFIGURATION]			
to L6 -	All the logic inputs available on the drive are processed as in the example for LI1 above, up to LI6.			
L5-	[LI5 CONFIGURATION] Specific parameters for LI5 used as a pulse input.			
PIA	[RP assignment] Read-only parameter, cannot be configured. It displays all the functions associated with the Pulse input in order to check Identical to [Al1 assignment] (A11A) page 133.	x, for example, for compa	tibility problems.	
PIL	[RP min value]	0 to 20.00 kHz	0 kHz	
	Pulse input scaling parameter of 0% in Hz * 10 unit.		l .	
PFr	[RP max value]	0 to 20.00 kHz	20.00 kHz	
	Pulse input scaling parameter of 100% in Hz * 10 unit.			
PF∎	[RP filter]	0 to 1,000 ms	0 ms	
	VO ext Pulse input cutoff time of the low-filter.		-	
LA1- LA2-	[LAX CONFIGURATION] The 2 analog inputs Al1 and Al2 on the drive could be used as LI inputs and	d are processed as in the	example for LI1 above.	



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



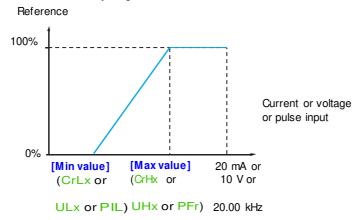
To change the assignment of this parameter, press the ENT key for 2 s.

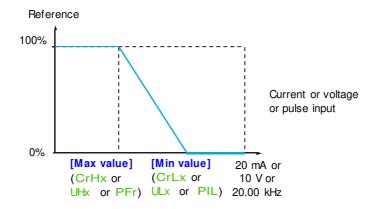
Configuration of analog inputs and Pulse input

The minimum and maximum input values (in volts, mA, etc.) are converted to % in order to adapt the references to the application.

Minimum and maximum input values:

The minimum value corresponds to a reference of 0% and the maximum value to a reference of 100%. The minimum value maybe greater than the maximum value:

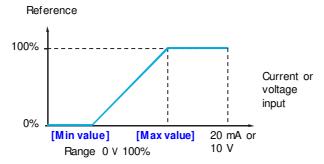


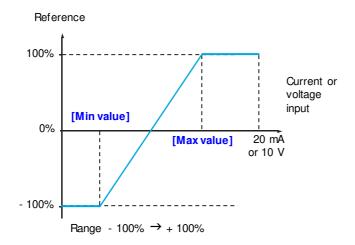


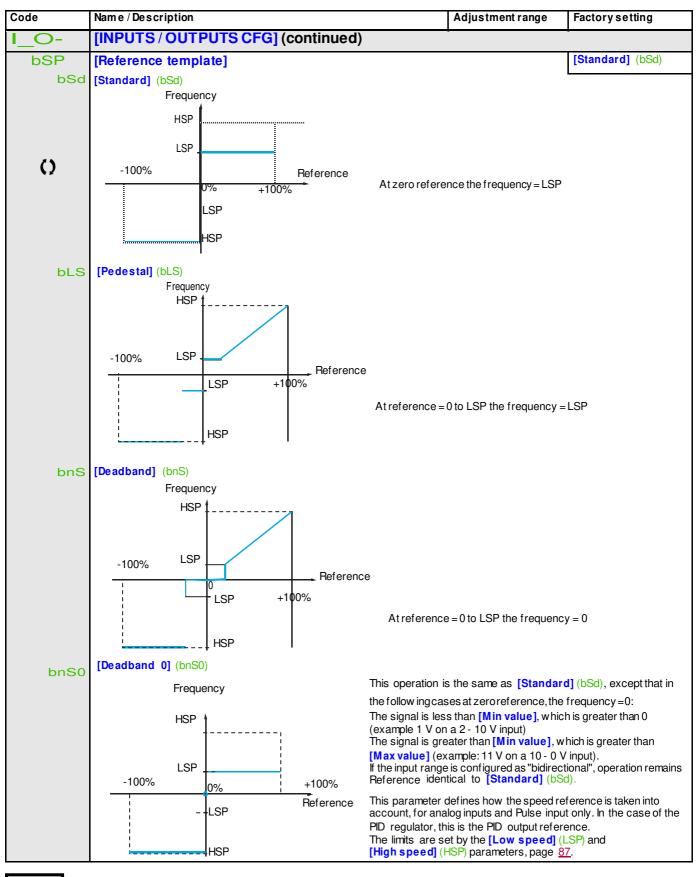
For \pm -bidirectional inputs, the min. and max. are relative to the absolute value, for example \pm -2 to 8 V.

Range (output values): For analog inputs only:

This parameter is used to configure the reference range to $[0\% \rightarrow 100\%]$ or $[-100\% \rightarrow +100\%]$ in order to obtain a bidirectional output from a unidirectional input.



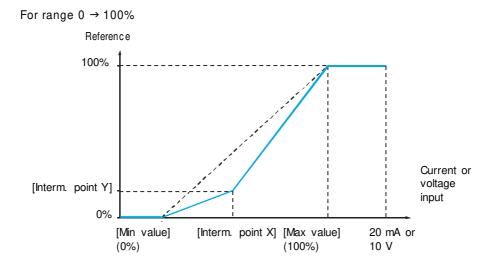




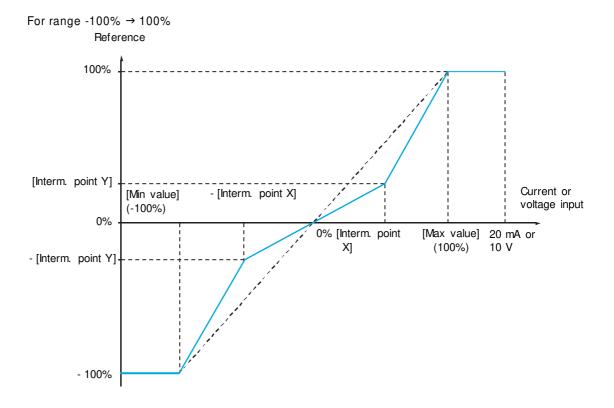
Parameter that can be modified during operation or when stopped.

Delinearization: For analog inputs only:

The input can be delinearized by configuring an intermediate point on the input/output curve of this input:



Note: For [Interm. point X], 0% corresponds to [Min value] and 100% to [Max value].



Code	Name / Description	Adjustment range	Factory setting		
Al1-	[A1 CONFIGURATION]		-		
Al1A	[Al1 assignment]				
	Read-only parameter, cannot be configured.				
	It displays all the functions associated with input AI1 in order to check, for example, for compatibility problems.				
	[No] (nO): Not assigned				
	[AO1 assignment] (AO1): Analog output AO1 [Ref.1 channel] (Fr1): Reference source 1				
Fr2	[Ref.2 channel] (Fr2): Reference source 2				
	[Summing ref. 2] (SA2): Summing reference 2 [PID feedback] (PI⊢): PI feedback (PI control)				
tAA	[Torque limitation] (tAA): Torque limitation: Activation by an analog value				
		auto man)			
	[Manual PID ref.] (PIM): Manual speed reference of the PI(D) regulator (a [PID speed ref.] (FPI): Speed reference of the PI(D) regulator (predictive				
SA3	[Summingref.3] (SA3): Summing reference 3				
	[Ref.1B channel] (Fr1b): Reference source 1B [Subtract. ref. 3] (dA3): Subtracting reference 3				
FLOC	[Forced local] (FLOC): Forced local reference source				
	[Ref.2 multiplier] (MA2): Multiplying reference 2 [Ref.3 multiplier] (MA3): Multiplying reference 3				
PES	[Weight input] (PES): Hoisting: External weight measurement function				
IA01	[IA01] (IA01): Function blocks: Analog Input 01				
IA10	[IA10] (IA10): Function blocks: Analog Input 10				
Al1t	[Al1 Type]		[Voltage] (10U)		
	[Voltage] (10U): Positive voltage input 0 - 10 V (negative values are interpolated)	<u> </u>	•		
UIL1	[Al1 min value]	0 to 10.0 V	0 V		
	All voltage scaling parameter of 0%.				
UIH1	[Al1 max value]	0 to 10.0 V	10.0 V		
	All voltage scaling parameter of 100%.				
Al1F	[Al1 filter]	0 to 10.00 s	0 s		
	Interference filtering.				
	[Al1 range]		[0 - 100%] (POS)		
	[0 - 100%] (POS): Positive logical [+/- 100%] (nEG): Positive and negative logical				
AI1E	[Al1 Interm. point X]	0 to 100%	0%		
	Input delinearization point coordinate. Percentage of the physical input sign	nal.			
	0% corresponds to [Al1 min value] (UIL1). 100% corresponds to [Al1 max value] (UIH1).				
AI1S	[Al1 Interm. point Y]	0 to 100%	0%		
	Output delinearization point coordinate (frequency reference).				
	Percentage of the internal frequency reference corresponding to the [All input signal.	Interm. point X] (A11E)	percentage of physical		
I_O-	[INPUTS / OUTPUTS CFG] (continued)				
AI2-	[AI2 CONFIGURATION]				
Al2A	[Al2 assignment]				
	Identical to [Al1 assignment] (A11A) page 133.				
AI2t	[Al2 Type]		[Voltage +/-] (n10U)		
			unidirectional)		
	[Voltage +/-] (n10U): Positive and negative voltage input +/- 10 V (the in	nput is bidirectional)			
UIL2	[Voltage +/-] (n10U): Positive and negative voltage input +/- 10 V (the in [Al2 min value]	0 to 10.0 V	0 V		

DRI- > CONF > FULL > I_O- > A12-

Code	Name / Description	Adjustment range	Factory setting	
UIH2	[Al2 max. value]	0 to 10.0 V	10.0 V	
	AI2 voltage scaling parameter of 100%.		•	
Al2F	[Al2 filter]	0 to 10.00 s	0 s	
	Interference filtering.			
Al2L	[Al2 range]		[0 - 100%] (POS)	
	This parameter is forced to $[0 - 100\%]$ (POS) and can not be accessed if $[+/-]$ (n10U) .	Al2 Type] (Al2t) (page	133) is set to [Voltage	
	[0 - 100%] (POS): Positive logical [+/-100%] (nEG): Positive and negative logical			
AI2E	[Al2 Interm. point X]	0 to 100%	0%	
	Input delinearization point coordinate. Percentage of the physical input sig	nal.	•	
	0% corresponds to [Min value] if the range is $0 \rightarrow 100\%$			
	0% corresponds to [Max value] + [Min value] 2 if the range is -100% → +1 100% corresponds to [Max value].	00%.		
AI2S	[Al2 Interm. point Y]	0 to 100%	0%	
	Output delinearization point coordinate (frequency reference). Percentage of the internal frequency reference corresponding to the [AI2 input signal.	Interm.point X] (A12E)	percentage of physical	
I_O-	[INPUTS / OUTPUTS CFG] (continued)			
AI3-	[Al3 CONFIGURATION]			
AI3A	[Al3 assignment]			
	Identical to [Al1 assignment] (A11A) page 133.			
Al3t	[Al3 Type]		[Current] (0A)	
0A	[Current] (0A): Current input 0 - 20 mA			
CrL3	[Al3 min. value]	0 to 20.0 mA	0 mA	
	Aß current scaling parameter of 0%.			
CrH3	[Al3 max. value]	0 to 20.0 mA	20.0 mA	
	Al3 current scaling parameter of 100%.			
Al3F	[Al3 filter]	0 to 10.00 s	0 s	
,	Interference filtering.			
Al3L	[Al3 range]		[0 - 100%] (POS)	
	[0 - 100%] (POS): Unidirectional input		[0 - 100/0] (1 00)	
nEG	[+/- 100%] (PCS). Unidirectional input [+/- 100%] (nEG): Bidirectional input Example: On a 4 - 20 mA input. 4 mA corresponds to reference -100%. 12 mA corresponds to reference 0%. 20 mA corresponds to reference+100%. Since Aß is, in physical terms, a bidirectional input, the [+/- 100%] (nEG) is unidirectional. A bidirectional signal is not compatible with a bidirectional		e used if the signal applied	
AI3E	[Al3 Interm. point X]	0 to 100%	0%	
	Input delinearization point coordinate. Percentage of the physical input sig	nal.		
	0% corresponds to [Min value] (CrL3) if the range is $0 \rightarrow 100\%$.			
	[Al3 max. value] (CrH3) - [Al3 min. value]			
	0% corresponds to if th	e range is -100% → 100%		
	100% corresponds to [Al3 max. value] (CrH3).			

DRI- > CONF > FULL > I_O- > IEn-

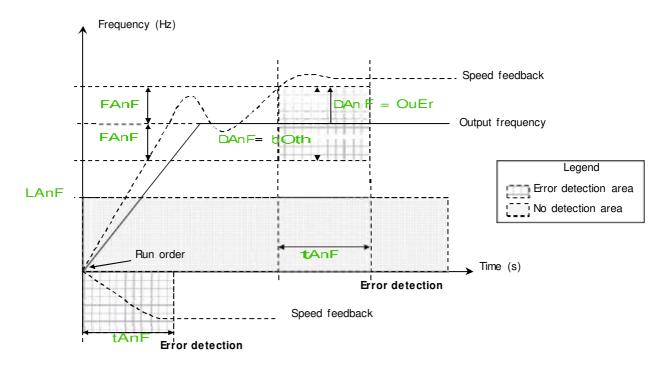
Code	Name / Description	Adjustment range	Factory setting	
Al3S	[Al3 Interm. point Y]	0 to 100%	0%	
	Output delinearization point coordinate (frequency reference). Percentage of the internal frequency reference corresponding to the [Al3 Interm.point X] (A13E) percentage of physical input signal.			
I_O-	[INPUTS / OUTPUTS CFG] (continued)			
AU1-	[VIRTUAL AI1]			
AU1A	[AIV1 assignment]			
	Virtual analog input 1 via the jog dial available on the front side of the produdentical to [Al1 assignment] (A11A) page 133.	ıct.		
AU2-	[VIRTUAL AI2]			
AU2A	[AIV2 assignment]			
	Possible assignments for [Al virtual 2] (AIU2): Virtual analog input 2 via c net. channel] (AIC2).	ommunication channel, t	to be configured with [Al2	
	Identical to [AIV1 assignment] (AU1A) page 133.			
AIC2	[Al2 net. Channel]		[No] (nO)	
*	[VIRTUAL AI2] (AU2A) source channel.			
•	This parameter can also be accessed in the [PID REGULATOR] (PId –) Scale: The value 8192 transmitted by this input is equivalent to 10 V on a 1			
nO	[No] (nO): Not assigned			
Mdb CAn	[Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen®			
nEt	[Com.card] (n⊟): Communication card (if inserted)			
IEn-	[ENCODER CONFIGURATION]			
E-11	Follow ing parameters can be accessed if the speed monitoring card has be	een inserted.	[Me1/pO)	
EnU	[Encoder usage]		[No] (nO)	
nO SEC	[No] (nO): Function inactive. [Fdbk monit.] (SEC): The encoder provides speed feedbackfor monitoring	ı .		
			_	
EnS	[Encoder type]		[AABB] (AAbb)	
*	Encoder usage configuration.			
	Encoder usage configuration.			
	To be configured in accordance with the type of encoder used.			
AAbb Ab	[AABB] (AAbb): For signals A, /A, B, /B. [AB] (Ab): For signals A, B.			
	Following parameters can be accessed if [Encoder usage] (EnU) is set to [Fdbk monit.] (SEC).			
PG∎	[Number of pulses]	100 to 3600	1024	
*	Encoder usage configuration.		1	
	Number of pulses per encoder revolution. Follow ing parameters can be accessed if [Encoder usage] (EnU) is set to [I	Fdbk monit.] (SEC).		

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > I_O- > IEn-

Load slip detection:



The drive will detect an error and display the error code [Load slipping] (AnF) in the following cases:

- As soon as the RUN order is received, if the sign of the output frequency and the speed feedback are in opposite way during [ANF Time Thd.] (tAnF).
- During operation:
 - if the speed feedback is in the same direction than the output frequency
 - and the speed feedback is over [ANF Detection level] (LAnF).
 - and,

"if [ANF Direction check] (dAnF) is set to [Over] (OUEr), the difference between the output frequency and the speed feedback is over [ANF Frequency Thd.] (FAnF) during [ANF Time Thd.] (TAnF) (Overspeed detection).

or,

"if [ANF Direction check] (dAnF) is set to [Both] (bOth), the difference between the output frequency and the speed feedback is over [ANF Frequency Thd.] (FAnF) or below - [ANF Frequency Thd.] (FAnF) during [ANF Time Thd.] (tAnF) (Overspeed or underspeed detection).

Code	Name / Description	Adjustment range	Factory setting		
I_O-	[INPUTS / OUTPUTS CFG] (continued)				
IEn-	[ENCODER CONFIGURATION] (continued)				
	Follow ing parameters can be accessed if the speed monitoring card VW3A3620 has been inserted and if [Encoder usage] (EnU) is set to [Fdbk monit.] (SEC).				
FAnF	[ANF Frequency Thd.]	0.1 to 50 Hz	5.0 Hz		
*	Level of [Load slipping] (AnF) detected error.				
	The drivew illnot detect the error [Load slipping] (AnF) if the difference between the output frequency and the speed feedback is below than [ANF Frequency Thd.] (FAnF).				
LAnF	[ANF Detection level]	0 to 10 Hz	0.0 Hz		
	Level of ANF detected error.				
*	The drive will not detect the error [Load slipping] (AnF) if the speed feedback is below [ANF Detection level] (LAnF).				

DRI- > CONF > FULL > I_O- > IEn-

Code	Name / Description	Adjustment range	Factory setting
dAnF	[ANF Direction check]	•	[Over] (OUEr)
* OUEr bOth	Available [Load slipping] (AnF) detection direction. [Over] (OUEr): The drive will detect the error [Load slipping] (AnF) in case of overspeed. [Both] (bOth): The drive will detect the error [Load slipping] (AnF) in case of overspeed or underspeed.		
tAnF	[ANF Time Thd.]	0 to 10 s	0.10 s
*	Level of [Load slipping] (AnF) detected error. The drive will detect the error [Load slipping] (AnF) if the conditions are present during [ANF Time Thd.] (AnF).		ime Thd.] (AnF).

g

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Code	Name / Description	Adjustment range	Factory setting
I_O-	[INPUTS / OUTPUTS CFG] (continued)		
r1-	[R1 CONFIGURATION]		
r1	[R1 Assignment]		[No drive flt] (FLt)
	[No] (nO): Not assigned		
	[No drive flt] (FLt): Drive fault detection status (relay normally energized, [Drv running] (rUn): Drive running	and de-energized in the	event of an error)
	[Freq.Th. attain.] (FtA): Frequency threshold attained ([Freq.thresh	old] (Ftd) page <u>102</u>)	
FLA	[HSP attain.] (FLA): High speed attained		
	[I attained] (CtA): Current threshold attained ([Current threshold] (Ctd) page 102) [Freq.ref.att] (SrA): Frequency reference attained		
	[Th.mot. att.] (tSA): Motor 1 thermal state attained		
	[PID error al] (P⊞): PID error alarm		
	[PID fdbk al] (PFA): PID feedback alarm	threehold 21 (E2d) po	ago 102)
	[Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq. Th. drv. att.] (tAd): Drive thermal state attained	tillesiloid 2j (F2d) po	age <u>102</u>)
ULA	[Pro.Undload] (ULA): Underload alarm		
	[Ovid.P.Airm] (OLA): Overload alarm		
	[Rope slack] (rSdA): Rope slack (see [Rope slack config.] (rSd) pa [High tq. att.] (ttHA): Motor torque overshooting high threshold [High to		102
ttLA	[Low tq. att.] (ttLA): Motor torque undershooting low threshold [Low to		
	[Forward] (MFrd): Motor in forward rotation		
	[Reverse] (Mrs): Motor in reverse rotation [Th.mot2 att] (tS2): Motor 2 thermal threshold (TTD2) reached		
	[Th.m ot3 att] (tS3): Motor 3 thermal threshold (TTD3) reached		
AtS	[Neg Torque] (AtS): Negative torque (braking)		
	[Cnfg.0 act.] (CnF0): Configuration 0 active [Cnfg.1 act.] (CnF1): Configuration 1 active		
	[Cnfg.2 act.] (CnF2): Configuration 2 active		
CFP1	[Set 1 active] (CFP1): Parameter set 1 active		
	[Set 2 active] (CFP2): Parameter set 2 active [Set 3 active] (CFP3): Parameter set 3 active		
	[DC charged] (dbL): DC bus charging		
brS	[In braking] (brS): Drive braking		
	[P. removed] (PrM): Drive locked by "Safe Torque Off" input	ouning that I (Eat) not	20. 100
	[Fr.met. alar.] (FqLA): Measured speed threshold attained [Pulse w [I present] (MCP): Motor current present	arning that, (FqL) pag	je <u>102</u>
LSA	[Limit sw. att] (LSA): Limit switch attained		
	[Load alarm] (dLdA): Load variation detection (see page 267)		
	[Alarm Grp 1] (AGI): Alarm group 1 [Alarm Grp 2] (AG2): Alarm group 2		
AG3	[Alarm Grp 3] (AG3): Alarm group 3		
	[LI6=PTC al.] (PLA): LI6 = PTCL alarm		
	[Ext. fault al] (EFA): External fault alarm [Under V. al.] (USA): Undervoltage alarm		
UPA	[Uvolt warn] (UPA): Undervoltage threshold		
	[Al. °C drv] (tHA): Drive overheating		
	[Lim T/I att.] (SSA): Torque limit alarm [IGBT al.] (tJA): Thermal junction alarm		
AP3	[Al3 Al. 4-20] (AP3): Al3 4-20 mA loss alarm		
rdY	[Ready] (rdY): Ready to start		
r1-	[R1 CONFIGURATION] (continued)		
r1d	[R1 Delay time]	0 to 60,000 ms	0 ms
(1)	The change in state only takes effect once the configured time has elapsed. The delay cannot be set for the [No drive fit] ($\vdash L \cdot t$) assignment, and remains		ecomes true.
r1S	[R1 Active at]		[1] (POS)
	Configuration of the operating logic:		
	[1] (POS): State 1 when the information is true [0] (nEG): State 0 when the information is true Configuration [1] (POS) cannot be modified for the [No drive flt] (FLt)	assignment.	

Code	Name / Description	Adjustment range	Factory setting		
r1H	[R1 Holding time]	0 to 9,999 ms	0 ms		
	The change in state only takes effect once the configured time has elapsed. The holding time cannot be set for the [No drive flt] (FLt) assignment, an		ecomes false.		
r1F	[Enable Relay1 fallback]		[No] (nO)		
	Available if [R1 Assignment] (r1) page 138 is set [No] (nO): Not assigned				
YES nO	[No] (nO): Relay controlled by OL1R.	ive is in operating state "	Fault"		
I_O-	[INPUTS / OUTPUTS CFG] (continued)				
r2-	[R2 CONFIGURATION]				
r2	[R2 Assignment]		[No] (nO)		
tSY dCO	Identical to [R1 Assignment] (r1) page 138 with the addition of: [Brk control] (bLC): Brake contactor control [Input cont.] (LLC): Line contactor control [Output cont] (OCC): Output contactor control [End reel] (⊞O): End of reel (traverse control function) [Sync. wobble] (tSY): "Counter wobble" synchronization [DC charging] (dCO): DC bus precharging contactor control [OL01] (OL01): Function blocks: Logical Output 01				
OI 10	[OL10] (OL10): Function blocks: Logical Output 10				
r2d	[R2 Delay time]	0 to 60,000 ms	0 ms		
(1)	The delay cannot be set for the [No drive flt] (FLt), [Brk control] (bLC assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed	C), [Output cont.] (OCC)			
r2S	[R2 Active at]		[1] (POS)		
POS nEG	Configuration of the operating logic: [1] (POS): State 1 w hen the information is true [0] (nEG): State 0 w hen the information is true The configuration [1] (POS) cannot be modified for the [No drive flt] (FLt), [Brk control] (bLC), [DC charging] (dCO), and [Input cont.] (LLC) assignments.				
r2H	[R2 Holding time]	0 to 9,999 ms	0 ms		
	The holding time cannot be set for the [No drive flt] (FLt), [Brk control] (bLC) and [Input cont] (LLC) assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes false.				
r2F	[Enable Relay2 fallback]		[No] (nO)		
	Available if [R2 Assignment] (r2) page 139 is set [No] (nO): Not assign	gned			
YES nO	[No] (nO): Relay controlled by OL1R.	ive is in operating state "	Fault"		
I_O-	[INPUTS / OUTPUTS CFG] (continued)				
LO1-	[LO1 CONFIGURATION]				
LO1	[LO1 assignment]		[No] (nO)		
OL01 	[OL10] (OL10): Function blocks: Logical Output 10		r information only as these		
LO1d	[LO1 delay time]	0 to 60,000 ms (1)	0 ms		
	The delay cannot be set for the [No drive flt] (FLt), [Brk control] (bLC assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed				

Code	Name / Description	Adjustment range	Factory setting
LO1S	[LO1 active at]		[1] (POS)
	Configuration of the operating logic: [1] (POS): State 1 w hen the information is true [0] (nEG): State 0 w hen the information is true The configuration [1] (POS) cannot be modified for the [No drive flt] (lassignments.	FLt),[Brk control] (bL	C) and [Input cont.] (LLC)
LO1H	[LO1 holding time]	0 to 9,999 ms	0
	The holding time cannot be set for the [No drive flt] (FLt), [Brk control remains at 0. The change in state only takes effect once the configured time has elapsed		

(1) 0 to 9,999 ms then 10.00 to 60.00 s on the integrated display terminal.

DRI- > CONF > FULL > I_O- > DO1-

Use of analog output AO1 as a logic output

Analog output AO1 can be used as a logic output, by assigning DO1. In this case, when set to 0, this output corresponds to the AO1 $\,$ min. value (0 V, or 0 $\,$ mA for example), and when set to 1 to the AO1 $\,$ max. value (10 V, or 20 $\,$ mA for example).

The electrical characteristics of this analog output remain unchanged. As these characteristics are different from logic output characteristics, check that it is still compatible with the intended application.

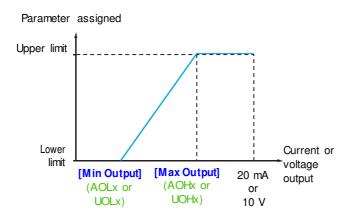
Code	Name / Description	Adjustment range	Factory setting
I_O-	[INPUTS / OUTPUTS CFG] (continued)		
dO1-	[DO1 CONFIGURATION]		
dO1	[DO1 assignment]		[No] (nO)
	Identical to [R1 Assignment] (r1) page 138 with the addition of the follow as these selections can only be configured in the [APPLICATION FUNCT.] [Brk control] (bLC): Brake contactor control [Input cont.] (LLC): Line contactor control [Output cont] (OCC): Output contactor control [End reel] (BDO): End of reel(traverse control function) [Sync. wobble] (tSY): "Counter wobble" synchronization [DC charging] (dCO): DC bus precharging contactor control [OL01] (OL01): Function blocks: Logical Output 01 [OL10] (OL10): Function blocks: Logical Output 10		own for information only
dO1d	[DO1 delay time]	0 to 60,000 ms (1)	0 ms
	The delay cannot be set for the [No drive flt] (FLt), [Brk control] (bLC), [Output cont.] (OCC) and [Input cont.] (LLC) assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes true.		
dO1S	[DO1 active at]		[1] (POS)
POS nEG	Configuration of the operating logic: [1] (POS): State 1 w hen the information is true [0] (nEG): State 0 w hen the information is true The configuration [1] (POS) cannot be modified for the [No drive flt] (FLt), [Brk control] (bLC) and [Input cont.] (LLC) assignments.		
dO1H	[DO1 holding time]	0 to 9,999 ms	0 ms
	The holding time cannot be set for the [No drive flt] (FLt), [Brk control] remains at 0. The change in state only takes effect once the configured time has elapsed	. ,	

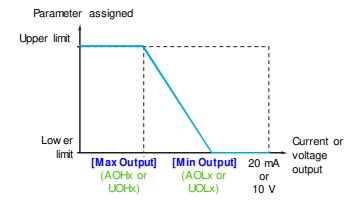
^{(1) 0} to 9,999 ms then 10.00 to 60.00 s on the integrated display terminal.

Configuration of analog output

Minimum and maximum values (output values):

The minimum output value, in volts, corresponds to the lower limit of the assigned parameter and the maximum value corresponds to its upper limit. The minimum value may be greater than the maximum value.





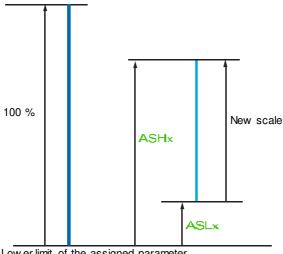
Scaling of the assigned parameter

The scale of the assigned parameter can be adapted in accordance with requirements by modifying the values of the lower and upper limits by means of two parameters for each analog output.

These parameters are given in %. 100% corresponds to the total variation range of the configured parameter, so: 100% = upper limit - lower limit For example, [Sign. torque] (Stq) which varies between -3 and +3 times the rated torque, 100% corresponds to 6 times the rated torque.

- The [Scaling AOx min] (ASLx) parameter modifies the lower limit: new value = lower limit + (range x ASLx). The value 0% (factory setting) does not modify the lower limit.
- The [Scaling AOx max] (ASHx) parameter modifies the upper limit: new value = lower limit + (range x ASLx). The value 100% (factory setting) does not modify the upper limit.
- [Scaling AOx min] (ASLx) must always be lower than [Scaling AOx max] (ASHx).

Upper limit of the assigned parameter



Low er limit of the assigned parameter

Application example 2

The value of the motor current at the AO1 output is to be transferred with 0 - 20 m A, range 2 ln motor, ln motor being the equivalent of a 0.8 In drive.

The [I motor] (OC r) parameter varies between 0 and 2 times the rated drive current, or a range of 2.5 times the rated drive current.

[Scaling AO1 min] (ASL1) must not modify the lower limit, which therefore remains at its factory setting of 0%.

[Scaling AO1 max] (ASH1) must modify the upper limit by 0.5x the rated motor torque, or 100 - 100/5 = 80% (new value = lower limit + (range x ASH1).

Code	Name / Description	Adjustment range	Factorysetting
I_O-	[INPUTS / OUTPUTS CFG] (continued)		<u>.</u>
AO1-	[AO1 CONFIGURATION]		
AO1	[AO1 assignment]		[No] (nO)
OCr	[No] (nO): Not assigned [I motor] (OCr): Current in the motor, between 0 and 2 ln (ln = rated drive current indicated in the Installation manual and on the drive nameplate)		
	[Motor freq.] (○Fr): Output frequency, from 0 to [Max frequency] (tFr) [Sig. o/p frq.] (○FS): Signed output frequency, between - [Max frequency] (tFr) and + [Max frequency] (tFr)		
OrP trq Stq	[Ramp out.] (OrP): From 0 to [Max frequency] (tFr) [Motor torq.] (trq): Motor torque, between 0 and 3 times the rated motor torque [Sign.torque] (Stq): Signed motor torque, between -3 and +3 times the rated motor torque. The + sign corresponds to the		
OPF	motor mode and the - sign to the generator mode (braking). [sign ramp] (OrS): Signed ramp output, between - [Max frequency] (tFr) and + [Max frequency] (tFr). [PID ref.] (OPS): PID regulator reference between [Min PID reference] (PIP1) and [Max PID reference] (PIP2). [PID feedbk] (OPF): PID regulator feedback between [Min PID feedback] (PIF1) and [Max PID feedback] (PIF2) [PID error] (OPE): PID regulator error between-5% and +5% of ([Max PID feedback] (PIF2) - [Min PID feedback]		
OPr UOP tHr	(PIF1)) [PID output] (OPI): PID regulator output between [Low speed] (LSP) and [High speed] (HSP) [Mot. power] (OPIr): Motor power, between 0 and 2.5 times [Rated motor power] (nPr) [Motor volt.] (UOP): Voltage applied to the motor, between 0 and [Rated motor volt.] (UnS) [Mot thermal] (tHr): Motor thermal state, between 0 and 200% of the rated thermal state		
tHr3	[Mot therm2] (tHr2): Motor thermal state 2, betw een 0 and 200 % of the rated thermal state [Mot therm3] (tHr3): Motor thermal state 3, betw een 0 and 200% of the rated thermal state [Drv thermal] (tHd): Drive thermal state, betw een 0 and 200% of the rated thermal state [Torque lim] (tqL): Torque limit, between 0 and 3 times the rated motor torque [dO1] (dO1): Assignment to a logic output. This assignment can only appear if [DO1 assignment] (dO1) has been assigned.		
tqMS	This is the only possible choice in this case, and is only displayed for informational purposes. [Torque 4Q] (tqMS): Signed motor torque, between -3 and +3 times the rated motor torque. The +sign and the -sign correspond to the physical direction of the torque, regardless of mode (motor organization). [OA01] (OA01): Function blocks: Analog Output 01		
	[OA10] (OA10): Function blocks: Analog Output 10		
AO1t	[AO1 Type]		[Current] (0A)
	[Voltage] (10U): Voltage output [Current] (0A): Current output		
AOL1	[AO1 min Output]	0 to 20.0 mA	0 mA
*	This parameter can be accessed if [AO1 Type] (AO1t) is set to [Curre	nt] (0A).	
AOH1	[AO1 max Output]	0 to 20.0 mA	20.0 mA
*	This parameter can be accessed if [AO1 Type] (AO1t) is set to [Current] (0A).		
UOL1	[AO1 min Output]	0 to 10.0 V	0 V
*	This parameter can be accessed if [AO1 Type] (AO1t) is set to [Voltage	e] (10U).	•
UOH1	[AO1 max Output]	0 to 10.0 V	10.0 V
*	This parameter can be accessed if [AO1 Type] (AO1t) is set to [Voltage	e] (10U).	
ASL1	[Scaling AO1 min]	0 to 100.0%	0%
	Scaling of the low er limit of the assigned parameter, as a % of the maximum		
ASH1	[Scaling AO1 max]	0 to 100.0%	100.0%
	Scaling of the upper limit of the assigned parameter, as a % of the maximur		
AO1F	[AO1 Filter]	0 to 10.00 s	0 s
	Interference filtering. This parameter is forced to 0 if [AO1 assignment] (A		

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

The following submenus group the alarms into 1 to 3 groups, each of which can be assigned to a relay or a logic output for remote signaling. These groups can also be displayed on the graphic display terminal (see [3.3 MONITORING CONFIG.] (MCF-) menu page 284) and viewed via the [1.2 MONITORING] (MOn-) menu page 47.

When one or a number of alarms selected in a group occurs, this alarm group is activated.

Code	Name / Description	
I_O-	[INPUTS / OUTPUTS CFG] (continued)	
A1C-	[ALARM GRP1 DEFINITION]	
	Selection to be made from the following list:	
PLA	[LI6=PTC al.] (PLA): Ll6 = PTCL alarm	
	[Ext. fault al.] (EFA): External fault alarm	
	[Under V. al.] (USA): Undervoltage alarm	
	[I attained] (CtA): Current threshold attained ([Current threshold] (Ctd) page 102)	
	[Freq.Th.att.] (FtA): Frequency threshold attained ([Freq. threshold] (Ftd) page 102)	
	[Freq. th.2 attained] (F2A): Frequency threshold 2 attained ([Freq. threshold 2] (F2d) page 102)	
	[Freq.ref.att] (SrA): Frequency reference attained	
	[Th.mot. att.] (tSA): Motor 1 thermal state attained	
	[Th.mot2att] (tS2): Motor 2 thermal state attained	
	[Th.mot3 att] (tS3): Motor 3 thermal state attained	
	[Uvolt warn] (UPA): Undervoltage threshold	
	[HSP attain.] (FLA): High speed attained	
	[Al. °C drv] (tHA): Drive overheating	
	[[PID erroral] (PEE): PID error alarm	
	[PID fdbk al.] (PFA): PID feedback alarm [Al3 Al. 4-20] (AP3): Alarm indicating absence of 4-20 mA signal on input Al3	
	[Lim T/I att.] (SSA): Torque limit alarm	
	[Th. drv. att.] (tAd): Drive thermal state attained	
	[IGBT alarm] (tJA): IGBT alarm	
	[Underload. Proc. Al.] (ULA): Underload alarm	
	[Overload. Proc. Al.] (OLA): Overload alarm	
	[Rope slack alarm] (rSdA): Rope slack (see [Rope slack config.] (rSd) parameter page 205)	
	[High torque alarm] (ttHA): Motor torque overshooting high threshold [High torque thd.] (ttH) page 102.	
	[Low torque alarm] (ttLA): Motor torque undershooting low threshold[Low torque thd.] (ttL) page 102.	
	[Freq. meter Alarm] (FqLA): Measured speed threshold attained: [Pulse warning thd.] (FqL) page 102.	
	[Dynamic load alarm] (dLdA): Load variation detection (see [DYNAMIC LOAD DETECT.] (dLd-) page 267).	
	See the multiple selection procedure on page 33 for the integrated display terminal, and page 24 for the graphic display terminal.	
A2C-	[ALARM GRP2 DEFINITION]	
	Identical to [ALARM GRP1 DEFINITION] (A1C-) page 145.	
A3C-	[ALARM GRP3 DEFINITION]	
	Identical to [ALARM GRP1 DEFINITION] (A1C-) page 145.	

Command

The parameters in the [COMMAND] (CtL-) menu can only be modified when the drive is stopped and no run command is present.

Command and reference channels

Run commands (forward, reverse, stop, etc.) and references can be sent using the following channels:

Command	Reference	
Terminals: logic inputs LI or analog inputs used as logic inputs LA Function blocks Remote display terminal Graphic display terminal Integrated Modbus Integrated CANopen® Communication card	Terminals: analog inputs AI, pulse input Function blocks Remote display terminal Graphic display terminal Integrated Modbus Integrated CANopen® Communication card +/- speed via the terminals +/- speed via the graphic display terminal	

A WARNING

UNANTICIPATED EQUIPMENT OPERATION

If analog inputs [A1] (A11) or [A2] (A12) are used as logic inputs ([LA1] (LA1) or [LA2] (LA2)), they remain active in their behaviors in analog input mode (example: [Ref.1 channel] (Fr1) is still set to [A1] (A11)).

Remove the configuration of [A1] (A11) or [A2] (A12) in analog input mode

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Note: [LA1] (LA1) and [LA2] (LA2) can be used as 2 logic inputs in source mode only.

- + 24 V power supply (max. 30 V)
- State 0 if < 7.5 V, state 1 if > 8.5 V.

Note: The stop keys on the graphic display terminal or remote display can be programmed as non-priority keys. A stop key can only have priority if the **[Stop Key priority]** (PSt) parameter in the **[COMMAND]** (CtL-) menu, page 154 is set to [Yes] (YES).

The behavior of the ER24 can be adapted according to requirements:

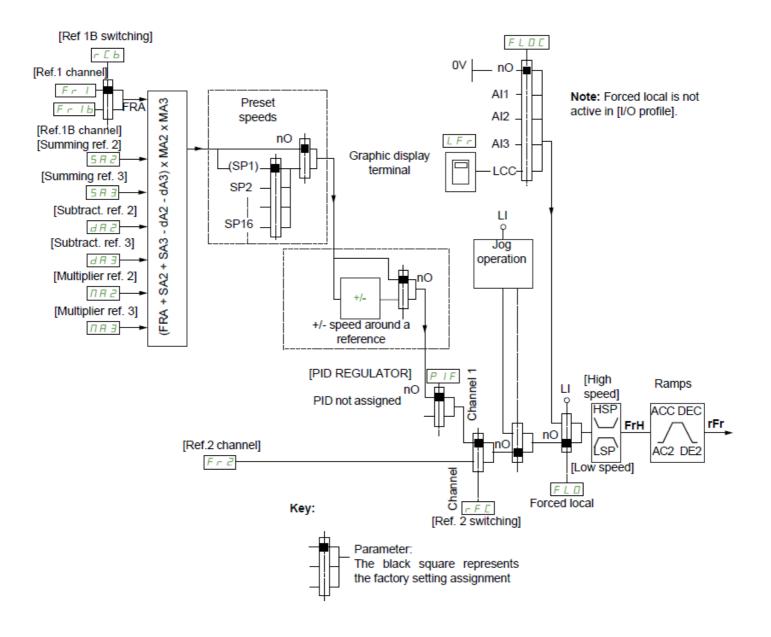
- [Not separ.] (SIM): Command and reference are sent via the same channel.
- [Separate] (SEP): Command and reference may be sent via different channels.

In these configurations, control via the communication bus is performed in accordance with the DRIVECOM standard with only 5 freely-assignable bits (see Communication Parameters Manual). The application functions cannot be accessed via the communication interface.

• [I/O profile] (IO): The command and the reference can come from different channels. This configuration both simplifies and extends use via the communication interface. Commands may be sent via the logic inputs on the terminals or via the communication bus. When commands are sent via a bus, they are available on a word, which acts as virtual terminals containing only logic inputs. Application functions can be assigned to the bits in this word. More than one function can be assigned to the same bit.

Note: Stop commands from the graphic display terminal or remote display terminal remain active even if the terminals are not the active command channel.

Reference channel for [Not separ.] (SIM), [Separate] (SEP) and [I/O profile] (IO) configurations, PID not configured



Fr1, SA2, SA3, dA2, dA3, MA2, MA3:

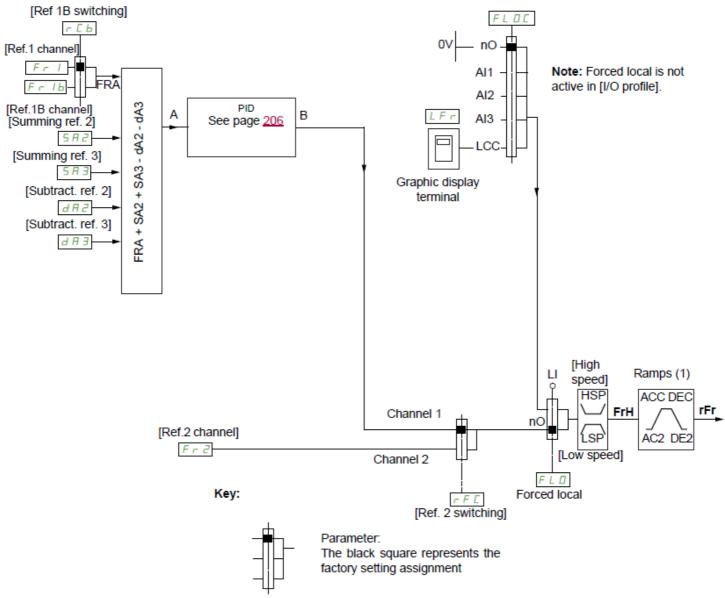
- Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card Fr1b, for SEP and IO:
- Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card Fr1b, for SIM:
- Terminals, only accessible if Fr1 = terminals

Fr2:

• Terminals, graphic displayterminal, integrated Modbus, integrated CANopen®, communication card, and +/- speed

Note: [Ref.1B channel] (Fr1b) and [Ref 1B switching] (rCb) must be configured in the [APPLICATION FUNCT.] (Fun-) menu.

Reference channel for [Not separ.] (SIM), [Separate] (SEP) and [I/O profile] (IO) configurations, PID configured with PID references at the terminals



(1) Ramps not active if the PID function is active in automatic mode.

Fr1:

- Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card Fr1b, for SEP and IO:
- Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card Fr1b, for SIM:
- Terminals, only accessible if Fr1 = terminals

SA2, SA3, dA2, dA3:

· Terminals only

Fr2:

Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card, and
 +/- speed

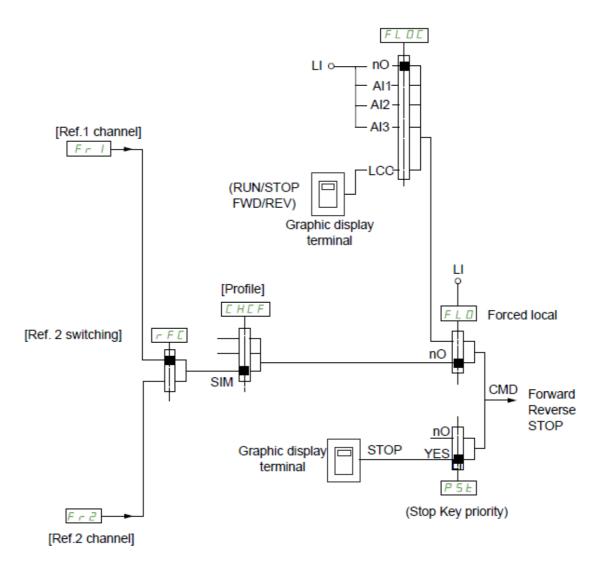
Note: [Ref.1B channel] (Fr1b) and [Ref 1B switching] (rCb) must be configured in the [APPLICATION FUNCT.] (Fun-) menu.

Command channel for [Not separ.] (SIM) configuration

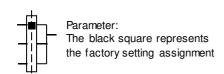
Reference and command, not separate

The command channel is determined by the reference channel. Parameters Fr1, Fr2, rFC, FLO and FLOC are common to reference and command.

Example: If the reference is Fr1 = Al1 (analog input at the terminals), control is via Ll (logic input at the terminals).



Key:



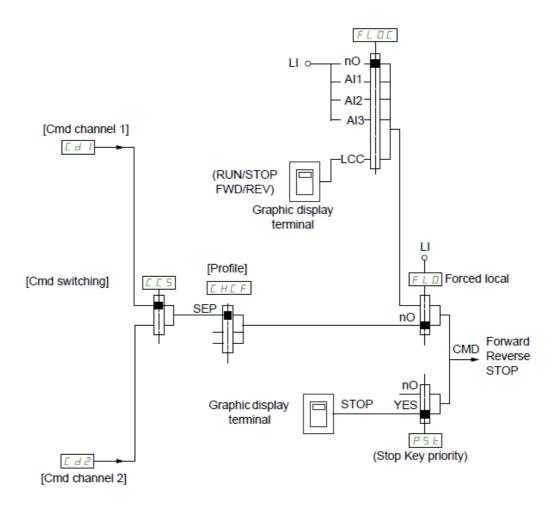
Command channel for [Separate] (SEP) configuration

Separate reference and command

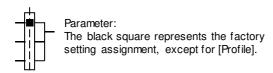
Parameters FLO and FLOC are common to reference and command.

Example: If the reference is inforced local mode via AI1 (analog input at the terminals), command inforced local mode is via LI (logic input at the terminals).

The command channels Cd1 and Cd2 are independent of the reference channels Fr1, Fr1b and Fr2.



Key:



Cd1, Cd2:

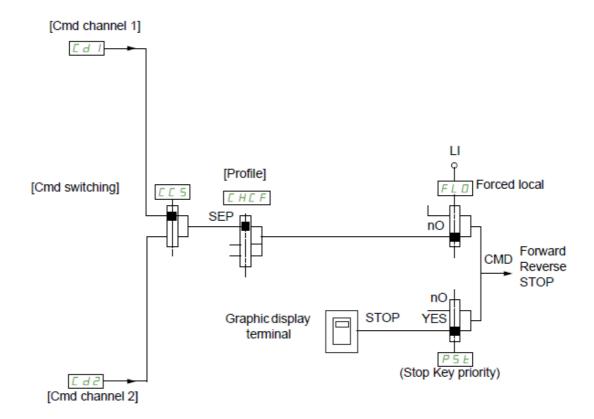
• Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card

DRI- > CONF > FULL > CTL-

Command channel for [I/O profile] (IO) configuration

Separate reference and command, as in [Separate] (SEP) configuration

The command channels Cd1 and Cd2 are independent of the reference channels Fr1, Fr1b and Fr2.



Key:



Parameter:

The black square represents the factory setting assignment, except for [Profile].

Cd1, Cd2:

• Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card

A command or an action can be assigned:

- To a fixed channel by selecting an LI input or a Cxxx bit:
 - By selecting, for example, LI3, this action will be triggered by LI3 regardless of which command channel is switched.
 - By selecting, for example, C214, this action will be triggered by integrated CANopen® with bit 14 regardless of which command channel is switched.
- To a switchable channel by selecting a CDxx bit:
 - By selecting, for example, Cd11, this action will be triggered by:

LI12 if the terminals channel is active

C111 if the integrated Modbus channel is active

C211 if the integrated CANopen® channel is active

C311 if the communication card channel is active

If the active channel is the graphic display terminal, the functions and commands assigned to CDxxswitchable internal bits are inactive.

Note: Cd06 to Cd13 can only be used for switching between 2 networks. They do not have equivalent logic inputs.

Terminals	Integrated Modbus	Communication card	Internal bit, can be switched	
				CD00
LI2 (1)	C101 (1)	C201 (1)	C301 (1)	CD01
LI3	C102	C202	C302	CD02
LI4	C103	C203	C303	CD03
LI5	C104	C204	C304	CD04
LI6	C105	C205	C305	CD05
-	C106	C206	C306	CD06
-	C107	C207	C307	CD07
-	C108	C208	C308	CD08
-	C109	C209	C309	CD09
-	C110	C210	C310	CD10
-	C111	C211	C311	CD11
-	C112	C212	C312	CD12
LAI1	C113	C213	C313	CD13
LAI2	C114	C214	C314	CD14
-	C115	C215	C315	CD15
OL01 to OL10				

 $^{(1) \ \ \}text{if [2/3 wire control] (tCC)} \ page \ \underline{85} \ \text{is set to [3 wire] (3C)}, \\ \ L12, C101, C201 \ \text{and C301} \ \text{cannot be accessed}.$

DRI- > CONF > FULL > CTL-

Assignment conditions for logic inputs and control bits

The following elements are available for every command or function that can be assigned to a logic input or a control bit:

[LI1] (LI1) to [LI6] (LI 🕎)	Drive w ith or w ithout option
[LAI1] (LAI1) to [LAI2] (LAI2)	Logical inputs
[C101] (C101) to [C110] (C110)	With integrated Modbus in [I/O profile] (IO) configuration
[C111] (C111) to [C115] (C115)	With integrated Modbus regardless of configuration
[C201] (C201) to [C210] (C210)	With integrated CANopen® in [I/O profile] (IO) configuration
[C211] (C211) to [C215] (C215)	With integrated CANopen® regardless of configuration
[C301] (C301) to [C310] (C310)	With a communication card in [I/O profile] (IO) configuration
[C311] (C311) to [C315] (C315)	With a communication card regardless of configuration
[CD00] (Cd00) to [CD10] (Cd10)	In [I/O profile] (IO) configuration
[CD11] (Cd11) to [CD15] (Cd15)	Regardless of configuration
[OL01] (OL01) to [OL10] (OL10)	Regardless of configuration

Note: In [I/O profile] (IO) configuration, LI1 cannot be accessed and if [2/3 wire control] (tCC) page 85 is set to [3 wire] (3C), LI2, C101, C201 and C301 cannot be accessed either.

AWARNING

LOSS OF CONTROL

Inactive communication channels are not monitored (no error detection in the event of a communication interruption).

Verify that using the commands and functions assigned to bits C101 to C315 does not result in unsafe conditions in the event of a communication interruption.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Code	Name / Description	Adjustment range	Factorysetting					
FULL	[FULL] (continued)							
CtL-	[COMMAND]							
Fr1	[Ref.1 channel]		[AI1] (A11)					
A11								
	[Al2] (A12): Analog input A2 [Al3] (A13): Analog input A3							
LCC	[HMI] (LCC): Graphic display terminal or remote display terminal source							
	[CANopen] (CAn): Integrated CANopen®							
nEt Pl	[Com. card] (nEt): Communication card (if inserted) [RP] (PI): Pulse input							
AIU1	[Al virtual 1] (AlU1): Virtual analog input 1 with the jog dial (only available	if [Profile] (CHCF) is n	ot set to					
0A01	[Not separ.] (SM)) [OA01] (OA01): Function blocks: Analog Output 01							
OA10	[OA10] (OA10): Function blocks: Analog Output 10							
rln	[RV Inhibition]		[No] (nO)					
	Inhibition of movement in reverse direction, does not apply to direction requests Reverse direction requests sent by logic inputs are taken into account. Reverse direction requests sent by the graphic display terminal are not taken Reverse direction requests sent by the fieldbus are not taken into account. Any reverse speed reference originating from the PID, summing input, etc., is	n into account.						
nO YES								
PSt	[Stop Key priority]		[Yes] (YES)					
₹2 s	LOSS OF CONTROL	i						
	This function disables the Stop keys of the Remote Display Terminic channel] (CMdC) is not [HMI] (HMI).	alif the setting of the p	arameter [Command					
	Only setthis parameter to [No] (nO) if you have implemented apprailure to follow these instructions can result in death, serious	-						
	This will be a freew heelstop. If the active command channel is the graphic disto the [Type of stop] (Stt) page 173 irrespective of the configuration of [St							
nO YES	[No] (nO) [Yes] (YES): Gives priority to the STOP key on the graphic display terminal the command channel.	w hen the graphic displa	y terminal is not enabled as					
CHCF	[Profile]		[Not separ.] (SIM)					
🔀 2 s	▲ WARNING	ì						
	UNANTICIPATED EQUIPMENT OPERATION Disabling [I/O profile] (IO) resets the drive to the factory settings.							
	Verify that restoring the factory settings is compatible with the type of wiring used.							
	Failure to follow these instructions can result in death, seriou		ent damage.					
SIM SEP IO		annot be accessed in	[I/O profile] (IO).					

DRI- > CONF > FULL > CTL-

Code	Name / Description	Adjustment range	Factory setting							
CCS	[Cmd switching]		[ch1 active] (Cd1)							
*	If the assigned input or bit is at 0, channel [Cmd channel 1] (Cd1) is acti	This parameter can be accessed if [Profile] (CHCF) is set to [Separate] (SEP) or [I/O profile] (IO). If the assigned input or bit is at 0, channel [Cmd channel 1] (Cd1) is active. If the assigned input or bit is at 1, channel [Cmd channel 2] (Cd2) is active.								
Cd2	[ch1 active] (Cd1): [Cmd channel 1] (Cd1) active (no switching) [ch2 active] (Cd2): [Cmd channel 2] (Cd2) active (no switching) [Ll1] (Ll1): Logical input Ll1									
	[] (): See the assignment conditions on page 153 (not Cd00 to Cd1	5)	IT							
Cd1	[Cmd channel 1]		[Terminals] (t ⊑ r)							
*	This parameter can be accessed if [Profile] (CHCF) is set to [Separate]	(SEP) or [I/O profile] ((IO).							
	[Terminals] (t □ r): Terminals [HMI] (LCC): Graphic display terminal or remote display terminal [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com.card] (n⊞): Communication card (if inserted)									
Cd2	[Cmd channel 2]		[Modbus] (Mdb)							
*	This parameter can be accessed if [Profile] (CHCF) is set to [Separate]	(SEP) or [I/O profile] (IO).							
LCC Mdb CAn	[Terminals] (t r): Terminals [HMI] (LCC): Graphic display terminal or remote display terminal [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com. card] (n⊞): Communication card (if inserted)									
rFC	[Ref. 2 switching]		[Ref.1 channel] (Fr1)							
	This parameter can be accessed if [Profile] (CHCF) is set to [Separate] If the assigned input or bit is at 0, channel [Cmd channel 1] (Cd1) is actified the assigned input or bit is at 1, channel [Cmd channel 2] (Cd2) is actified to the channel 2 of the channel	ve.	lO).							
Fr2	[Ref. 1 channel] (Fr1): [Cmd channel1] (Cd1) active (no switching) [Ref. 2 channel] (Fr2): [Cmd channel2] (Cd2) active (no switching) [LI1] (LI1): Logical input LI1									
	[] (): See the assignment conditions on page 153 (not Cd00 to Cd1	5)								
Fr2	[Ref.2 channel]		[No] (nO)							
	[No] (nO): Not assigned. If [Profile] (CHCF) is set to [Not separ.] (SIM), reference. If [Profile] (CHCF) is set to [Separate] (SEP) or [I/O profile] (SEP) as set to [Separate] (SEP) or [I/O profile] (SEP) or [I/O profile] (SEP) as set to [Separate] (SEP) or [I/O profile] (SEP) or [I/O profile] (SEP) as set to [Separate] (SEP) or [I/O profile] (SEP) or [I/O profile] (SEP) or [I/O profile] (SEP) as set to [Separate] (SEP) or [I/O profile] (SEP) or [I/O pr									
	[Al1] (A11): Analog input A1 [Al2] (A12): Analog input A2									
A13	[Al3] (A13): Analog input A3									
	[+/-Speed] (UPdt): +/- speed command									
	[HMI] (LCC): Graphic display terminal or remote display terminal [Modbus] (Mdb): Integrated Modbus									
CAn	[CANopen] (CAn): Integrated CANopen®									
	[Com. card] (n⊞): Communication card (if inserted) [RP] (PI): Pulse input									
	[Al virtual 1] (AlU1): Virtual analog input 1 with the jog dial									
	[OA01] (OA01): Function blocks: Analog Output 01									
OA10	[OA10] (OA10): Function blocks: Analog Output 10									

DRI- > CONF > FULL > CTL-

Code	Name / Description	Adjustment range	Factory setting					
COP	[Copy channel 1 <> 2]	-	[No] (nO)					
₹2 s	▲ WAR	NING						
	UNANTICIPATED EQUIPMENT OPERATION This parameter can cause unintended movements, for example, inversion of the direction of rotation of the motor, sudden acceleration or stops.							
	 Verify that the setting of this parameter does not cause unintended movements. Verify that the setting of this parameter does not result in unsafe conditions Failure to follow these instructions can result in death, serious injury, or equipment damage. 							
	Can be used to copy the current reference and/or the command b example. If [Profile] (CHCF) page 154 is set to [Not separ.] (SIM) or [Separation or [Separa	,	, ,					
	to channel 2. If [Profile] (CHCF) is set to [I/O profile] (IO), copying will be possible in both directions. A reference or a command cannot be copied to a channel on the terminals. The reference copied is [Frequencyref.] (FrH) (before ramp) unless the destination channel reference is set via +/- speed. In this case, the reference copied is [Output frequency] (rFr) (after ramp).							
	[No] (nO): No copy [Reference] (SP): Copy reference [Command] (Cd): Copy command LL [Cmd+ref.] (ALL): Copy command and reference							



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > CTL-

As the graphic display terminal may be selected as the command and/or reference channel, its action modes can be configured.

The parameters on this page can only be accessed on the graphic display terminal, and not on the integrated display terminal.

Comments:

- The display terminal command/reference is only active if the command and/or reference channels from the terminal are active with the exception of [T/K] (Ft) (command via the display terminal), which takes priority over these channels. Press [T/K] (Ft) (command via the display terminal) again to revert control to the selected channel.
- Command and reference via the display terminal are impossible if the latter is connected to more than one drive.
- The JOG, preset speed and +/- speed functions can only be accessed if [Profile] (CHCF) is set to [Not separ.] (SIM).
- The preset PID reference functions can only be accessed if [Profile] (CHCF) is set to [Not separ.] (SIM) or [Separate] (SEP).
- The [T/K] (Ft) (command via the display terminal) can be accessed regardless of the [Profile] (CHCF).

Code	Name / Description	Adjustment range	Factory setting						
Fn1	[F1 key assignment]		[No] (nO)						
FJOG									
FPS2	[Preset spd3] (FPS2): Press the key to run the drive at the 3rd preset specto stop the drive.	ed [Preset speed 3] (Si	P3) page <u>97</u> . Press STOP						
FPr1	[PID ref. 2] (FPr1): Sets a PID reference equal to the 2nd preset PID reference [Preset ref. PID 2] (rP2) page 99, without sending a run command. Only operates if [Ref.1 channel] (Fr1) is set to [HMI] (LCC). Does not operate with the [T/K] (Ft) function.								
	PID ref. 3] (FPr2): Sets a PID reference equal to the 3rd preset PID reference [Presetref. PID 3] (rP3) page 100, without sending a run command. Only operates if [Ref.1 channel] (Fr1) is set to [HMI] (LCC). Does not operate with the [T/K] (Ft) unction.								
FuSP	+speed] (FUSP): Faster, only operates if [Ref.2 channel] (Fr2) is set to [HMI] (LCC). Press the key to run the drive and increase the speed. Press STOP to stop the drive.								
	[-speed] (FdSP): Slower, only operates if [Ref.2 channel] (Fr2) is set to [HMI] (LCC) and if a different key has been assigned to [+speed]. Press the key to run the drive and decrease the speed. Press STOP to stop the drive. [T/K] (Ft): Command via the display terminal: Takes priority over [Cmd switching] (CCS) and over [Ref. 2 switching] (rFC).								
Fn2	[F2 key assignment]		[No] (nO)						
	Identical to [F1 key assignment] (Fn1) page 157.								
Fn3	[F3 key assignment]		[No] (nO)						
	Identical to [F1 key assignment] (Fn1) page 157.								
Fn4	[F4 key assignment]		[No] (nO)						
	Identical to [F1 key assignment] (Fn1) page 157.	Identical to [F1 key assignment] (Fn1) page 157.							
bMp	[HMI cmd.]		[Stop] (StOP)						
*	When the [T/K] (Ft) function is assigned to a key and that function is active, this parameter defines the behavior at the moment when control returns to the graphic display terminal or remote display terminal.								
	[Stop] (StOP): Stops the drive (although the controlled direction of operation (to be taken into account on the next RUN command)).	·	•						
bUMF	[Bumpless] (bUMF): Does not stop the drive (the controlled direction of operare copied)	eration and the reference	of the previous channel						

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > FBM- > MFB-

Function Block Management

Code	Name / Description Adjustment range Factory setting								
FULL	[FULL] (continued)		_						
FbM-	[FUNCTION BLOCKS]								
MFb-	[MONIT. FUN. BLOCKS]								
	Note: This section shows only what is possible to dow ith local or remote dis PC software, please refer to the dedicated Function blocks manual.	splay on the drive. For ac	dvanced configuration using						
FbSt	[FB Status]								
CHEC StOP InIt rUn Err	[Idle] (IdLE): No binary file in the target, the FB is w aiting for a dow nload [Check prog.] (CHEC): Check the program dow nloaded [Stop] (StOP): The Function blocks application is stopped [Init] (Init): Check coherency between Logic program and Function blocks parameters [Run] (rUn): The Function blocks application is running [Error] (Err): An internal error has been detected. The Function blocks application is in fault state mode.								
FbFt	[FB Fault]								
Int bln InP PAr CAL tOAU tOPP AdL	[No] (nO): No detected fault [Internal] (Int:): Internal detected error [Binary file] (bIn): Binary file corrupted [Intern Para.] (InP): Internal parameter detected error [Para. RW] (PAr): Parameter access detected error [Calculation] (CAL): Calculation detected error [TO AUX] (tOAU): TimeOut AUX task [TO synch] (tOPP): TimeOut in PRE/POST task [Bad ADLC] (AdL): ADLC with bad parameter [Input assig.] (In): Input not configured								
FbI-	[FB IDENTIFICATION]								
bUEr	[Program version]	0 to 255	-						
*	Program user version.								
bnS	[Program size]	0 to 65,535	-						
*	Program file size.		1						
bnU	[Prg. format version]	0 to 255	-						
	Binary format version of the drive.								
CtU	[Catalog version]	0 to 65,535	-						
	Catalog version of the drive.	,							
FbM-	[FUNCTION BLOCKS] (continued)								
FbCd	[FB Command]								
O	Allows to start and stop the function blocks manually.								
StOP	[FB Command] (FbCd) is forced to [Stop] (StOP) if there is no valid function blocks application in the drive memory. [FB Command] (FbCd) is set to [Start] (Strt) when the function blocks application switch to Run according to [FB start mode] (FbrM) configuration. Note: As soon as the function blocks are started, the drive is considered as in running state and the modification of configuration parameters is no longer possible.								
	[Stor] (StOP): Function blocks application Stop command [Start] (Strt): Function blocks application Start command								

Allow s to choose the different ways of starting the Function blocks application. Note: Modifications of this parameter are not taken into account if the Function blocks application is running. 100 [Mo] (nO): Function blocks application is controlled by [FB command] (FbCd) parameter [Yes] (Yes]: Function blocks application switches to Run automatically at drive power on [Litt] (Litt): Function blocks application switches to Run an arising edge of the logic input. It is witch to Stop on fathe logic input. 111 [Litt] (Litt): Function blocks application switches to Run on a rising edge of the logic input. It switch to Stop on fathe logic input. 112 [Litt] (Litt): Function blocks application switches to Run on a rising edge of the logic input. It switch to Stop on fathe logic input. 112 [Litt] (Litt): Function blocks application switches to Run on a rising edge of the logic input. It switch to Stop on fathe logic input. 113 [Stop FB Stop motor] 114 [Stop FB Stop motor] 115 [Stop FB Stop motor] 115 [Stop FB Stop motor] 116 [Stop FB Stop motor] 117 [Stop FB stop motor] 118 [Stop FB Stop motor] 119 [Stop FB Stop motor] 119 [Input Stop FB Stop motor] 110 [Input Stop FB Stop motor] 110 [Input Stop FB Stop motor] 111 [Input Stop FB Stop Motor stops in freewheel risks at the stop of the drive when function blocks are stopped. 111 [Input Stop Input Stop Stop Stop FB Stop Stop Stop Stop Stop Stop Stop Stop	Code	Name / Description	Adjustment range	Factory setting							
UNANTICIPATED EQUIPMENT OPERATION Depending on the setting of this parameter, function blocks may be immediately executed. • Verify that this setting does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage allows to choose the different ways of starting the Function blocks application. Note: Modifications of this parameter are not taken into account if the Function blocks application is running. **Note: Modifications of this parameter are not taken into account if the Function blocks application is unlocked by [FB command] (FbCd) parameter (Yes) (Yes): Function blocks application is witches to Run automatically at drive power on the logic input. **LI11** [LI11]: Function blocks application switches to Run on a rising edge of the logic input. It switch to Stop on failure to follow the season of the logic input. **LI11** [LI12]: Function blocks application switches to Run on a rising edge of the logic input. It switch to Stop on failure to follow the season of the drive witches to Run on a rising edge of the logic input. It switch to Stop on failure to follow these instructions can result in death, serious injury, or equipment damage Allows to setup the way of working of the drive when function blocks are stopped. **Display** [Incomment of the drive drive when function blocks are stopped.**] **Display** [Incomment of function blocks in free wheel rMP [Ramp stop] (MP): Ramp stop (MP	FbrM	[FB start mode]		[No] (nO)							
UNANTICIPATED EQUIPMENT OPERATION Depending on the setting of this parameter, function blocks may be immediately executed. • Verify that this setting does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage allows to choose the different ways of starting the Function blocks application. Note: Modifications of this parameter are not taken into account if the Function blocks application is running. [No] (nO): Function blocks application is controlled by [FB command] (FbCd) parameter (Yes) (Yes): Function blocks application switches to Run on a rising edge of the logic input. It is which to Stop on faith logic input. [In] (): See the assignment conditions on page 153 (not [01.10] (OL01) to [01.10] (OL10)). [Stop FB Stop motor] [Freewheet A WARNING LOSS OF CONTROL If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program will stopped. • Only setthis parameter to [No] (nO) if you have implemented appropriate alternative stop functifications to setup the way of working of the drive when function blocks are stopped. no [Ignore] (nO): The drive does not stop YES [Freewheet] (YES): Motor stops in freewheet IMP [Ramp stop] (mM): Ramp stop First [Fest stop] (FbS): Fast stop GCI [DC injection] (GC): DC injection FDDF [FB on drive fault] Behavior of function blocks when the drive trips. STOP [Ignore] (SD): Function blocks stops when the drive trips, outputs are realeased Ignore] (SD): Function blocks stops when the drive trips, outputs are realeased Ignore] (SD): Function blocks continue to work when the drive trips (except CFF and INFE) FDA— [INPUTS ASSIGNMENTS] [LOgic input 1 assignment] Possible assignment for the Function block logic input. no [No] (nO): Not assigned FLt. [Ref. 1, channel] (Fr1): Prive fault detection status (relay normally energized, and de-energized in the event of an erformation of the function blocks are stopped (Fr2) page 1020 FEA [Feq. 1.1. 2 stationed] (Fr				_							
Note: Modifications of this parameter are not taken into account if the Function blocks application is running. Note: Modifications of this parameter are not taken into account if the Function blocks application is controlled by [FB command] (FbCd) parameter [Yes] (YES): Function blocks application is writches to Run understale) at driver power on [Lift] (Lift): Function blocks application swritches to Run on a rising edge of the logic input. It is writch to be input.	2 2 s	UNANTICIPATED EQUIPMENT OPERATION Depending on the setting of this parameter, function blocks maybe immediately executed.									
the logic input. [] (): See the assignment conditions on page 153 (not [OL10] (OL01) to [OL10] (OL10)). [Stop FB Stop motor] [Istop FB Stop motor] [Istop FB Stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program will stopped. • Only set this parameter to [No] (nO) if you have implemented appropriate alternative stop functing failure to follow these instructions can result in death, serious injury, or equipment damage. Allow s to setup the way of working of the drive when function blocks are stopped. no [Ignore] (nO): The drive does not stop yes [Freewheel] (YES): Motor stops in freewheel [Ramp stop] (rMP): Ramp stop Frest heel] (YES): Motor stops in freewheel [Ramp stop] (rMP): Pamp stop Frest heel] (YES): Motor stops in freewheel [Ramp stop] (rMP): Pamp stop [Do injection] (dC): Do injection FbdF [FB on drive fault] [Stop] (Stop): Function blocks when the drive trips, outputs are realeased [Ignore] (Gn): Function blocks continue to work when the drive trips (except CFF and INFE) FbA- [INPUTS ASSIGNMENTS] ILO 1 [Logic input 1 assignment] [No] (nO): Not assigned No drive fit] (FL1): Drive fault detection status (relay normally energized, and de-energized in the event of an energy of the continuation of the function block logic input. No [No] (nO): Not assigned No drive fit] (FL1): Drive fault detection status (relay normally energized, and de-energized in the event of an energy of the continuation of the function block logic input. No [No] (nO): Not assigned [No] (FC) (Feq. threshold) (FCd) page 102) Fr1 [Ref.1 channel] (FA): Frequency threshold attained ([Freq. threshold] (FCd) page 102) Fr1 [Ref.1 channel] (FF) Reference source 1 [Ref.2 channel] (FF) Reference source 2 [Ref.2 chann	YES	Note: Modifications of this parameter are not taken into account if the Function [No] (nO): Function blocks application is controlled by [FB command] (F[Yes] (YES): Function blocks application switches to Run automatically at dr	Note: Modifications of this parameter are not taken into account if the Function blocks application is running. [No] (nO): Function blocks application is controlled by [FB command] (FbCd) parameter								
Stop FB Stop motor		the logic input.		-							
LOSS OF CONTROL If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program wistopped. • Only set this parameter to [No] (nO) if you have implemented appropriate alternative stop functification to follow these instructions can result in death, serious injury, or equipment damage Allows to setup the way of working of the drive when function blocks are stopped. Ignore] (nO): The drive does not stop [Ignore] (nO): The drive does not stop [Ignore] (nO): The drive does not stop [Fee wheel] (YES): Motor stops in freewheel [Ramp stop] (rMP): Ramp stop [Fast stop] (rSI): Fast stop [IGD injection] (ICI): Dic injection [Fbd IFB on drive fault] Behavior of function blocks when the drive trips, outputs are realeased [Ignore] ((Gn): Function blocks stops when the drive trips, outputs are realeased [Ignore] ((Gn): Function blocks continue to work when the drive trips (except CFF and INFE) FbA IINPUTS ASSIGNMENTS] ILO 1 [No] (nO): Not assigned FLt (No drive fit) (FLL): Drive fault detection status (relay normally energized, and de-energized in the event of an ere freq. Th. a tatain.) (Fr1): Frequency threshold attained ([Freq. threshold 2] (F2d) page 102) [Feq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq. threshold 2] (F2d) page 102) [Feq. Th. 2 attained] (F2): Reference source 1 [Ref. 2 channel] (F7): Reference source 1 [Ref. 2 channel] (F7): Reference cource 1 [Cd1 (ch1 active) (Cd1): Command channel = channel 1 (for [Cmd switching] (CSS)) [Ref. 18 channel] (F71): Reference channel = channel 1 (for [Ref. 2 switching] (CSS)) [Ref. 18 channel] (F71): Reference channel = channel 1 (for [Ref. 2 switching] (CSS)) [Ref. 18 channel] (F71): Reference channel = channel 1 (for [Ref. 2 switching] (CSS)) [Ref. 18 channel] (F71): Reference channel = channel 1 (for [Ref. 2 switching] (CSS))			01) to [OL10] (OL10)								
LOSS OF CONTROL If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program will stopped. • Only setthis parameter to [No] (nO) if you have implemented appropriate alternative stop functification to follow these instructions can result in death, serious injury, or equipment damage. Allow s to setup the way of working of the drive when function blocks are stopped. [Ignore] (nO): The drive does not stop [Freewheel] (YES): Motor stops in freewheel [Ramp stop] (rMP): Ramp stop [Fast stop] (rMP): Ramp stop [Fast stop] (rMP): Ramp stop [Ignore] [Ignore] (Ignore): The properties of the drive trips. Stop [Ignore] (Ignore): Function blocks when the drive trips, outputs are realeased [Ignore] (Ignore): Function blocks continue to work when the drive trips (except CFF and INFE) FDA- [INPUTS ASSIGNMENTS] [No] (nO): Not assigned [FLt [Freq. Th. attain.] (FLA): Frequency threshold attained ([Freq. threshold] (Ftd) page 102) [Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq. threshold] (Ftd) page 102) [Freq. Th. 1 channel] (Fr1): Peterence source 1 [Ref.2 channel] (Fr2) Reference source 2 [cdt] (cht active] (Cd1): Command channel = channel 1 (for [Cmd switching] (CSS)) [Fr1b [Ref.1 channel] (Fr1b): Reference channel = channel 1b (for [Ref. 2 switching] (rFC)) [Yes] (YES): Yes [Li1] (Li11): Logical input Li1	FbSM	[Stop FB Stop motor]		[Freewheel] (YES)							
If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program will stopped. • Only set this parameter to [No] (nO) if you have implemented appropriate alternative stop functification and the stop of the drive will be set instructions can result in death, serious injury, or equipment damage allows to set up the way of working of the drive when function blocks are stopped. **Read of the stop of the drive will be stop of the drive when function blocks are stopped. **Read of the stop of the stop of the drive when function blocks are stopped. **Read of the stop of the s		▲ WARNING									
If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program wistopped. • Only set this parameter to [No] (nO) if you have implemented appropriate alternative stop functification and the program wistopped. Allows to setup the way of working of the drive when function blocks are stopped. Ignore] (nO): The drive does not stop [Free wheel] (YES): Motor stops in freew heel [Ramp stop] (rMP): Ramp stop [Fast stop] (FSI): Fast stop [CID injection] (dCI): DC injection FbdF [Stop] (SlOP): Function blocks when the drive trips. StoP [Stop] (SlOP): Function blocks stops when the drive trips, outputs are realeased [Ignore] (Gn): Function blocks continue to work when the drive trips (except CFF and INFE) FbA- [INPUTS ASSIGNMENTS] [No] (nO): Not assigned FLt [No] (nO): Not assigned FLt [Freq. Th. 2 attained] (F2A): Frequency threshold attained ([Freq. threshold] (Ftd) page 102) Fr1 [Ref.1 channel] (Fr1) Reference source 1 [Ref.2 channel] (Fr2) Reference source 2 [ch1 active] (Cd1): Command channel = channel 1 (for [Cmd switching] (CSS)) [Fr1b [Ref.18 channel] (Fr1b): Reference channel = channel 1b (for [Ref. 2 switching] (rFC)) YES] [YES] (YES): Yes L11 [L11] (L11): Logical input L11		_									
Failure to follow these instructions can result in death, serious injury, or equipment damage Allows to setup the way of working of the drive when function blocks are stopped. Ignore] (nO): The drive does not stop YES Freewheel] (YES): Motor stops in freewheel Ramp stop] (rMP): Ramp stop) Fast stop] (FSt): Fast stop Fast stop] (FSt): Fast stop Ignore] (IDC injection] (dC): DC injection IFB on drive fault] Behavior of function blocks when the drive trips, outputs are realeased Ignore] (IGn): Function blocks continue to work when the drive trips (except CFF and INFE) INPUTS ASSIGNMENTS ILO1 [Logic input 1 assignment]		If [Stop FB stop motor] (FbSM) is set to [No] (nO), the motor will not stop when the program will be									
Ignore] (n0): The drive does not stop Freew heel] (YES): Motor stops in freew heel Ramp stop] (rMP): Ramp stop Fast stop] (FSt): Fast stop Ign injection] (dCl): DC injection FbdF FB on drive fault] Behavior of function blocks when the drive trips. StoP Ign (SiOP): Function blocks stops when the drive trips, outputs are realeased Ignore] (Ign): Function blocks continue to work when the drive trips (except CFF and INFE) FbA- INPUTS ASSIGNMENTS ILO 1 ILogic input 1 assignment Possible assignment for the Function block logic input. No InO : Not assigned FtA Freq. Th. attain.] (FtA): Frequency threshold attained ([Freq. threshold] (Ftd) page 102) F2A Fr1 Freq. Th. attain.] (Fr1A): Frequency threshold 2 attained ([Freq. threshold 2] (F2d) page 102) Freg. Th. 2 attained] (Fr2): Peference source 1 Fr2 Ref.1 channel] (Fr1) Peference source 2 Cd1 Indicated (Id1): Command channel = channel 1 (for [Cmd switching] (CSS)) Int		• Only set this parameter to [No] (nO) if you have implemented appropriate alternative stop functions. Failure to follow these instructions can result in death, serious injury, or equipment damage.									
Freewheel (YES): Motor stops in freewheel Ramp stop (rMP): Ramp stop FSt Ramp stop (rMP): Ramp stop Rast stop (rMP): Fast stop		Allows to setup the way of working of the drive when function blocks are stopped.									
Stop (Stop) (Stop): Function blocks when the drive trips. Stop (Stop) (Stop): Function blocks stops when the drive trips, outputs are realeased [Ignore] (Ignore) (Ignore): Function blocks continue to work when the drive trips (except CFF and INFE) INPUTS ASSIGNMENTS	YES rMP FSt	<pre>[Freew heel] (YES): Motor stops in freew heel [Ramp stop] (rMP): Ramp stop [Fast stop] (FSt): Fast stop</pre>									
Behavior of function blocks when the drive trips. StOP [Stop] (StOP): Function blocks stops when the drive trips, outputs are realeased [Ignore] (Ign): Function blocks continue to work when the drive trips (except CFF and INFE) FbA- [INPUTS ASSIGNMENTS] [Logic input 1 assignment] Possible assignment for the Function block logic input. [No] (nO): Not assigned [No drive flt] (FLt): Drive fault detection status (relay normally energized, and de-energized in the event of an erection of the foliation of the first page 102 (Freq. Th. attain.) (FtA): Frequency threshold attained ([Freq. threshold] (Ftd) page 102 (Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq. threshold 2] (F2d) page 102 (Freq. threshold 2] (F2d) page 102 (Freq. threshold 2] (F2d) page 102 (Freq. threshold 2] (F2d) page 102 (F1) (F1) (F1) (F1) (F1) (F1) (F1) (F1)				[Stop] (StOP)							
[Stop] (StOP): Function blocks stops when the drive trips, outputs are realeased [Ignore] (IGn): Function blocks continue to work when the drive trips (except CFF and INFE) [INPUTS ASSIGNMENTS] [Logic input 1 assignment] Possible assignment for the Function block logic input. [No] (nO): Not assigned [No drive fit] (FLt): Drive fault detection status (relay normally energized, and de-energized in the event of an erection of the fired in the event of th	FBGF	-		[Stop] (Stor)							
[Inputs assignment] [No] (no): Not assigned [No] (real threshold (Freq. threshold) (Ftd) page 102) [Ref.1 channel] (Fr1) Reference source 2 [Cota active] (Cd2): Command channel = channel 1 (for [Cmd switching] (CSS)) [Ref.1 b channel] (Fr1b): Reference channel = channel 1b (for [Ref. 2 switching] (FCC)) [Yes] (YES): Yes [Li1] (LI1): Logical input L11	O.O.D.	·									
ILO1 [Logic input 1 assignment] [No] (nO)											
[No] (nO) Possible assignment for the Function block logic input. Indicate Indic	FbA-	[INPUTS ASSIGNMENTS]	·								
Possible assignment for the Function block logic input. No (No) (nO): Not assigned		[Logic input 1 assignment]		[No] (nO)							
[No drive fit] (FLt): Drive fault detection status (relay normally energized, and de-energized in the event of an ereft. FtA F2A F2A F71 [Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq. threshold] (Ftd) page 102) [Ref.1 channel] (F71) Reference source 1 F72 [Ref.2 channel] (F72) Reference source 2 [ch1 active] (Cd1): Command channel = channel 1 (for [Cmd switching] (CSS)) [ch2 active] (Cd2): Command channel = channel 2 (for [Cmd switching] (CSS)) [Ref.1B channel] (F71b): Reference channel = channel 1b (for [Ref. 2 switching] (rFC)) YES L11 [L11] (L11): Logical input L11		Possible assignment for the Function block logic input.									
Cd1 [ch1 active] (Cd1): Command channel = channel 1 (for [Cmd switching] (CSS)) [ch2 active] (Cd2): Command channel = channel 2 (for [Cmd switching] (CSS)) Fr1b [Ref.1B channel] (Fr1b): Reference channel = channel 1b (for [Ref. 2 switching] (rFC)) YES (YES): Yes [Ll1] (Ll1): Logical input Ll1	FLt FtA F2A	[No drive flt] (FLt): Drive fault detection status (relay normally energized, a [Freq.Th. attain.] (FtA): Frequency threshold attained ([Freq.threshold] Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained ([Freq.theshold])	old] (Ftd) page <u>102</u>)								
	Cd1 Cd2 Fr1b YES	[ch1 active] (Cd1): Command channel = channel 1 (for [Cmd switching] [ch2 active] (Cd2): Command channel = channel 2 (for [Cmd switching] [Ref.1B channel] (Fr1b): Reference channel = channel 1b (for [Ref. 2 swit [Yes] (YES): Yes	(CSS))								
	_	[] (): See the assignment conditions on page 153		T							
[No] (nO) All the Function Blocks logic inputs available on the drive are processed as in the example for [Logic input 1 assignment] (IL01) above, up to [Logic input 10 assignment] (IL10).	IL	All the Function Blocks logic inputs available on the drive are processed as in		[No] (nO)							

IA01	FAmilia di mandi di angli manggarati										
	[Analog input 1 assignment]		[No] (nO)								
1	Possible assignment for the Function block analog input.										
nO	[No] (nO): Not assigned										
A11	[Al1] (A11): Analog input A1										
	[AI2] (A12): Analog input A2										
	Al3] (A13): Analog input A3 I motor] (OCir): Motor current										
	Motor freq.] (OFr): Motor speed										
OrP	Ramp. out] (OrP): Ramp output										
	[Motor torq.] (trq): Motor torque										
	[Sign torque] (Stq): Signed motor torque [Sign ramp] (OrS): Signed ramp output										
	[PID ref.] (OPS): PI(D) reference										
OPF	[PID feedbk] (OPF): PI(D) feedback										
	[PID error] (○PE): PI(D) error [PID output] (○P I): PI(D) integral										
	[Mot.power] (OPr): Motor power										
	[Mot. thermal] (tHr): Motor thermal state										
	[Drv thermal] (tHd): Drive thermal state										
	[Torque 4Q] (tqMS): Signed motor torque [+/-Speed] (UPdt): Up/Down function is assigned by Lix										
	[+/-spd HMI] (UPdH): Up/Down function is assigned by graphic display tern	ninal or remote display	terminal								
LCC	[HMI] (LCC): Graphic display terminal or remote display terminal source										
	[Modbus] (Mdb): Integrated Modbus										
	[CANopen] (CAn): Integrated CANopen® [Com. card] (n E t): Communication option board source										
	[Sig. o/p frq.] (OFS): Signed output frequency										
	[Mot therm 2] (tHr2): Motor 2 thermal state										
	[Mot therm3] (tHr3): Motor 3 thermal state [Torque lim.] (tqL): Torque limitation										
	[Motorvolt.] (UOP): Motor voltage										
PI	[RP] (PI): Pulse input										
	[Al virtual 1] (AlU1): Virtual analog input 1 with the jog dial										
	[DO1] (dO1): Analog/logical output DO1 [Al virtual 2] (AIU2): Virtual analog input 2 by the communication but	3									
	[OA01] (OA01): Function blocks: Analog Output 01										
	[OA10] (OA10): Function blocks: Analog Output 10										
	[Analog input x assignment]		[No] (nO)								
1		us in the example for [[A									
	All the Function blocks analog inputs available on the drive are processed as in the example for [IA01] (IA01) above, up to [IA10] (IA10).										
FbM-	[FUNCTION BLOCKS] (continued)										
FAd-	[ADL CONTAINERS]										
	ADL containers contain Modbus logical adress of internal parameters of the drive. If the chosen adress is valid, the display shows the parameter name instead of the adress.										
	ADL Container 01	3,015 to 64,299	0								
LA02	ADL Container 02	3,015 to 64,299	0								
LA03	ADL Container 03	3,015 to 64,299	0								
LA04	ADL Container 04	3,015 to 64,299	0								
LA05	ADL Container 05	3,015 to 64,299	0								
LA0	ADL Container 06	3,015 to 64,299	0								
LA07	ADL Container 07	3,015 to 64,299	0								
LA08	ADL Container 08	3,015 to 64,299	0								

Code	Name / Description	Adjustment range	Factory setting
FbM-	[FUNCTION BLOCKS] (continued)	-	
FbP-	[FB PARAMETERS] Internal parameters available for the user program.		
M001	[]	0 to 65,535	0
(1)	M001 Parameter saved in EEprom.		
()			
M002	[1]	0 to 65,535	0
(1)	M002 Parameter saved in EEprom		
()			
M003	[]	0 to 65,535	0
(1)	M003 Parameter saved in EEprom		•
()			
M004	[]	0 to 65,535	0
(1)	M004 Parameter saved in EEprom		•
()			
M005	[]	0 to 65,535	0
(1)	M005 Parameter w ritten in RAM		•
()			
M00 📮	[]	0 to 65,535	0
(1)	M006 Parameter w ritten in RAM		
()			
M007	[]	0 to 65,535	0
(1)	M007 Parameter w ritten in RAM		•
O			
M008	[]	0 to 65,535	0
(1)	M008 Parameter w ritten in RAM		•
()			

(1) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, for example, 15.65 for 15,650.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

[APPLICATION FUNCT.] (FUn-)

Summary of functions:

Code	Nam e	Page
(rEF-)	[REFERENCE SWITCH.]	<u>167</u>
(OAI-)	[REF. OPERATIONS]	<u>168</u>
(rPt-)	[RAMP]	<u>170</u>
(Stt-)	[STOP CONFIGURATION]	<u>173</u>
(AdC-)	[AUTO DC INJECTION]	<u>176</u>
(JOG-)	[JOG]	<u>178</u>
(PSS-)	[PRESET SPEEDS]	<u>181</u>
(UPd)	[+/- SPEED]	<u>185</u>
(SrE-)	[+/-SPEED AROUND REF.]	<u>187</u>
(SPM-)	[MEMOREFERENCE]	<u>188</u>
(FLI-)	[FLUXING BY LI]	<u>189</u>
(bLC-)	[BRAKE LOGIC CONTROL]	<u>194</u>
(ELM-)	[EXTERNAL WEIGHT MEAS.]	<u>200</u>
(HSH-)	[HIGH SPEED HOISTING]	<u>205</u>
(Pld-)	[PID REGULATOR]	<u>210</u>
(Pr1-)	[PID PRESET REFERENCES]	<u>214</u>
(tOL-)	[TORQUE LIMITATION]	<u>216</u>
(CLI-)	[2nd CURRENT LIMIT.]	<u>218</u>
(I2t -)	[DYN CURRENT LIMIT]	<u>219</u>
(LLC-)	[LINE CONTACTOR COMMAND]	<u>221</u>
(OCC-)	[OUTPUT CONTACTOR CMD]	<u>223</u>
(LPO-)	[POSITIONING BY SENSORS]	<u>227</u>
(MLP-)	[PARAM. SET SWITCHING]	<u>230</u>
(MMC-)	[MULTIMOTORS/CONFIG.]	<u>235</u>
(tnL-)	[AUTO TUNING BY LI]	<u>236</u>
(trO-)	[TRAVERSE CONTROL]	<u>237</u>
(CHS-)	[HSP SWITCHING]	<u>244</u>
(dCC-)	[DC BUS]	<u>245</u>

The parameters in the [APPLICATION FUNCT.] (Fun-) menu can only be modified when the drive is stopped and there is no run command, except for parameters with a () symbol in the code column, which can be modified with the drive running or stopped.

Note: Compatibility of functions

The choice of application functions may be limited by the number of I/O and by the fact that some functions are incompatible with others. Functions that are not listed in the table below are fully compatible.

If there is an incompatibility between functions, the first function configured will help to prevent the others being configured.

Each of the functions on the following pages can be assigned to one of the inputs or outputs.

A WARNING

UNANTICIPATED EQUIPMENT OPERATION

Multiple functions can be assigned to and simultaneously activated via a single input.

• Verify that assigning multiple functions to a single input does not result in unsafe conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

DRI- > CONF > FULL > REF-

It is only possible to assign one input to several functions at [Advanced] (AdU) and [Expert] (EPr) levels.

Before assigning a command, reference or function to an input or output, the user must check that this input or output has not already been assigned and that another input or output has not been assigned to an incompatible function.

The drive factory setting or macro configurations automatically configure functions, which may help to prevent other functions being assigned.

In some case, it is necessary to unconfigure one or more functions in order to be able to enable another. Check the compatibility table below.

Stop functions have priority over run commands.

Speed references via logic command have priority over analog references.

Note: This compatibility table does not affect commands that can be assigned to the keys of the graphic display terminal (see page $\frac{24}{}$).

DRI- > CONF > FULL -

Compatibility table

Compatibility table																			
	Reference operations (page 168)	+/- speed (3) (page 185)	Preset speeds (page 180)	PID regulator (page 210)	Traverse control (page 242)	JOG operation (page 178)	Reference switching (page 167)	Skip frequency (page 183)	Brake logic control (page 194)	Auto DC injection (page 176)	Catch on the fly (page 253)	Output contactor command (page 223)	DC injection stop (page 173)	Fast stop (page 173)	Freewheel stop (page 173)	+/- speed around a reference (page 187)	High speed hoisting (page 205)	Load sharing (page 122)	Positioning by sensors (page 227)
Reference operations (page 168)			1	(2)		1	1	1											
+/- speed (3) (page <u>185</u>)					•	•	1	1											
Preset speeds (page 180)	+					1	1	1											
PID regulator (page 210)	• (2)				•	•	1	1	•							•	•	•	•
Traverse control (page <u>242</u>)		•		•		•	1	1								•	•		
JOG operation (page 178)	←	•	←	•	•			1	•	←						•	•		
Reference switching (page <u>167</u>)	+	Ţ	+	Ţ	Ţ			1								1			
Skip frequency (page <u>183</u>)	1	Ţ	Ţ	Ţ	Ţ	1	Ţ									1			
Brake logic control (page 194)				•		•					•	•	•						
Auto DC injection (page <u>176</u>)						1							1		1				
Catch on the fly (page <u>253</u>)									•										
Output contactor command (page 223)									•										
DC injection stop (page 173)									•	←				• (1)	1				
Fast stop (page 173)													• (1)		1				
Freew heel stop (page 173)										←			←	←					
+/- speed around a reference (page 187)				•	•	•	←	1											
High speed hoisting (page 205)				•	•	•													
Load sharing (page 122)				•															
Positioning by sensors (page <u>227</u>)				•															

 Priority is given to the first of these two stop modes to be activated. Only the multiplier reference is incompatible with the PID regulator. 					
Incompatible functions Compatible functions Not applicable					
Priority functions (functions which cannot be active at the same time):					
The function indicated by the arrow has priority over the other.					

DRI- > CONF > FULL > FUN- > REF-

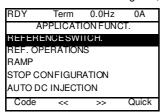
Incompatible Functions

The following function will be inaccessible or deactivated after an Automatic restart.

This is only possible for control type if [2/3 wire control] (tCC) is set to [2 wire] (2C) and if [2 wire type] (tCt) is set to [Level] (LEL) or [Fwd priority] (PFO). See [2/3 wire control] (tCC) page 85.

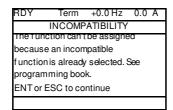
The [1.2 MONITORING] (MOn-) menupage $\underline{47}$ can be used to display the functions assigned to each input in order to check their compatibility.

When a function is assigned, a ✓ appears on the graphic display terminal, as illustrated in the example below:



If you attempt to assign a function that is incompatible with another function that has already been assigned, an alarm message will appear:

• With the graphic displayterminal:

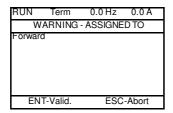


• With the integrated display terminal and the remote display terminal: COMP flashes until ENT or ESC is pressed.

When you assign a logic input, an analog input, a reference channel or a bit to a function, pressing the HELP key will display the functions that may already have been activated by this input, bit or channel.

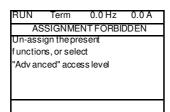
When a logic input, an analog input, a reference channel or a bit that has already been assigned to another function, the following screens appear:

• With the graphic displayterminal:



If the access level permits this new assignment, pressing ENT confirms the assignment.

If the access level does not permit this new assignment, pressing ENT results in the following display:



• With the integrated displayterminal:

The code for the first function, which is already assigned, is displayed flashing.

If the access level permits this new assignment, pressing ENT confirms the assignment.

If the access level does not permit this new assignment, pressing ENT has no effect, and the message continues to flash. It is only possible to exit by pressing ESC.

DRI- > CONF > FULL > FUN- > REF-

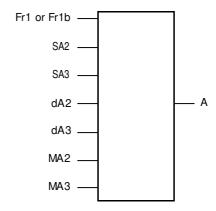
REFERENCE SWITCHING

Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.]				
rEF-	[REFERENCE SWITCH.]				
rCb	[Ref 1B switching]		[ch1 active] (Fr1)		
	See the diagrams on pages 147 and 148. If the assigned input or bit is at 0, [Ref.1 channel] (Fr1) is active (see [I if the assigned input or bit is at 1, [Ref.1B channel] (Fr1b) is active. [Ref.1B switching] (rCb) is forced to [ch1 active] (Fr1) if [Profile] [Ref.1 channel] (Fr1) assigned via the terminals (analog inputs, pulse)	(CHCF) is set to [Not s	epar.] (SIM) with		
	[ch1 active] (Fr1): No switching, [Ref.1 channel] (Fr1) active				
	[ch1B active] (Fr1b): No switching, [Ref.1B channel] (Fr1b) active [Ll1] (Ll1): Logical input Ll1				
	[] (): See the assignment conditions on page 153 (not [Cd00] (CdC	O) to [Cd15] (Cd15)).			
Fr1b	[Ref.1B channel]		[No] (nO)		
nO	[No] (nO): Not assigned				
	[Al1] (A11): Analog input A1				
	[AI2] (A12): Analog input A2				
	[Al3] (A13): Analog input A3				
	[HMI] (LCC): Graphic display terminal or remote display terminal source				
	[Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen®				
	[Com.card] (n=1): Communication option board source				
	[RP] (PI): Pulse input				
	[Al virtual 1] (AlU1): Virtual analog input 1 w ith the jog dial (only availab [Not separ.] (SIM))	le if [Profile] (CHCF)	is not set to		
OA01	[OA01] (OA01): Function blocks: Analog Output 01				
 OA10	[OA10] (OA10): Function blocks: Analog Output 10				

DRI- > CONF > FULL > FUN- > OAI-

REFERENCE OPERATIONS

Summing input / Subtracting input / Multiplier



 $A = (Fr1 \text{ or } Fr1b + SA2 + SA3 - dA2 - dA3) \times MA2 \times MA3$

- If SA2, SA3, dA2, dA3 are not assigned, they are set to 0.
- If MA2, MA3 are not assigned, they are set to 1.
- A is limited by the minimum LSP and maximum HSP parameters.
- For multiplication, the signal on MA2 or MA3 is interpreted as a %. 100% corresponds to the maximum value of the corresponding input. If MA2 or MA3 is sent via the communication bus or graphic display terminal, an MFr multiplication variable, page 284 must be sent via the bus or graphic display terminal.
- Reversal of the direction of operation in the event of a negative result can be inhibited (see
 [RV Inhibition] (SIn) page 154).

Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)				
OA I –	[REF. OPERATIONS]				
	$\label{eq:Reference} \mbox{Reference} = (\mbox{Fr1} \mbox{ or Fr1b} + \mbox{SA2} + \mbox{SA3} - \mbox{dA2} - \mbox{dA3}) \times \mbox{MA2} \times \mbox{MA3}.$ $\mbox{Note:} \mbox{This function cannot be used with certain other functions.} \mbox{ For SA3} + \mbox{dA3} + \$	• • •			
SA2	[Summing ref. 2]		[No] (nO)		
	Selection of a reference to be added to [Ref.1 channel] (Fr1)	or [Ref.1B channel] (Fr1b).			
A11 A12 A13 LCC Mdb CAn nEt PI AIU1 AIU2 OA01	[No] (nO): Not assigned [Al1] (A11): Analog input A1 [Al2] (A12): Analog input A2 [Al3] (A13): Analog input A3 [HMI] (LCC): Graphic display terminal or remote display terminal s [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com.card] (nEt): Communication option board source [RP] (P): Motor voltage [Al virtual 1] (AlU1): Virtual analog input 1 with the jog dial [Al virtual 2] (AlU2): Virtual analog input 2 by the communica [OA01] (OA01): Function blocks: Analog Output 01 [OA10] (OA10): Function blocks: Analog Output 10				
SA3	[Summing ref. 3]		[No] (nO)		
	Selection of a reference to be added to [Ref.1 channel] (Fr1) dentical to [Summing ref.2] (SA2) page 168.	or [Ref.1B channel] (Fr1b).			
dA2	[Subtract. ref. 2]		[No] (nO)		
	Selection of a reference to be subtracted from [Ref.1 channel] (I dentical to [Summing ref.2] (SA2) page $\underline{168}$.	Fr1) or [Ref.1B channel] (Fr	1b).		

DRI- > CONF > FULL > FUN- > OAI-

Code	Name / Description	Adjustment range	Factory setting		
dA3	[Subtract. ref. 3]		[No] (nO)		
	Selection of a reference to be subtracted from [Ref.1 channel] (Fr1) or [Ref.1B channel] (Fr1b). Identical to [Summing ref. 2] (SA2) page 168.				
MA2	[Multiplier ref. 2]	[No] (nO)			
	Selection of a multiplier reference [Ref.1 channel] (Fr1) or Identical to [Summing ref. 2] (SA2) page 168.	[Ref.1B channel] (Fr1b).			
MA3	[Multiplier ref. 3]		[No] (nO)		
	Selection of a multiplier reference [Ref.1 channel] (Fr1) or Identical to [Summing ref. 2] (SA2) page 168.	[Ref.1B channel] (Fr1b).			

DRI- > CONF > FULL > FUN- > RPT-

RAMP

Counting coefficient is fixed, the counting coeff	Code	Name / Description	Adjustment range	Factorysetting
Clear Class Clas	FUn-	[APPLICATION FUNCT.] (continued)		
Customized Cus	rPt-	[RAMP]		
t1 = 0.5 set ramp time (linear) t2 = 1.0 set ramp time (round) t3 = 1.5 set ramp time Customized ramps (##) L12 = ACC * (tA1(%) / 100 + tA2(%) / 100 + 1) tA3: adjustable from 0 to 100% tA4: adjustable from 0 to (100% - tA1) tA3: adjustable from 0 to (100% - tA3) L12 = ACC * (tA1(%) / 100 + tA2(%) / 100 + 1) tA4: adjustable from 0 to (100% - tA3) L12 = ACC * (tA3(%) / 100 + tA4(%) / 100 + 1) [Ramp increment] This parameter is valid for [Acceleration] (ACC), [Deceleration] (dEC), [Acceleration 2] (AC2) and [Deceleration 2] (dE2). (1) ACC [Acceleration] [Acceleration] [Bamp up to 99.9.9 seconds 1]: Ramp up to 6,000 seconds [Continue of the continue of the possibility of the application. [Bamp increment] [Continue of the possibility of the application.	rPt LIn s U CUS	[Ramp type] [Linear] (Lin) [S ramp] (S) [U ramp] (U) [Customized] (CUS) S ramps The rounding coefficient is f t1 = 0.6 set ramp time (linea t2 = 0.4 set ramp time (roun t3 = 1.4 set ramp time	r) d)	[Linear] (LIn)
This parameter is valid for [Acceleration] (ACC), [Deceleration 2] (AC2) and [Deceleration 2] (dE2). [0,01]: Ramp up to 99.99 seconds [0,1]: Ramp up to 999.9 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [2]: Ramp up to 6,000 seconds [3]: Ramp up to 6,000 seconds [4]: Ramp up to 6,000 seconds [5]: Ramp up to 6,000 seconds [6]: Ramp up to 6,000 seconds [7]: Ramp up to 6,000 seconds [8]: Ramp up to 6,000 seconds [9]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [2]: Ramp up to 6,000 seconds [3]: Ramp up to 6,000 seconds [4]: Ramp up to 6,000 seconds [5]: Ramp up to 6,000 seconds [6]: Ramp up to 6,000 seconds [7]: Ramp up to 6,000 seconds [8]: Ramp up to 6,000 seconds [9]: Ramp up to 6,000 seconds [1]: Ramp up to 6,000 seconds [2]: Ramp up to 6,000 seconds [3]: Ramp up to 6,000 seconds [4]: Ramp up to 6,000 seconds [5]: Ramp up to 6,000 seconds [6]: Ramp up to 6,000 seconds [6]: Ramp up to 6,000 seconds [7]: Ramp up to 6,000 seconds [8]: Ramp up to 6,0		t1 = 0.5 set ramp time (linea t2 = 1.0 set ramp time (round t3 = 1.5 set ramp time) Customized ramps f(Hz) FrS TA1: adjustable from 0 to 100 tA2: adjustable from 0 to 100 tA3: adjustable from 0 to 100 tA4: adjus	r) d) 0% 00% - tA1)	
[Deceleration 2] (dE2). (1) O.01 [0,01]: Ramp up to 99.99 seconds [0,1]: Ramp up to 999.9 seconds [1]: Ramp up to 6,000 seconds ACC [Acceleration] Time to accelerate from 0 to the [Rated motor freq.] (FrS) (page 86). To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application. (1) Deceleration] O.00 to 6,000 s (2) 3.0 s Deceleration] O.00 to 6,000 s (2) 3.0 s	Inr	[Ramp increment]		[0,1] (0.1)
ACC [Acceleration] Time to accelerate from 0 to the [Rated motor freq.] (FrS) (page 86). To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application. (1) Deceleration] 0.00 to 6,000 s (2) 3.0 s 0.00 to 6,000 s (2) 3.0 s	(1) 0.01 0.1	[0,01]: Ramp up to 99.99 seconds [0,1]: Ramp up to 999.9 seconds	on] (dEC), [Acceleration 2] (A	AC2) and
parameter must be set according to the possibility of the application. (1) dEC [Deceleration] 0.00 to 6,000 s (2) 3.0 s	-	[Acceleration]	0.00 to 6,000 s (2)	3.0 s
dEC [Deceleration] 0.00 to 6,000 s (2) 3.0 s				amps, the value of this
Time to decelerate from the [Rated motor freq.] (FrS) (page 86) to 0. To have repeatability in ramps, the value of this		[Deceleration]	0.00 to 6,000 s (2)	3.0 s
parameter must be set according to the possibility of the application. (1)	(1)			amps, the value of this
tA1 [Begin Acc round] 0 to 100% 10%		[Begin Acc round]	0 to 100%	10%
Rounding of start of acceleration ramp as a % of the [Acceleration] (ACC) or [Acceleration 2] (AC2) ramp time. Can be set betw een 0 and 100%. This parameter can be accessed if the [Ramp type] (r Pt) is [Customized] (CUS).	O	Can be set between 0 and 100%.		AC2) ramp time.

DRI- > CONF > FULL > FUN- > RPT-

Code	Name / Descript	ion	Adjustment range	Factory setting		
tA2	[End Acc rou	nd]	0 to 100%	10%		
*	Rounding of end of acceleration ramp as a% of the [Acceleration] (ACC) or [Acceleration 2] (AC2) ramp time. Can be set between 0 and (100% - [Begin Acc round] (tA1)). This parameter can be accessed if the [Ramp type] (rPt) is [Custo mized] (CUS).					
(1)	Triis parameter car	The accessed if the [namp type]	(I F t) is [customized] (COS).			
tA3	[Begin Dec ro	und]	0 to 100%	10%		
*	Rounding of start of deceleration ramp as a % of the [Deceleration] (dEC) or [Deceleration 2] (dE2) ramp time. Can be set between 0 and 100%. This parameter can be accessed if the [Ramp type] (r Pt) is [Customized] (CUS).					
(1)	This parameter can	The accessed if the frame type	(TT E) is [oustomized] (COC).			
tA4	[End Dec rou	nd]	0 to 100%	10%		
*	Can be set betwe	en 0 and (100% - [Begin Dec r	ne [Deceleration] (dEC) or [Deceler ound] (tA3)). (rPt) is [Custo mized] (CUS).	ation 2] (dE2) ramp time.		
()	This parameter car	The accessed if the [namp type	(1 1 t) is [oustomized] (000).			
(1)			<u></u>			
Frt	[Ramp 2 thres	shold]	0 to 599 Hz according	g to rating 0 Hz		
		r than [Ramp 2 threshold] (Fwitching can be combined with [Frequency	Ram p switch as s.] (rPS) switching a	as follows:		
	0	< Frt	ACC, dEC	-		
	0	> Frt	AC2, dE2	_		
	1	< Frt	AC2, dE2	_		
	1	> Frt	AC2, dE2	-		
*D0	IDitali			[Nel (pO)		
rPS	[Ramp switch			[No] (nO)		
400		B channel] (Fr1b) page 167		5.0 s		
AC2	[Acceleration	-	0.00 to 6,000 s (2) eq.] (FrS). To have repeatability in ran			
•		o the possibility of the applicatio		nps, the value of this parameter must		
()			old] (Frt) is greater than 0 or if [Ran	mp switch ass.] (rPS) is assigned.		
(1)						
dE2	[Deceleration	2]	0.00 to 6,000 s (2)	5.0 s		
*	Time to decelerate	_	S) to 0. To have repeatability in ramps	the value of this parameter must be		
(1)	This parameter cal	n be accessed if [Ramp 2 thresh	old] (⊏rt) is greater than 0 or if [Rat	np switch ass.] (rPS) is assigned.		
(')						

DRI- > CONF > FULL > FUN- > RPT-

Code	Name / Description	Adjustment range	Factory setting
brA	[Dec ramp adapt.]		[Yes] (YES)
		NOTICE	
		(S) or [No] (nO) if the connected motor is	a permanent magnet
	synchronous motor. Other settings demagnetize permaner Failure to follow these instructions of		
	of the load, w hich can cause an overvoltage of [Dec ram p adapt.] (brA) is forced to [No] (n	if the brake logic control [Brake assignme	
	The function is incompatible with applications - Positioning on a ramp The use of a braking resistor (the resisto		

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] (Inr) page 170.
- *

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > STT-

STOP CONFIGURATION

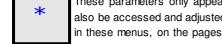
Code	Name / Description	Adjustment range	Factory setting			
FUn-	[APPLICATION FUNCT.] (continued)					
Stt-	[STOP CONFIGURATION]					
	Note: Some types of stops cannot be used with all other functions. Follow the instructions on page <u>163</u> .					
Stt	[Type of stop]		[Ramp stop] (rMP)			
	Stop mode on disappearance of the run command or appearance Note: If the "brake logic" function on page 194 has been enabled only ramp type stops may be configured.	•	_S) page <u>95</u> or <u>213</u> is not 0,			
	[Ramp stop] (rMP): Stop on ramp [Fast stop] (FSt): Fast stop [Freewheel] (nSt): Freew heel stop [DC injection] (dCl): DC injection stop. Available only if [Moto [Sync. mot.] (SYn).		not set to			
FFt	[Freewheel stop Thd.]	0.2 to 599 Hz	0.2 Hz			
* () (1)	Speed threshold below which the motor will switch to freewheel stop. This parameter supports switching from a ramp stop or a fast stop to a freew heel stop below a low speed threshold. This parameter can be accessed if [Type of stop] (Stt) is set to [Fast stop] (FSt) or [Ramp stop] (rMP) and if [Brake assignment] (bLC) or [Auto DC injection] (AdC) are configured.					
nSt	[Freewheel stop ass.]		[No] (nO)			
	The stop is activated when the input or the bit changes to 0. If the imotor will only restart if [2/3 wire control] (tCC) page 85 is set [Level] (LEL) or [Fwd priority] (PFO). If not, a new run communication [No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153	o [2 wire] (2C) and if [2 wire ty				
FSt	[Fast stop assign.]		[No] (nO)			
nO	The stop is activated when the input changes to 0 or the bit if the input returns to state 1 and the run command is still active, control] (tCC) page 85 is set to [2 wire] (2C) and if [2 wire type if not, a new run command must be sent. Note: This function cannot be used with certain other functions. [No] (nO): Not assigned	the motor will only restart if [2/3] (tCt) is set to [Level] (LEL	wire _) or [Fwd priority] (PFO).			
	[LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153					
dCF	[Ramp divider]	0 to 10	4			
* () (1)	This parameter can be accessed if [Type of stop] (Stt) is set to [No] (nO) and if [Stop type] (PAS) is set to [Fast stop] (FSt) The ramp that is enabled ([Deceleration] (dEC) or [Deceleration] requests are sent. Value 0 corresponds to a minimum ramp time.					
(1)	and a consequence of a consequence of the consequen					

DRI- > CONF > FULL > FUN- > STT-Parameters described in this page can be accessed by: Code Name / Description Adjustment range Factory setting dC I [DC injection assign.] [No] (nO) **WARNING** UNINTENDED MOVEMENT Do not use DC injection to generate holding torque when the motor is at a standstill. • Use a holding brake to keep the motor in the standstill position. Failure to follow these instructions can result in death, serious injury, or equipment damage. DC injection braking is initiated when the assigned input or bit changes to state 1. If the input returns to state 0 and the run command is still active, the motor will only restart if [2/3 wire control] (tCC) page 85 is set to [2 wire] (2C) and if [2 wire type] (t t) is set to [Level] (LEL) or [Fwd priority] (PFO). If not, a new run command must be sent. Note: This function cannot be used with certain other functions. Follow the instructions on page 163. nO [No] (nO): Not assigned [LI1] (LI1): Logical input LI1 LI1 [...] (...): See the assignment conditions on page 153 0.1 to 1.41 ln (2) 0.64 ln (2) IdC [DC inject. level 1] * **NOTICE** () OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount (1)(3)and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage. Level of DC injection braking current activated via logic input or selected as stop mode. This parameter can be accessed if [Type of stop] (Stt) is set to [DC injection] (dCl) or if [DC injection assign.] (dCl) is not [No] (nO). tdl [DC injection time 1] 0.1 to 30 s 0.5 s NOTICE OVERHEATING AND DAMAGE TO THE MOTOR * Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. () Failure to follow these instructions can result in equipment damage. (1)(3)Maximum current injection time [DC inject. level 1] (IdC). After this time, the injection current becomes [DC inject. level 2] (IdC2). This parameter can be accessed if [Type of stop] (Stt) is set to [DC injection] (dCl) or if [DC injection assign.] (dCl) is not set to [No] (nO).

DRI- > CONF > FULL > FUN- > STT-

Code	Name / Description	Adjustment range	Factory setting		
ldC2	[DC inject. level 2]	0.1 ln (2) to [DC inject. level 1] (IdC)	0.5 ln (2)		
*	OVERHEATING AND DAMAGE TO THE MO	NOTICE			
(1) (3)	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
	Injection current activated by logic input or selected as elapsed. This parameter can be accessed if [Type of stop] (St set to [No] (nO).				
tdC	[DC injection time 2]	0.1 to 30 s	0.5 s		
*	OVERHEATING AND DAMAGE TO THE MO	NOTICE			
O	Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor.				
(1) (3)					
	Maximum injection time [DC inject. level 2] (IdC2) for in parameter can be accessed if [Stop type] (Stt) is set to				
dOtd	[Dis. operat opt code]		[Ramp stop] (rMp)		
	Disable operation stop mode.				
nSi rMp	[Freewheel] (nSt): Disable drive function [Ramp stop] (rMp): Ramp stop then disable drive fu	ınction			

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- (3) These settings are independent of the [AUTO DC INJECTION] (AdC-) function.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

() Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > A DC-

AUTO DC INJECTION

Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)				
AdC-	[AUTO DC INJECTION]				
AdC	[Auto DC injection] [Yes] (YES)				
()	HAZARD OF ELECTRIC SHOCK, EXPLOSION OR A If the parameter [Auto DC injection] (AdC) is set to [Co if the motor does not run. • Verify that using this setting does not result in unsafe Failure to follow these instructions will result in dea	RC FLASH ontinuous] (Ct), DC inject e conditions.	ion is always active, even		
₹ 2 s	AWAR .	NING			
	UNINTENDED MOVEMENT				
	 Do not use DC injection to generate holding torque versions. Use a holding brake to keep the motor in the stands: Failure to follow these instructions can result in deal 	tillposition.			
	Automatic current injection on stopping (at the end of the ramp). Note: There is an interlock betw een this function and [Motor fluxing] (FLU) page 95. If [Motor fluxing] (FLU) is set to [Continuous] (FCt), [Auto DC injection] (AdC) must be [No] (nO). Note: [Auto DC injection] (AdC) is set to [No] (nO) w hen [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (SYn). [Auto DC injection] (AdC) is forced to [No] (nO) w hen [Brake as signment] (bLC) page 194 is not set to [No] (nO). This parameter gives rise to the injection of current even if a run command has not been sent. It can be accessed with the driver running.				
YES	[No] (nO): No injection [Yes] (YES): Adjustable injection time [Continuous] (Ct): Continuous standstill injection				
SdC1	[Auto DC inj. level 1]	0 to 1.2 ln (2)	0.7 ln (2)		
	NOT	TCE .			
*	11				
(1)	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
	Level of standstill DC injection current [Auto DC injection] (Ad	C) is not [No] (nO).			
tdC1	[Auto DC inj. time 1]	0.1 to 30 s	0.5 s		
	NOT	TCE			
* () (1)	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
	Standstill injection time. This parameter can be accessed if [Au' If [Motor control type] (Ctt) page 105 is set to [Sync. mot.](S) time.				

ode	Name / De	escription		Adjustment range	Factory setting	
SdC2	[Auto D	C inj. levo	el 2]	0 to 1.2 ln (2)	0.5 ln (2)	
* () (1)	Verify to	NOTICE OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
			DC injection current. e accessed if [Auto DC injectio	n] (AdC) is not [No] (nO).		
tdC2	[Auto D	C inj. tim	e 2]	0 to 30 s	0 s	
	Verify to and time Failure 2nd stand	hat the con te in order to to follow still injection	to avoid overheating and dan these instructions can res time.	ed for the DC injection current to b nage to the motor. ult in equipment damage.	e applied in terms of amount	
			e accessed if [Auto DC injection	ij (AdC) is set to [fes] (fEs).		
	AdC	SdC2	Operation	inj (Add) is set to [res] (TES).		
*	AdC YES		Operation SdC1 SdC2			
		SdC2	Operation SdC1 SdC2 tdC1 SdC1 SdC2 TdC1	tdC1 + tdC2		
O	YES	SdC2	Operation SdC1 SdC2 tdC1 SdC1	tdC1 + tdC2		
O	YES Ct	SdC2 x ≠ 0 = 0	Operation SdC1 SdC2 tdC1 SdC2 tdC1			

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.
- 2 s To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > FUN- > JOG-

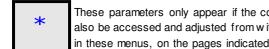
JOG

Code	Name / Description			Adjustment range	Factory setting	
FUn-	[APPLICATION FUNC	T.] (continued)			<u>-</u>	
JOG-	[JOG]					
	Note: This function cannot be	used w ith certain other	functions. F	follow the instructions of		
JOG	[JOG]				[LI3] (LI3)	
	Pulse operation. The JOG function is only active The function is active when the Example: 2-wire control opera	e assigned input or bit is	nel and the res	eference channels are	on the terminals.	
	Motor frequency	Ramp DEC/DE2	Ramp	d to 0.1 s		
	Reference					
	JGF reference			7		
	0					
	JGF reference					
	LI (JOG)					
	1 .					
	0		10:			
	Forw ard		JGt			
	11		$\exists \sqcap \vdash$			
	0					
	Reverse					
	0					
LI	[No] (nO): Not assigned [L11] (L11): Logical input L11 [] (): See the assignment	conditions on page	153 (not [C	cd00] (Cd00) to [Cd15	5] (Cd15))	
JGF	[Jog frequency]			0 to 10 Hz	10 Hz	
*	Reference in jog operation. This parameter can be access	ed if [JOG] (JOG) is no	t set to [No]	(nO).	•	
()						
(1)						

DRI- > CONF > FULL > FUN- > JOG-

Code	Name / Description	Adjustment range	Factory setting
JGt	[Jog delay]	0 to 2.0 s	0.5 s
*	Anti-repeat delay betw een 2 consecutive jog operations. This parameter can be accessed if [JOG] (JOG) is not set to [N	ol (nO).	
()		((())	
(1)			

(1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the \mbox{ENT} key for $2\mbox{ s}$.

PRESET SPEEDS

2, 4, 8 or 16 speeds can be preset, requiring 1, 2, 3 or 4 logic inputs respectively.

Note:

You must configure 2 and 4 speeds in order to obtain 4 speeds.

You must configure 2,4 and 8 speeds in order to obtain 8 speeds.

You must configure 2, 4, 8, and 16 speeds in order to obtain 16 speeds.

Combination table for preset speed inputs

16 speeds LI (PS16)	8 speeds LI (PS8)	4 speeds LI (PS4)	2 speeds LI (PS2)	Speed reference
0	0	0	0	Reference (1)
0	0	0	1	SP2
0	0	1	0	SP3
0	0	1	1	SP4
0	1	0	0	SP5
0	1	0	1	SP6
0	1	1	0	SP7
0	1	1	1	SP8
1	0	0	0	SP9
1	0	0	1	SP10
1	0	1	0	SP11
1	0	1	1	SP12
1	1	0	0	SP13
1	1	0	1	SP14
1	1	1	0	SP15
1	1	1	1	SP16

⁽¹⁾ See the diagram on page $\underline{147}$: Reference 1 = (SP1).

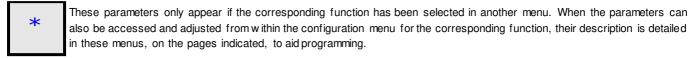
Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)		-		
PSS-	[PRESET SPEEDS]				
	Note: This function cannot be used with certain other functions. Follow the	e instructions on page <u>16</u>			
PS2	[2 preset speeds]		[No] (nO)		
	[No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153				
PS4	[4 preset speeds]		[No] (nO)		
	Identical to [2 preset speeds] (PS2) page 181. To obtain 4 speeds, you must also configure 2 speeds.				
PS8	[8 preset speeds]		[No] (nO)		
	Identical to [2 preset speeds] (PS2) page 181. To obtain 8 speeds, you must also configure 2 and 4 speeds.				
PS16	[16 preset speeds]		[No] (nO)		
	Identical to [2 preset speeds] (PS2) page 181. To obtain 16 speeds, you must also configure 2, 4 and 8 speeds.				
SP2	[Preset speed 2]	0 to 599 Hz	10 Hz		
*	Preset speed 2. See the Combination table for preset PID references pag	e <u>206</u> .			
()					
(1)			T		
SP3 *	[Preset speed 3] Preset speed 3. See the Combination table for preset PID references page	0 to 599 Hz	15 Hz		
() (1) SP4	[Preset speed 4]	T 0 to 599 Hz	120 Hz		
*	Preset speed 4. See the Combination table for preset PID references pag		20112		
(1)			_		
SP5	[Preset speed 5]	0 to 599 Hz	25 Hz		
* ()	Preset speed 5. See the Combination table for preset PID references pag	e <u>206</u> .			
SP6	[Preset speed 6]	0 to 599 Hz	30 Hz		
*	Preset speed 6. See the Combination table for preset PID references page		1		
O	Troot speed a. God the combination table for present is references pag	0 <u>230</u> .			
(1)					
SP7	[Preset speed 7]	0 to 599 Hz	35 Hz		
*	Preset speed 7. See the Combination table for preset PID references pag	e <u>206</u> .	•		
()					
(1)					

DRI- > CONF > FULL > FUN- > UPD-

Code	Name / Description	Adjustment range	Factory setting		
SP8	[Preset speed 8]	0 to 599 Hz	40 Hz		
*	Preset speed 8. See the Combination table for preset PID references page 206.				
$\langle \rangle$					
(1) SP9	[Preset speed 9]	0 to 599 Hz	45 Hz		
*	Preset speed 9. See the Combination table for preset PID refere		7012		
	Treset speed 3. Gee the combination table for presett in refere	200.			
()					
(1)					
SP10	[Preset speed 10]	0 to 599 Hz	50 Hz		
*	Preset speed 10. See the Combination table for preset PID refer	rences page <u>206</u> .			
()					
(1) SP11	[Preset speed 11]	0 to 599 Hz	55 Hz		
*	Preset speed 11. See the Combination table for preset PID refer		00112		
	Troot speed 11. doe the demandation table for present is feller	-ciioco pago <u>200</u> .			
()					
(1)					
SP12	[Preset speed 12]	0 to 599 Hz	60 Hz		
*	Preset speed 12. See the Combination table for preset PID refer	rences page <u>206</u> .	1		
()					
(1) SP13	[Preset speed 13]	0 to 599 Hz	70 Hz		
*	Preset speed 13. See the Combination table for preset PID refer		7012		
	Trocot opeca to: eco tito constitution table for process is to on				
()					
(1)					
SP14	[Preset speed 14]	0 to 599 Hz	80 Hz		
*	Preset speed 14. See the Combination table for preset PID refer	rences page <u>206</u> .	•		
()					
(1)					
SP15	[Preset speed 15]	0 to 599 Hz	90 Hz		
*	Preset speed 15. See the Combination table for preset PID refer		150		
	Total speed to see the semantial table for product is follow	- 5555 pago <u>= 55</u> .			
()					
(1)					
SP16	[Preset speed 16]	0 to 599 Hz	100 Hz		
*	Preset speed 16.	alata marina ad las alla	-dfi		
()	The appearance of these [Preset speed x] (SPx) parameters is determined by the number of speeds configured. See the Combination table for preset PID references page 206.				
(1)					

Code	Name / Description	Adjustment range	Factory setting	
JPF	[Skip Frequency]	0 to 599 Hz	0 Hz	
()	Skip frequency. This parameter helps to prevent prolonged operation within an adjustable range around the regulated frequency. This function can be used to help to prevent a critical speed, which would cause resonance, being reached. Setting the function to 0 renders it inactive.			
JF2	[Skip Frequency 2]	0 to 599 Hz	0 Hz	
()	2nd skip frequency. This parameter helps to prevent prolonged operation within an adjustable range around the regulated frequency. This function can be used to help to prevent a critical speed, which would cause resonance, being reached. Setting the function to 0 renders it inactive.			
JF3	[3rd Skip Frequency]	0 to 599 Hz	0 Hz	
()	3rd skip frequency. This parameter helps to prevent prolonged operation within an adjustable range around the regulated frequency. This function can be used to help to prevent a critical speed, which would cause resonance, being reached. Setting the function to 0 renders it inactive.			
JFH	[Skip.Freq.Hysteresis]	0.1 to 10 Hz	1 Hz	
*	This parameter is visible if at least one skip frequency [Skip Frequency	cy] (JPF), [Skip Freque	ency 2] (JF2) or	
()	[3rd Skip Frequency] (JF3) is different from 0. Skip frequency range: between (JPF-JFH) and (JPF+JFH), for example. This adjustment is common to the 3 frequencies (JPF, JF2, JF3).			

(1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.



Parameter that can be modified during operation or when stopped.

+/- SPEED

Two types of operations are available:

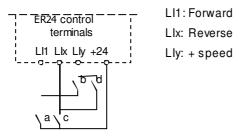
- Use of single action keys: Two logic inputs are required in addition to the operating direction(s). The input assigned to the "+ speed" command increases the speed, the input assigned to the "- speed" command decreases the speed.
- Use of double action keys: Only one logic input assigned to "+ speed" is required.

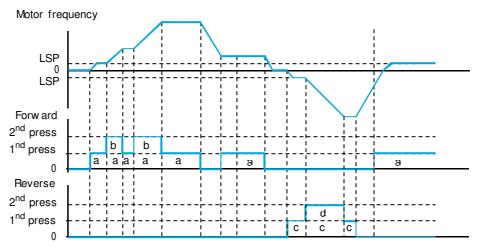
+/- speed with double-press buttons:

Description: 1 button pressed twice (2 steps) for each direction of rotation. A contact closes each time the button is pressed.

	Released (-speed)	1st press (speed maintained)	2nd press (faster)
Forw ard button	_	а	a and b
Reversebutton	_	С	c and d

Example of wiring:





Do not use this +/-speed type with 3-wire control.

Whichever type of operation is selected, the max. speed is set by [High speed] (HSP) (see page 87).

Note:

If the reference is switched via [Ref. 2 switching] (rFC) (see page 155) from anyone reference channel to another reference channel with "+/- speed", the value of reference [Output frequency] (rFr) (after ramp) may be copied at the same time in accordance with the [Copy channel 1 --> 2] (COP) parameter (see page 156).

If the reference is switched via [Ref. 2 switching] (rFC) (see page $\underline{155}$) from one reference channel to any other reference channel with "+/- speed", the value of reference [Output frequency] (rFr) (after ramp) is copied at the same time.

This helps to prevent the speed being incorrectly reset to zero when switching takes place.

DRI- > CONF > FULL > FUN- > UPD-

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		
UPd-	[+/- SPEED]		
	This function can be accessed if reference channel [Ref.2 channel] (Fr Note: This function cannot be used with certain other functions. Follow the i		
USP	[+ speed assignment]		[No] (nO)
	Function active if the assigned input or bit is at 1.		
LI1	[No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		
dSP	[-Speed assignment]		[No] (nO)
	See the assignment conditions on page 153		
	Function active if the assigned input or bit is at 1.		
Str	[Reference saved]		[No] (nO)
*	Associated with the "+/- speed" function, this parameter can be used to save . When the run commands disappear (saved to RAM). - When the supply mains or the run commands disappear (saved to EEF Therefore, the next time the drive starts up, the speed reference is the last r	PROM).	
nO rAM EEP	[No] (nO): No save (the next time the drive starts up, the speed reference is [RAM] (rAM): Saved in RAM [EEprom] (EEP): Saved in EEPROM	s [Low speed] (LSP), see	e page <u>87</u>)

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

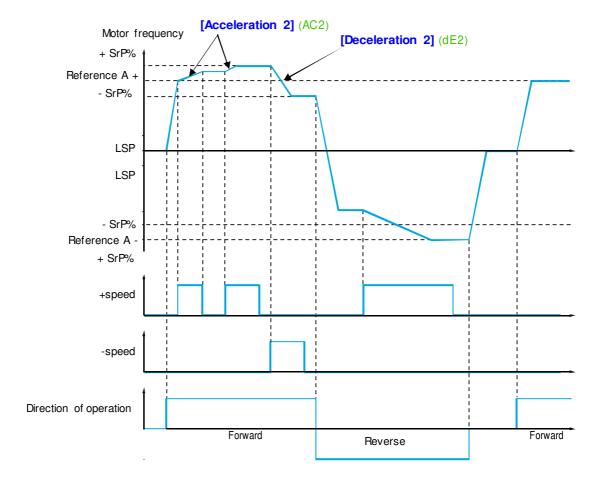
DRI- > CONF > FULL > FUN- > SRE-

+/- SPEED AROUND A REFERENCE

The reference is given by [Ref.1 channel] (Fr1) or [Ref.1B channel] (Fr1b) with summing/subtraction/multiplication functions and preset speeds if relevant (see the diagram on page $\underline{147}$). For improved clarity, we will call this reference A. The action of the +speed and -speed keys can be set as a % of this reference A. On stopping, the reference (A+/- speed) is not saved, so the drive restarts with reference A+ only.

The maximum total reference is limited by **[High speed]** (HSP) and the minimum reference by **[Low speed]** (LSP), see page <u>87</u>.

Example of 2-wire control:



DRI- > CONF > FULL > FUN- > SRE-

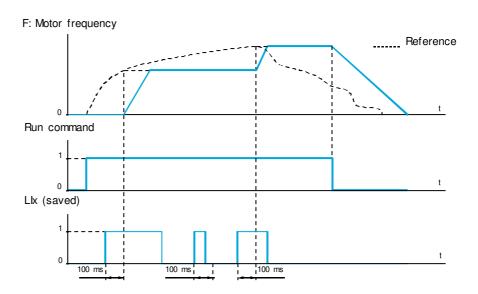
Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued)			
SrE-	[+/-SPEED AROUND REF.]			
	The function can be accessed for reference channel [Ref.1 channel] (F Note: This function cannot be used with certain other functions. Follow the		<u>6</u> .	
USI	[+ speed assignment]		[No] (nO)	
LI1	No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153			
dSI	[-Speed assignment]		[No] (nO)	
	See the assignment conditions on page 153			
	Function active if the assigned input or bit is at 1.			
SrP	[+/-Speed limitation]	0 to 50%	10%	
*	This parameter limits the variation range with +/- speed as a % of the reference. The ramps used in this function are [Acceleration 2] (AC2) and [Deceleration 2] (dE2). This parameter can be accessed if +/- speed is assigned.			
AC2	[Acceleration 2]	0.00 to 6,000 s (2)	5.00 s	
*	Time to accelerate from 0 to the [Rated motor freq.] (FrS). To have repeat	atability in ramps, the va	lue of this parameter must	
()	be set according to the possibility of the application. This parameter can be accessed if [+/- speed] (tUd) is assigned.			
(1)				
dE2	[Deceleration 2]	0.00 to 6,000 s (2)	5.00 s	
*	Time to decelerate from the [Rated motor freq.] (FrS) to 0. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application.			
()	This parameter can be accessed if [+/- speed] (tUd) is assigned.			
(1)				

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] (Inr) page 170.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.

REFERENCE MEMORIZING

Saving a speed reference value using a logic input command lasting longer than $0.1\,\mathrm{s}$.

- This function is used to control the speed of several drives alternately via a single analog reference and one logic input for each drive.
- It is also used to confirm a line reference (communication bus or network) on several drives via a logic input. This allows movements to be synchronized by getting rid of variations when the reference is set.
- The reference is acquired 100 ms after the rising edge of the request. A new reference is not then acquired until a new request is made.



Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)	<u>.</u>	
SPM-	[MEMO REFERENCE]		
SPM	[Ref. memo ass.]		[No] (nO)
	Assignment to a logic input. Function active if the assigned input is at active state.		
	[No] (nO): Not assigned		
LI1 	[LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		

FLUXING BY LOGIC INPUT

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)	•	
FLI-	[FLUXING BY LI]		
FLU	[Motor fluxing]		[No] (FnO)
	A A DA	NGER	
	HAZARD OF ELECTRIC SHOCK, EXPLOSION OR A		
*	If the parameter [Motor fluxing] (FLU) is set to [Cont		is always active, even if the
	motor does not run.		
()	Verify that using this setting does not result in unsaffailure to follow these instructions will result in deals.		
(1)			
	NOT	ICF	
🛣 2 s	OVERHEATING AND DAMAGE TO THE MOTOR		
	Verify that the connected motor is properly rated for the	DC injection current to be	applied in terms of amount
	and time in order to avoid overheating and damage to t	he motor.	applied in terme of am editi
	Failure to follow these instructions can result in eq	uipment damage.	
EnC	[Not cont.] (FnC): Non-continuous mode		
	[Continuous] (FCt): Continuous mode.		
	This option is not possible if [Auto DC injection] (AdC) page 176 [Freewheel] (nSt).	is [Yes] (YES) or if [Type	of stop] (Stt) page 173 is
FnO	[No] (FnO): Function inactive		
	In order to obtain rapid high torque on startup, magnetic flux need		ablished in the motor.
	In [Continuous] (FCt) mode, the drive automatically builds up fluin [Not cont.] (FnC) mode, fluxing occurs when the motor star		
	The flux current is greater than [Rated mot. current] (nCr) (conf	figured rated motor current)	when the flux is established and
	is then adjusted to the motor magnetizing current.		
	If [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (Salignment of the rotor and not the fluxing.	SYn), the [Motor fluxing] (FLU) parameter causes the
	If [Brake assignment] (bLC) page 194 is not [No] (nO), the [No]	Notor fluxing] (FLU) parar	meter has no effect.
FLI	[Fluxing assignment]		[No] (nO)
	NOT	ICE	
*	OVERHEATING AND DAMAGE TO THE MOTOR		
	Verify that the connected motor is properly rated for the	e flux current to be applie	ed in order to avoid
	overheating and damage to the motor. Failure to follow these instructions can result in eq	uinment damage	
	Assignment is only possible if [Motor fluxing] (FLU) is set to [-	
	If an LI or a bit is assigned to the motor fluxing command, flux is b	ouilt up w hen the assigned i	
	If an LI or a bit has not been assigned, or if the assigned LI or bit motor starts.	s at 0 w nen a run command	is sent, fluxing occurs when the ।
nO	[No] (nO): Not assigned		
LI1	[LI1] (LI1): Logical input LI1		
	[] (): See the assignment conditions on page 153		

Code	Name / Description	Adjustment range	Factory setting
ASt	[Angle setting type]		[PSIO align.] (PSIO)
*	Mode for measuring the phase-shift angle. Visible only if [Motor control type] (Ctt) is set to [Sync. mot.] (SYn). [PSI align] (PSI) and [PSIO align] (PSIO) are working for all type of synchronous motors. [SPM align] (SPMA) and [IPM align] (IPMA) increase performances depending on the type of synchronous motor.		
	[IPM align] (IPMA): Alignment for IPM motor. Alignment mode for Interior-buried Permanent Magnet motor (usually, this kind of motor has a high saliency level). It uses high frequency injection, w hich is less noisy than standard alignment mode. [SPM align] (SPMA): Alignment for SPM motor. Mode for Surface-mounted Permanent Magnet motor (usually, this kind of motor has a medium or low saliency level). It uses high frequency injection, w hich is less noisy than standard alignment mode.		
	[PSI align] (PSI): Pulse signal injection. Standard alignment mode by pulse signal injection.		
PSIO nO	[PSIO align] (PSIO): Pulse signal injection - Optimized. Standard phase-shift angle measurement time is reduced after the firstrun of [No align] (nO): No alignment		

(1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for $2\,\mathrm{s}$.

BRAKE LOGIC CONTROL

Used to control an electromagnetic brake by the drive, for horizontal and vertical hoisting applications, and for unbalanced machines.

Principle:

- Vertical hoisting movement:

Maintain motor torque in the driving load holding direction during brake opening and closing, in order to hold the load, start smoothly when the brake is released and stop smoothly when the brake is engaged.

- Horizontal movement:

Synchronize brake release with the build-up of torque during startup and brake engage at zero speed on stopping, to help to prevent jolting.

Instructions for brake logic control for a vertical hoisting application:

WARNING

UNANTICIPATED EQUIPMENT OPERATION

Verify that the selected settings will not result in the loss of control of the load being lifted.

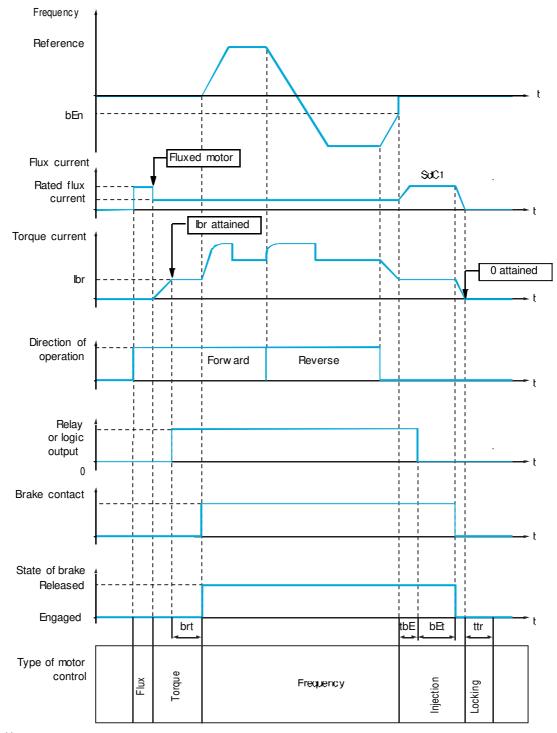
Failure to follow these instructions can result in death, serious injury, or equipment damage.

- [Brake impulse] (b IP): [Yes] (YES). Ensure that the direction of rotation FW corresponds to lifting the load.
 - For applications in which the load being lowered is very different from the load being lifted, set bIP = 2 Ibr (for example, ascentalways with a load and descent always without a load).
- Brake release current ([Brake release | FW] (| br) and [Brake release | Rev] (| rd) if [Brake impulse] (b|P) = 2 | br): Adjust the brake release current to the rated current indicated on the motor.
 During testing, adjust the brake release current in order to hold the load smoothly.
- Acceleration time: For hoisting applications, it is advisable to set the acceleration ramps to more than 0.5 seconds. Ensure that the drive does not exceed the current limit.
 - The same recommendation applies for deceleration.
 - Reminder: For a hoisting movement, a braking resistor should be used.
- [Brake Release time] (brt): Set according to the type of brake. It is the time required for the mechanical brake to release.
- [Brake release frequency] (bir), in open-loop mode only: Leave in [Auto] (AUtO), adjustif necessary.
- [Brake engage frequency] (bEn): Leave in [Auto] (AUtO), adjust if necessary.
- [Brake engage time] (bEt): Set according to the type of brake. It is the time required for the mechanical brake to engage.

Instructions for brake logic control for a horizontal hoisting application:

- [Brake impulse] (b IP): No
- [Brake release | FW] (|br): Set to 0.
- [Brake Release time] (brt): Set according to the type of brake. It is the time required for the mechanical brake to release.
- [Brake engage frequency] (bEn), in open-loop mode only: Leave in [Auto] (AUtO), adjust if necessary.
- [Brake engage time] (bEt): Set according to the type of brake. It is the time required for the mechanical brake to engage.

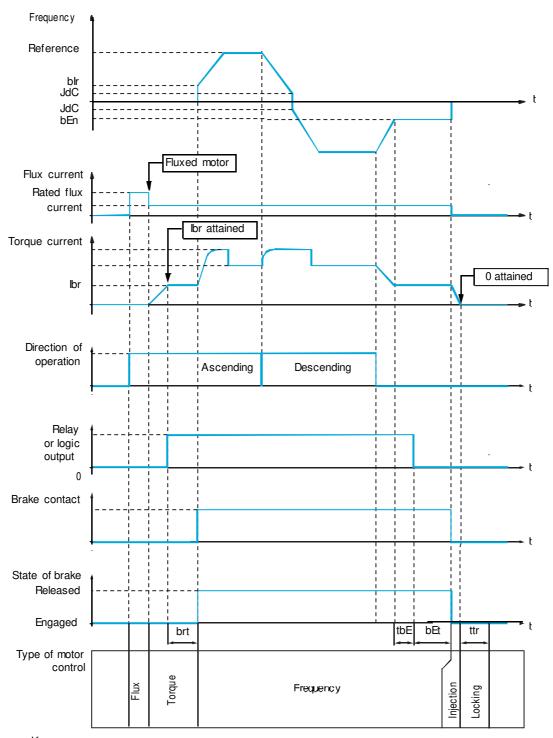
Brake logic control, horizontal movement in open-loop mode



Key:

- (bEn): [Brake engage freq]
- (bEt):[Brake engage time]
- (brt): [Brake Release time]
- (lbr): [Brake release I FW]
- (SdC1): [Auto DC inj. level 1]
- (tbE):[Brake engage delay]
- (ttr): [Time to restart]

Brake logic control, vertical movement in open-loop mode



Key:

- (bEn): [Brake engage freq]
- (bEt):[Brake engage time]
- (blr): [Brake release freq]
- (brt): [Brake Release time]
- (lbr): [Brake release I FW]
- (JdC): [Jump at reversal]
- (tbE):[Brake engage delay]
- (ttr): [Time to restart]

Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued)	-	•	
bLC-	[BRAKE LOGIC CONTROL]			
	Note: This function cannot be used with certain other functions. Follow	the instructions on page <u>163</u>	<u>3</u> .	
bLC	[Brake assignment]	[Brake assignment]		
	Logic output or control relay. Note: If the brake is assigned, only a ramp stop is possible. Check the [Type of stop] (Stt) page 173. Brake logic control can only be assigned if [Motor control type] (Ctt) is not set to [Standard] (Std), [V/F 5pts] (UFQ UV/F Quad.] (UFq) or [Sync. mot] (SYn). See Compatibility table page 165 to see the compatible functions.			
r2	[No] (nO): Function not assigned (in this case, none of the function para [R2] (r2): Relay [L01] (L01): Logic output	ameters can be accessed)		
dO1	[dO1] (dO1): Analog output AO1 functioning as a logic output. Selection is set to [No] (nO)	can be made if [AO1 assi	. , , , ,	
bSt	[Movement type]		[Hoisting] (UEr)	
*				
HOr UEr	[Traveling] (HOr): Resistive-load movement (translational motion of over Note: If [Motor control type] (Ctt) is set to [Standard] (Std) or [V/F [Traveling] (HOr). [Hoisting] (UEr): Driving-load movement (hoisting winch, for example) Note: If [Weight sensor ass.] (PES) page 200 is not [No] (nO), [Motor control of the con	5pts] (UF5), [Movement	type] (bSt) is forced to	
bCI	[Brake contact]		[No] (nO)	
*	If the brake has a monitoring contact (closed for released brake).			
	[No] (nO): Not assigned [Ll1] (Ll1): Logical input Ll1 [] (): See the assignment conditions on page 153			
bIP	[Brake impulse]		[Yes] (YES)	
*	Brake impulse. This parameter can be accessed if [Weight sensor ass.] (PES) is set if [Movement type] (bSt) is set to [Hoisting] (UEr).	to [No] (nO) (see page 20)	O). It is set to [Yes] (YES)	
YES	[No] (nO): The motor torque is given in the required operating direction, [Yes] (YES): The motor torque is in forw and direction (check that this dir [Brake release FW] (D r) [2 BR] (2 D r): The torque is in the required direction, at current [Brake release Rev] (rd) for Reverse, for certain specific application	rection corresponds to asce e release FW] (br) for	ending), at current	
Ibr	[Brake release I FW]	0 to 1.36 ln (2)	0 A	
*	Brake release current threshold for ascending or forward movement. This parameter can be accessed if [Weightsensorass.] (PES) is set to	D [No] (nO) page <u>200</u> .	•	
(1)				
Ird	[Brake release I Rev]	0 to 1.36 ln (2)	0 A	
*	Brake release current threshold for descending or reverse movement. This parameter can be accessed if [Brake impulse] (bIP) is set to [2 I	BR] (21br).	1	
brt	[Brake Release time]	0 to 5.00 s	0 s	
*	Brake release time delay.		1	
()				
(1)				
\ /				

DRI- > CONF > FULL > FUN- > BLC-

Code	Name / Description	Adjustment range	Factory setting
blr	[Brake release freq]	[Auto] (AU tO) to 10 Hz	[Auto] (AUtO)
*	Brake release frequency threshold (initialization of acceleration ramp). This parameter can be accessed if [Movement type] (bSt) page 194 is set to [Hoisting] (UEr).		
()			
(1)			
AUtO	[Auto] (AUtO): The drive takes a value equal to the rated slip of the m 0 to 10 Hz: Manual control.	,	drive parameters
bEn	[Brake engage freq]	[Auto] (AUtO) 0 to 10 Hz	[Auto] (AUTO)
*	Brake engage frequency threshold. Note: [Brake engage freq] (bEn) cannot be higher than [Low spe	eed] (LSP).	
()			
(1)			
AUtO	[Auto] (AUtO): The drive takes a value equal to the rated slip of the m 0 to 10 Hz: Manual control.	notor, calculated using the	drive parameters
tbE	[Brake engage delay]	0 to 5.00 s	0 s
*			
()	Time delay before request to engage brake.		
(1)			
bEt	[Brake engage time]	0 to 5.00 s	0 s
g	Brake engage time (brake response time).		L
()			
(1)			
SdC1	[Auto DC inj. level 1]	0 to 1.2 ln (2)	0.7 ln (2)
*	place be injured of	1 ''	1 ',
()	NOTICE		
(1)	OVERHEATING AND DAMAGE TO THE MOTOR		
(' '	Verify that the connected motor is properly rated for the DC injected and time in order to avoid overheating and damage to the motor actions to follow these instructions can result in equipment	or.	ed in terms of amount
	Level of standstill DC injection current. Note: This parameter can be accessed if [Movementtype] (bSt) pa	age 194 is set to [Traveling	a] (HOr).
bEd	[Engage at reversal]		[No] (nO)
*	Can be used to select w hether or not the brake engages on transition to	zero speed w hen the opera	ting direction is reversed.
O			
nO YES	[No] (nO): The brake does not engage [Yes] (YES): The brake engages		
JdC	[Jump at reversal]	[Auto] (AUtO) to 10 Hz	[Auto] (AUtO)
*	This parameter can be accessed if [Movement type] (bSt) page 194	is set to [Hoisting] (UEr).	
O			
(1)			
AUtO -	[Auto] (AUtO): The drive takes a value equal to the rated slip of the motor, calculated using the drive parameters 0 to 10 Hz: Manual control When the reference direction is reversed, this parameter can be used to avoid loss of torque (and consequential release of load)		
	on transition to zero speed. Parameter is not applicable if [Engage at r		

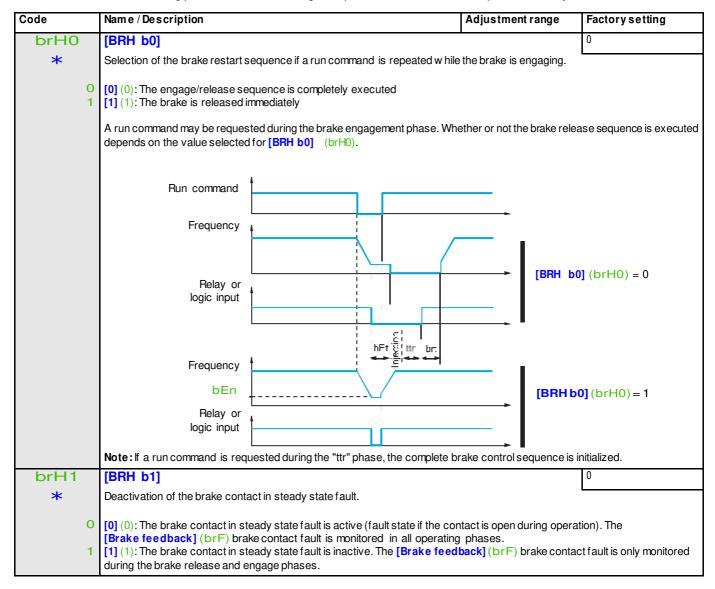
Code	Name / Description	Adjustment range	Factory setting
ttr	[Time to restart]	0.00 to 15.00 s	0 s
*	Time betw een the end of a brake engage sequence and the start of a brake release sequence.		
()			
(1)			

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > BLC-

Brake control logic expert parameters

Following parameters for brake logic sequence are accessible in expert mode only.



Code	Name / Description	Adjustment range	Factory setting
brH2	[BRH b2]	•	0
*	Taking the brake contact into account for the brake control sequence.		
0	[0] (0): The brake contact is not taken into account [1] (1): The brake contact is taken into account		
	If a logic input is assigned to the brake contact: - [BRH b2] (brH2) = 0: During the brake release sequence, the re [Brake Release time] (brt). During the brake engage seque [Current ramp time] (brr) at the end of the [Brake engage - [BRH b2] (brH2) = 1: When the brake is released, the referenthe brake is engaged, the current changes to 0 according to the rechanges to 0.	nce, the current changes to time] (bEt). ce is enabled when the logic	0 according to the ramp input changes to 1. When
	Run command Relay or logic input	→	
	Frequency	brr [BRH b2]	(brH2) = 0
	Logic input Brake contact	1	
	Frequency	brr [BRH b2] (brH2) = 1
brr	[Current ramp time]	0 to 5.00 s	0 s
*	Torque current ramp time (increase and decrease) for a current variation	n equal to [Brake release I	FW] (Ibr).
()			



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

()

Parameter that can be modified during operation or when stopped.

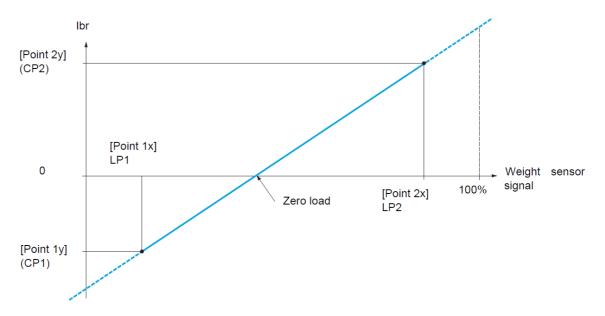
EXTERNAL WEIGHT MEASUREMENT

Load measurement

This function uses the information supplied by a weight sensor to adapt the current [Brake release I FW] (Ibr) of the [BRAKE LOGIC CONTROL] (bLC-) function. The signal from the weight sensor can be assigned to an analog input (usually a 4 - 20 mA signal) or to the pulse-in input, according to the type of weight sensor.

Example: Measurement of the total weight of a hoisting winch and its load

The current [Brake release | FW] (|br) is adapted in accordance with the curve below.



Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued)			
ELM-	[EXTERNAL WEIGHT MEAS.]			
PES	[Weight sensor ass.]		[No] (nO)	
	│	IG		
	LOSS OF CONTROL			
	 Verify that [Point 1 X] (LP1), [Point 2x] (LP2), [Point 1Y] set to avoid loss of control of the load being lifted. 	(CP1) and [Point 2)	(CP2) are correctly	
	 Perform a comprehensive commissioning test to confirm the value given to the parameters [Point 1 X] (LP1), [Point 2x] (LP2), [Point 1Y] (CP1) and [Point 2Y] (CP2). Failure to follow these instructions can result in death, serious injury, or equipment damage. This parameter can be configured if [BRAKE LOGIC CONTROL] (bLC-) page 194 is not set to [No] (nO).			
A11 A12 A13 PI AIU1 AIU2	[No] (nO): Not assigned [Al1] (A11): Analog input A1 [Al2] (A12): Analog input A2 [Al3] (A13): Analog input A3 [RP] (PI): Pulse input [Al virtual 1] (AlU1): Virtual analog input 1 with the jog dial [Al virtual 2] (AlU2): Virtual analog input 2 by the communication bus [OA01] (OA01): Function blocks: Analog Output 01			
 OA10	[OA10] (OA10): Function blocks: Analog Output 10			
LP1	[Point 1 X]	0 to LP2-0.01%	0%	
*	0 to 99.99% of signal on assigned input. [Point 1x] (LP1) must be less than [Point 2x] (LP2). This parameter can be accessed if [Weight sensor ass.] (PES) is assig	ned.		
CP1	[Point 1Y]	-1.36 ln to 1.36 ln (1)	-ln (1)	
*	Current corresponding to load [Point 1 X] (LP1), in A. This parameter can be accessed if [Weightsensorass.] (PES) is assig	ned.		
LP2	[Point 2X]	LP1+0.01% to 100%	50%	
*	0.01 to 100% of signal on assigned input. [Point 2x] (LP2) must be greater than [Point 1x] (LP1). This parameter can be accessed if [Weight sensor ass.] (PES) is assig	ned.		
CP2	[Point 2Y]	-1.36 ln to 1.36 ln (1)	0 A	
*	Current corresponding to load [Point 2x] (LP2), in A. This parameter can be accessed if [Weightsensorass.] (PES) is assigned.			
IbrA	[lbr 4-20 mA loss]	0 to 1.36 ln (1)	0	
*	Brake release current in the event of the loss of the weight sensor inform. This parameter can be accessed if the weight sensor is assigned to an ana Recommended settings: Rated motor current for a hoisting application.		4-20 mA loss is deactivated.	

 $(1) \ ln \ corresponds to the rated drive current indicated in the \ lnstallation \ manual \ and \ on the \ drive \ nameplate.$

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Parameter that can be modified during operation or when stopped.

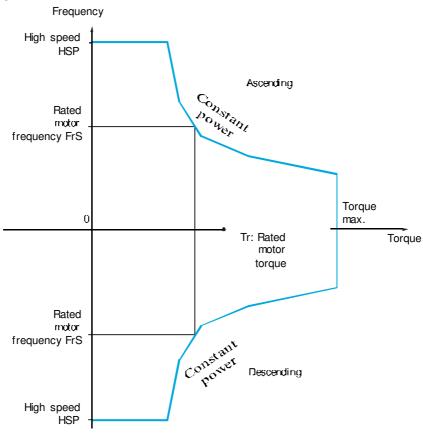
HIGH SPEED HOISTING

This function can be used to optimize the cycle times for hoisting movements for zero or lightweight loads. It authorizes operation at "constant power" in order to reach a speed greater than the rated speed without exceeding the rated motor current.

The speed remains limited by the [High speed] (HSP) parameter page 87.

The function acts on the speed reference pedestal and not on the reference itself.

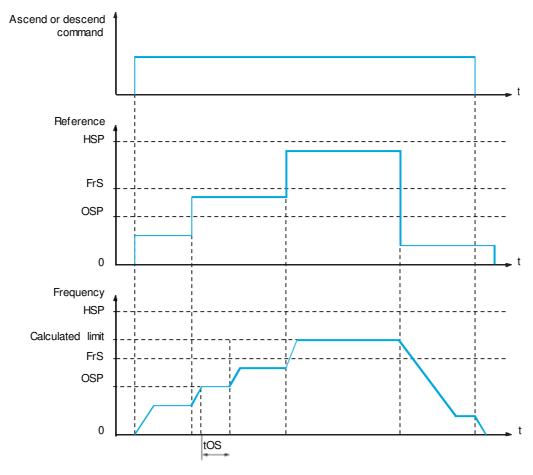
Principle:



There are 2 possible operating modes:

- Speed reference mode: The maximum permissible speed is calculated by the drive during a speed step that is set so that the drive can measure the load.
- Current limitation mode: The maximum permissible speed is the speed that supports current limitation in motor mode, in the "ascending" direction only. For the "descending" direction, operation is in Speed reference mode.

Speed reference mode

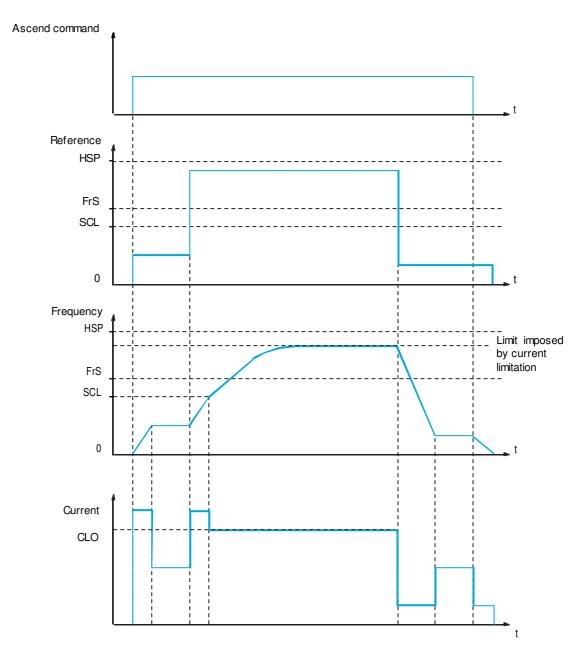


OSP: Adjustable speed step for load measurement

tOS: Load measuring time

Two parameters are used to reduce the speed calculated by the drive, for ascending and descending.

Current limiting mode



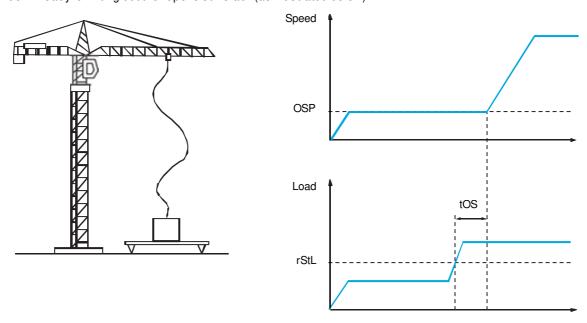
SCL: Adjustable speed threshold, above which current limitation is active

CLO: Current limitation for high-speed function

Note: The speed reached for a specific current will be lower in case of network undervoltage in comparison with nominal network voltage.

Rope slack

The Rope slack function can be used to help to prevent starting up at high speed when a load has been set down ready for lifting but the rope is still slack (as illustrated below).



The speed step (OSP parameters) described on page 202 is used to measure the load. The effective measurement cycle will not be triggered until the load reaches the adjustable threshold [Rope slack trq level] (rStL), which corresponds to the weight of the hook.

A logic output or a relay can be assigned to the indication of the rope slack state in the $[INPUTS / OUTPUTS \ CFG] \ (I_O-) \ menu.$

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		•
HSH-	[HIGH SPEED HOISTING]		
	Note: This function cannot be used with certain other functions. Follow the	ne instructions on page <u>163</u> .	
HSO	[High speed hoisting]		[No] (nO)
SSO	[No] (nO): Function inactive [Speed ref] (SSO): Speed reference mode [I Lim it] (CSO): Current limitation mode		
COF	[Motor speed coeff.]	0 to 100%	100%
*	Speed reduction coefficient calculated by the drive for Ascending direction. This parameter can be accessed if [High speed hoisting] (HSO) is set to		
COr	[Gen. speed coeff]	0 to 100%	50%
*	Speed reduction coefficient calculated by the drive for Descending direct This parameter can be accessed if [High speed hoisting] (HSO) is not s		1
tOS	[Load measuring tm.]	0.1 s to 65 s	0.5 s
* ()	Duration of speed step for measurement. This parameter can be accessed if [High speed hoisting] (HSO) is not set to [No] (nO).		
OSP	[Measurement spd]	0 to [Rated motor freq.] (FrS	40 Hz
*	Speed stabilized for measurement.	111	1 -
()	This parameter can be accessed if [High speed hoisting] (HSO) is not s	et to [No] (nO).	
CLO	[High speed Limit]	0 to 1.5 ln (1)	ln (1)
*	Current limitation at high speed. This parameter can be accessed if [High speed hoisting] (HSO) is set to Note: If the setting is less than 0.25 ln, the drive may lock in [Output Phase (see page 256).		has been enabled
SCL	[I Limit. frequency]	0 to 599 Hz according to rating	40 Hz
*	Frequency threshold, above w hich the high-speed limitation current is act This parameter can be accessed if [High speed hoisting] (HSO) is set to		I
Q			
rSd	[Rope slack config.]		[No] (nO)
*	Rope slack function. This parameter can be accessed if [High speed hoisting] (HSO) is not s	et to [No] (nO).	
nO drl PES	[No] (nO): Function inactive [Drive estim.] (clrl): Measurement of the load by estimating the torque [Ext. sensor] (PES): Measurement of the load using a weight sensor, ca page 200 is not [No] (nO)		sorass.](PES)
rStL	[Rope slack trq level]	0 to 100%	0%
*	Adjustment threshold corresponding to a load w eighing slightly less than the hook when off-load, as a % of the rated load. This parameter can be accessed if [Rope slack trq level] (rSd) has been assigned.		

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.

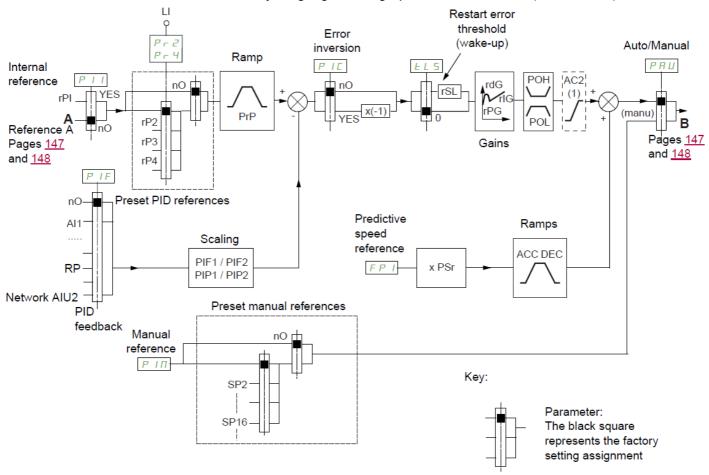
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Parameter that can be modified during operation or when stopped.

PID REGULATOR

Block diagram

The function is activated by assigning an analog input to the PID feedback (measurement).



(1) Ramp AC2 is only active when the PID function starts up and during PID "wake-ups".

PID feedback:

The PID feedback must be assigned to one of the analog inputs Al1 to Al3, to the pulse input, according to whether any extension cards have been inserted.

PID reference:

The PID reference must be assigned to the following parameters: Preset references via logic inputs (rP2, rP3, rP4)

In accordance with the configuration of [Act. internal PID ref.] (PII) page 210:

Internal reference (rPI) or

Reference A ([Ref.1 channel] (Fr1) or [Ref.1B channel] (Fr1b), see page 154).

Combination table for preset PID references:

LI (Pr4)	LI (Pr2)	Pr2 = n0	Reference
			rPI or A
0	0		rPl or A
0	1		rP2
1	0		rP3
1	1		rP4

A predictive speed reference can be used to initialize the speed on restarting the process.

Scaling of feedback and references:

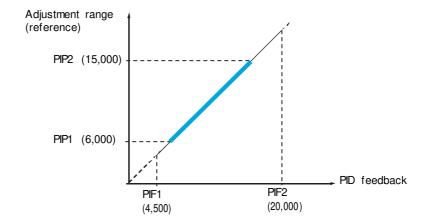
- [Min PID feedback] (PIF1), [Max PID feedback] (PIF2) parameters can be used to scale the PID feedback (sensorrange). This scale MUST be maintained for all other parameters.
- [Min PID reference] (PIP1), [Max PID reference] (PIP2) parameters can be used to scale the adjustment range, for example the reference. The adjustment range MUST remain within the sensor range.

The maximum value of the scaling parameters is 32,767. To facilitate installation, we recommend using values as close as possible to this maximum level, while retaining powers of 10 in relation to the actual values.

Example (see graph below): Adjustment of the volume in a tank, between 6 m³ and 15 m³.

- Sensor used 4-20 mA, $4.5 \,\mathrm{m}^3$ for $4 \,\mathrm{mA}$ and $20 \,\mathrm{m}^3$ for $20 \,\mathrm{mA}$, with the result that PIF1 = 4,500 and PIF2 = 20,000.
- Adjustment range 6 to 15 m³, with the result that PIP1 = 6,000 (min. reference) and PIP2 = 15,000 (max. reference).
- Example references:
 - rP1 (internal reference) = 9,500
 - rP2 (preset reference) = 6,500
 - rP3 (preset reference) = 8,000
 - rP4 (preset reference) = 11,200

The [3.4 DISPLAY CONFIG.] menu can be used to customize the name of the unit displayed and its format.



Other parameters:

- [PID wake up thresh.] (rSL) parameter: Can be used to set the PID error threshold, above which the PID regulator will be reactivated (wake-up) after a stop due to the max. time threshold being exceeded at low speed [Low speed time out] (tLS).
- Reversal of the direction of correction [PID correct.reverse] (PIC): If [PID correct.reverse] (PIC) is set to [No] (nO), the speed of the motor will increase when the error is positive (for example: pressure control with a compressor). If [PID correct.reverse] (PIC) is set to [Yes] (YES), the speed of the motor will decrease when the error is positive (for example: temperature control using a cooling fan).
- The integral gain may be short-circuited by a logic input.
- An alarm on the PID feedback may be configured and indicated by a logic output.
- An alarm on the PID error may be configured and indicated by a logic output.

DRI- > CONF > FULL > FUN- > PID-

"Manual - Automatic" Operation with PID

This function combines the PID regulator, the preset speeds and a manual reference. Depending on the state of the logic input, the speed reference is given by the preset speeds or by a manual reference input via the PID function.

Manual reference [Manual reference] (PIM):

- Analog inputs Al1 to Al3
- · Pulse input

Predictive speed reference [Speed ref. assign.] (FPI):

- [Al1] (Al1): Analog input
- [Al2] (Al2): Analog input
- [Al3] (Al3): Analog input
- [RP] (PI): Pulse input
- [HMI] (LCC): Graphic display terminal or remote display terminal
- [Modbus] (Mdb): Integrated Modbus
- [CANopen] (CAn): Integrated CANopen®
- [Com. card] (nEt): Communication card (if inserted)

Setting up the PID regulator

1. Configuration in PID mode.

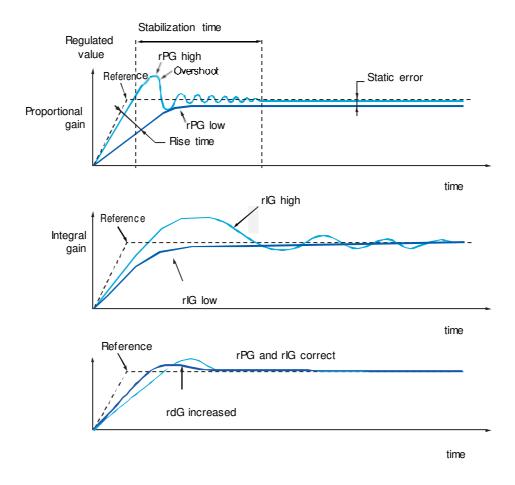
See the diagram on page 206.

2. Perform a test in factory settings mode.

To optimize the drive, adjust [PID prop. gain] (rPG) or [PID integral gain] (rIG) gradually and independently, and observe the effect on the PID feedback in relation to the reference.

3. If the factory settings are unstable or the reference is incorrect.

- Perform a test with a speed reference in Manual mode (without PID regulator) and with the drive on load for the speed range of the system:
 - In steady state, the speed must be stable and comply with the reference, and the PID feedback signal must be stable.
 - In transient state, the speed must follow the ramp and stabilize quickly, and the PID feedback must follow the speed. If this is not the case, see the settings for the drive and/or sensor signal and wiring.
- Switch to PID mode.
- Set [Dec ramp adapt.] (brA) to [No] (nO) (no auto-adaptation of the ramp).
- Set [PID ramp] (PrP) to the minimum permitted by the mechanism without triggering an [Overbraking] (ObF).
- Set the integral gain [PID integral gain] (rIG) to minimum.
- Leave the derivative gain [PID derivative gain] (rdG) at 0.
- Observe the PID feedback and the reference.
- Switch the drive ON/OFF a number of times or vary the load or reference rapidly a number of times.
- Set the proportional gain [PID prop. gain] (rPG) in order to ascertain the compromise between response time and stability in transient phases (slightovershoot and 1 to 2 oscillations before stabilizing).
- If the reference varies from the preset value in steady state, gradually increase the integral gain [PID integral gain] (rIG), reduce the proportional gain [PID prop. gain] (rPG) in the event of instability (pump applications), find a compromise between response time and static precision (see diagram).
- Lastly, the derivative gain may permit the overshoot to be reduced and the response time to be improved, although this will be more difficult to obtain a compromise in terms of stability, as it depends on 3 gains.
- Perform in-production tests over the whole reference range.



The oscillation frequency depends on the system kinematics.

Param e ter	Rise time	Overshoot	Stabilization time	Static error
rPG /	//	1	=	` `
rIG 🖊	`	11	1	//
rdG 🖊	=	`	_	=

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		·
Pld-	[PID REGULATOR]		
	Note : This function cannot be used with certain other functions. Follow the instructions on page <u>163</u> .		
PIF	[PID feedback ass.]		[No] (nO)
nO A11	[No] (nO): Not assigned [Al1] (A11): Analog input A1		
A12	[Al2] (A12): Analog input A2		
	[Al3] (A13): Analog input A3 [RP] (PI): Pulse input		
AIU1	[Al virtual 1] (AIU1): Virtual analog input 1 by the communication		
	[Al virtual 2] (AlU2): Virtual analog input 2 by the communica: [OA01] (OA01): Function blocks: Analog Output 01	tion bus	
	[OA10] (OA10): Function blocks: Analog Output 10		
AIC2	[Al2 net. channel]		[No] (nO)
*	This parameter can be accessed if [PID feedback ass.] (PIF) accessed in the [INPUTS / OUTPUTS CFG] (I_O-) menu.	is setto [Al virtual 2] (AIU2). This parame	ter can also be
nO Mdb CAn nEt	[No] (nO): Not assigned [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com.card] (nEt): Communication card (if inserted)		
PIF1	[Min PID feedback]	0 to [Max PID feedback] (PIF2) (2)	100
*	Value for minimum feedback.		
()			
(1)		Int. DID (II. (DIE4) 00.707 (6	W 4 000
PIF2	[Max PID feedback]	[Min PID feedback] (PIF1) to 32,767 (2	2) 1,000
*	Value for maximum feedback.		
\circ			
(1)			
PIP1	[Min PID reference]	[Min PID feedback] (PIF1) to	150
*	Minimum process value.	[Max PID reference] (PIP2) (2)	
0			
(1)			
PIP2	[Max PID reference]	[Min PID reference] (PIP1) to	900
1112	[wax Fib reference]	[Max PID feedback] (PIF2) (2)	
*	Maximum process value.		
()			
(1)			
PII	[Act. internal PID ref.]		[No] (nO)
*	Internal PID regulator reference.		
nO YES	[No] (nO): The PID regulator reference is given by [Ref.1 che summing/subtraction/multiplication functions (see the diagram of [Yes] (YES): The PID regulator reference is internal via [Internal via	on page <u>206</u>).	with

DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting
rPI	[Internal PID ref.]	[Min PID reference] (PIP1) to [Max PID reference] (PIP2)	150
*	Internal PID regulator reference.	ODING! (MOs.) many	•
()	This parameter can also be accessed in the [1.2 MONIT	OHING) (MOn-) menu.	
rPG	[PID prop. gain]	0.01 to 100	1
*	Proportional gain.		
()			
rIG	[PID integral gain]	0.01 to 100	1
*	Integral gain.		
()			
rdG	[PID derivative gain]	0.00 to 100	0
*	Derivative gain.		
()			
PrP	[PID ramp]	0 to 99.9 s	0 s
*	PID acceleration/deceleration ramp, defined to go from vice versa.	Min PID reference] (PP1) to [Max PID refe	erence] (PIP2) and
()			
(1)			
PIC	[PID correct. reverse]		[No] (nO)
*	Reversal of the direction of correction [PID correct.rev If [PID correct.reverse] (PIC) is set to [No] (nO), the sper pressure control with a compressor) If [PID correct.reverse] (PIC) is set to [Yes] (YES), the stemperature control using a cooling fan).	eed of the motor will increase when the error is	
	[No] (nO): No [Yes] (YES): Yes		
POL	[Min PID output]	- 599 to 599 Hz	0 Hz
*	Minimum value of regulator output in Hz.		-
(1)			
POH	[Max PID output]	0 to 599 Hz	60 Hz
*	Maximum value of regulator output in Hz.	0 10 000 112	0012
O			
(1)			
PAL *	[Min fbk alarm]	[Min PID feedback] (PIF1) to [Max PID feedback] (PIF2) (2)	100
()	Minimum monitoring threshold for regulator feedback.		
(1)			

DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting
PAH	[Max fbk alarm]	[Min PID feedback] (PIF1) to [Max PID feedback] (PIF2) (2)	1,000
*	Maximum monitoring threshold for regulator feedback.		
()			
(1)			
PEr	[PID error Alarm]	0 to 65,535 (2)	100
*	Regulator error monitoring threshold.		_
()			
(1)			
PIS	[PID integral reset]		[No] (nO)
*	If the assigned input or bit is at 0, the function is inactive (the PID f the assigned input or bit is at 1, the function is active (the PID	,	
nO LI1	No] (nO): Not assigned [LI1] (LI1): Logical input LI1		
	[] (): See the assignment conditions on page 153		
FPI	[Speed ref. assign.]		[No] (nO)
*	PID regulator predictive speed input.		
AI2 AI3 LCC Mdb CAn nEt PI AIU1	[A11] (A11): Analog input A1 [AI2] (A12): Analog input A2 [AI3] (A13): Analog input A3 [HMI] (LCC): Graphic display terminal or remote display termin [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com.card] (net): Communication option board source [RP] (Pl): Pulse input [AI virtual 1] (AIU1): Virtual analog input 1 with the jog dial [OA01] (OA01): Function blocks: Analog Output 01	1 to 100%	100%
()			
(1)			
PAU	[Auto/Manual assign.]		[No] (nO)
*	If the assigned input or bit is at 0, the PID is active. If the assigned input or bit is at 1, manual operation is active.		
nO LI1 	[No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		
AC2	[Acceleration 2]	0.00 to 6,000 s (3)	5 s
*	Time to accelerate from 0 to the [Rated motor freq.] (FrS). To be set according to the possibility of the application.	have repeatability in ramps, the value of the	his parameter must
()	Ramp AC2 is only active when the PID function starts up and o	luring PID "w ake-ups".	
(1)			
. ,	<u> </u>		

Code	Name / Description	Adjustment range	Factory setting	
PIM	[Manual reference]	L	[No] (nO)	
*	Manual speed input. This parameter can be accessed if [Auto/Manual assign.] (PAU) is not set to [No] (nO). The preset speeds are active on the manual reference if they have been configured.			
AI1 AI2 AI3 PI AIU1 OA01	[No] (nO): Not assigned [Al1] (A11): Analog input A1 [Al2] (A12): Analog input A2 [Al3] (A13): Analog input A3 [RP] (Pl): Pulse input [Al virtual 1] (AlU1): Virtual analog input 1 with the jog [OA01] (OA01): Function blocks: Analog Output 01 [OA10] (OA10): Function blocks: Analog Output 10	g dial		
tLS	[Low speed time out]	0 to 999.9 s	0 s	
(1)	Maximum operating time at [Low speed] (LSP) (see [Low speed] (LSP) page 87). Follow ing operation at [Low speed] (LSP) for a defined period, a motor stop is requested automatically. The motor will restart if the reference is greater than [Low speed] (LSP) and if a run command is still present. Note: A value of 0 indicates an unlimited period of time. If [Low speed time out] (tLS) is not 0, [Type of stop] (Stt) page 173 is forced to [Ramp stop] (rMP) (only if a ramp stop can be configured).			
rSL	[PID wake up thresh.]	0.0 to 100.0	0	
*	A \	WARNING		
₹ 2 s	UNANTICIPATED EQUIPMENT OPERATION Verify that activating this function does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage. If the "PID" and "Low speed operating time" [Low speed time out] (tLS) functions are configured at the same time, the PID regulator may attempt to set a speed low er than [Low speed] (LSP). This results in unsatisfactory operation, which consists of starting, operating at low speed then stopping, and so on Parameter [PID wake up thresh.] (rSL) (restart error threshold) can be used to set a minimum PID error threshold for restarting after a stop at prolonged [Low speed] (LSP). [PID wake up thresh.] (rSL) is a percentage of the PID error (value depends on [Min PID feedback] (PIF1) and [Max PID feedback] (PIF2), see [Min PID feedback] (PIF1) page 210). The function is inactive if [Low speed time out] (tLS) = 0 or if [PID wake up thresh.] (rSL) = 0.			

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, for example, 15.65 for 15,650.
 (3) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] (Inr) page 170.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.
- To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > FUN- > PRI-

PID PRESET REFERENCES

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		
PrI-	[PID PRESET REFERENCES]		
	Function can be accessed if [PID feedback ass.] (PIF) page	e <u>210</u> is assigned.	
Pr2	[2 preset PID ref.]		[No] (nO)
	If the assigned input or bit is at 0, the function is inactive. If the assigned input or bit is at 1, the function is active.		
nO LI1 	[No] (nO): Not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		
Pr4	[4 preset PID ref.]		[No] (nO)
	Check that [2 preset PID ref.] (Pr2) has been assigned before identical to [2 preset PID ref.] (Pr2) page 212. If the assigned input or bit is at 0, the function is inactive. If the assigned input or bit is at 1, the function is active.	assigning this function.	
rP2	[Preset ref. PID 2]	[Min PID reference] (PIP1) to [Max PID reference] (PIP2) (2)	300
*	This parameter can be accessed if [2 preset PID ref.2] (Pr2) is assigned.	
()			
(1)			
rP3	[Preset ref. PID 3]	[Min PID reference] (PIP1) to [Max PID reference] (PIP2) (2)	600
*	This parameter can be accessed if [3 preset PID ref.] (Pr3)		
()			
(1)			
rP4	[Preset ref. PID 4]	[Min PID reference] (PIP1) to [Max PID reference] (PIP2) (2)	900
*	This parameter can be accessed if [4 preset PID ref.] (Pr4)		
()			
(1)			

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, for example, 15.65 for 15,650.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
- Parameter that can be modified during operation or when stopped.

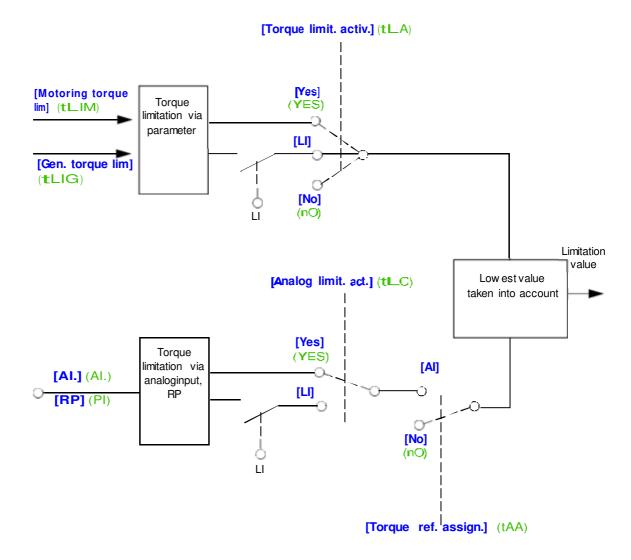
DRI- > CONF > FULL > FUN- > TOL-

TORQUE LIMITATION

There are two types of torque limitation:

- With a value that is fixed by a parameter
- With a value that is set by an analog input (Al orpulse)

If both types are enabled, the lowest value is taken into account. The two types of limitation can be configured or switched remotely using a logic input or via the communication bus.

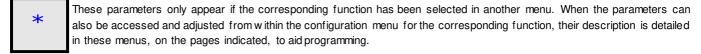


DRI- > CONF > FULL > FUN- > TOL-

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)	-	•
tOL-	[TORQUE LIMITATION]		
tLA	[Torque limit. activ.]		[No] (nO)
	If the assigned input or bit is at 0, the function is inactive. If the assigned input or bit is at 1, the function is active.		
YES LI1	[No] (nO): Function inactive [Yes] (YES): Function alw ays active [Ltt] (L_I1): Logical input Lt1 [] (): See the assignment conditions on page 153		
IntP	[Torque increment]		[1%] (1)
*	This parameter cannot be accessed if [Torque limit.activ.] (tLA) is s Selection of units for the [Motoring torque lim] (tLIM) and [Gen. tor		neters.
	[0,1%] (0.1): Unit 0.1% [1%] (1): Unit 1%		
tLIM	[Motoring torque lim]	0 to 300%	100%
(1)	This parameter cannot be accessed if [Torque limit.activ.] (tLA) is s Torque limitation in motor mode, as a % or in 0.1% increments of the rated [Torque increment] (IntP) parameter.		vith the
tLIG	[Gen. torque lim]	0 to 300%	100%
* () (1)	This parameter cannot be accessed if [Torque limit.activ.] (tLA) is s Torque limitation in generator mode, as a % or in 0.1% increments of the r [Torque increment] (IntP) parameter.		ce with the
tAA	[Torque ref. assign.]		[No] (nO)
	If the function is assigned, the limitation varies betw een 0% and 300% of the applied to the assigned input. Examples: 12 mA on a 4-20 mA input results in limitation to 150% of the rated torque 2.5 V on a 10 V input results in 75% of the rated torque.	·	sis of the 0% to 100% signal
Al1 Al2 Al3 Pl AlU1 AlU2	[No] (nO): Not assigned (function inactive) [Al1] (Al1): Analog input [Al2] (Al2): Analog input [Al3] (Al3): Analog input [RP] (PI): Pulse input [Al Virtual 1] (AlU1): Virtual analog input 1 with the jog dial [Al Virtual 2] (AlU2): Virtual input via communication bus, to be config	gured via [Al2 net. cha	nnel] (AIC2) page <u>135</u> .
OA10	[OA10] (OA10): Function blocks: Analog Output 10		

Code	Name / Description	Adjustment range	Factory setting
tLC	[Analog limit. act.]		[Yes] (YES)
	This parameter cannot be accessed if [Torque limit. activ.] (tL/	A) is set to [No] (nO).	
	Identical to [Torque limit. activ.] (tLA) page 216.		
	If the assigned input or bit is at 0:		
*	The limitation is specified by the [Motoring torque lim] (tLIM) and [Gen. torque lim.] (tLIG) parameters if		
	[Torque limit. activ.] (tLA) is not [No] (nO).		
	No limitation if [Torque limit. activ.] (tLA) is set to [No] (nO). If the assigned input or bit is at 1:		
	The limitation depends on the input assigned by [Torque ref. assign.] (tAA).		
	Note: If [Torque limitation] (tLA) and [Torque ref. assign.] (tA taken into account.		ne, the low est value will be

(1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- >CLI-

2ND CURRENT LIMITATION

Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued)	-	-	
CLI-	[2nd CURRENT LIMIT.]			
LC2	[Current limit 2]		[No] (nO)	
	If the assigned input or bit is at 0, the first current limitation is active if the assigned input or bit is at 1, the second current limitation is a			
nO LI1 	[No] (nO): Function inactive [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153			
CL2	[l Limit. 2 value]	0 to 1.5 ln (1)	1.5 ln (1)	
	NOTI	CE		
*	OVERHEATING AND DAMAGE TO THE MOTOR			
O	 Verify that the motor is properly rated for the maximus Consider the duty cycle of the motor and all factors o 			
	in determining the currentlimit.	i your application includ	aing derating requirements	
	Failure to follow these instructions can result in eq	uipment damage.		
	Second current limitation. This parameter can be accessed if [Current limit 2] (LC2) is not the adjustment range is limited to 1.5 ln. Note: If the setting is less than 0.25 ln, the drive may lock in [Output (see [Output Phase Loss] (OPL) page 256). If it is less than the	out Phase Loss] (OPL) fa		
CLI	[Current limitation]	0 to 1.5 ln (1)	1.5 ln (1)	
			_	
*	NOTI	CE		
	OVERHEATING AND DAMAGE TO THE MOTOR			
()	Verify that the motor is properly rated for the maximum Caraidantha duty and a of the grateriand all features.			
	Consider the duty cycle of the motor and all factors of your application including derating requirements in determining the currentlimit.			
	Failure to follow these instructions can result in equipment damage.			
	First current limitation. This parameter can be accessed if [Current limit 2] (LC2) is not the adjustment range is limited to 1.5 ln. Note: If the setting is less than 0.25 ln, the drive may lock in [Out enabled (see [Output Phase Loss] (OPL) page 256). If it is less than 1.5 ln.	put Phase Loss] (OPL) f		

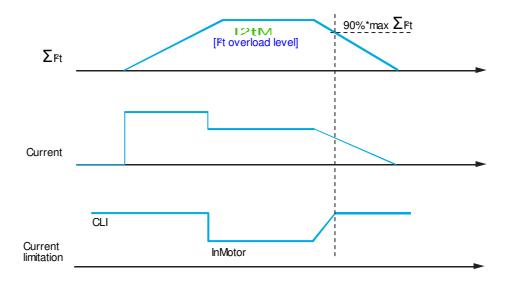
(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Parameter that can be modified during operation or when stopped.

DYN CURRENT LIMIT

The DTM ER24, is available with SoMove to set the **BMP** motors. To install the ER24 DTM (device type manager), you can download and install our FDT (field device tool): SoMove lite on www.blemo.com.



Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)				
I2t-	[DYN CURRENT LIMIT]				
I2tA	[l²t model activation]		[No] (nO)		
*	Pt model activation for current limitation				
	[No] (nO): [Yes] (YES):				
	when $i^2t \ge Max \sum i^2t$, [i^2t overload level] (i^2tM) = 100 and current limitation is set to InMotor when $i^2t \le Max \sum i^2t^*90\%$, [i^2t overload level] (i^2tM) y 90 and the current limitation is set to CLI				
	This parameter can be accessed if [max time of Ptl] (12tt) is not	set to [0.00] (O.OO)			
I2tI	[max current of I²tl] Maximum current of I²t model.		1.5 ln +1 (1)		
I2tt	[max time of I²tl] Maximum time of I²t model.	0.00 to 655.35	[0.00] (0.00)		

(1) In corresponds to the rated drive current indicated in the Installation manual or on the drive nameplate.

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

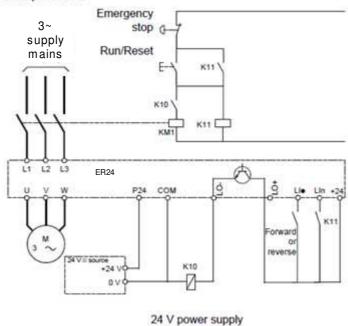
DRI- > CONF > FULL > FUN- >LLC-

LINE CONTACTOR COMMAND

The line contactor closes every time a run command (forward or reverse) is sent and opens after every stop, as soon as the drive is locked. For example, if the stop mode is stop on ramp, the contactor will open when the motor reaches zero speed.

Note: The drive control power supply must be provided via an external 24 V source.

Example circuit:



Note: The "Run/Reset" key must be pressed once the "Emergencystop" key has been released.

Llp = Run command [Forward] (Frd) or [Reverse] (rrS)
LO-/LO+ = [Line contactor ass.] (LLC)
Lln = [Drive lock] (LES)

NOTICE

DAMAGE TO THE DRIVE

Do not use this function at intervals of less than 60 s.

Failure to follow these instructions can result in equipment damage.

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		
LLC-	[LINE CONTACTOR COMMAND]		
LLC	[Line contactor ass.]		[No] (nO)
	Logic output or control relay.		
	[No] (nO): Function not assigned (in this case, none of the function parame [LO1] (LO1): Logical output LO1 [R2] (r2): Relay r2 [d01] (dO1): Analog output AO1 functioning as a logic output. Selection calls set to [No] (nO)	,	[AO1] page 144
LES	[Drive lock]		[No] (nO)
*	This parameter can be accessed if [Line contactor ass.] (LLC) is not set to [No] (nO). The drive locks when the assigned input or bit changes to 0.		
	[No] (nO): Function inactive [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		
LCt	[Mains V. time out]	5 to 999 s	5 s
*	Monitoring time for closing of line contactor. If, once this time has elapsed, drive will lock with a [Line contactor] (LCF) detected fault.	there is no voltage on the	drive pow er circuit, the

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

OUTPUT CONTACTOR COMMAND

This allows the drive to control a contactor located between the drive and the motor. The contactor is closed when a run command is applied. The contactor is opened when there is no longer any current in the motor.

Note: If the DC injection braking function is used, the output contactor does not close as long as DC injection braking is active

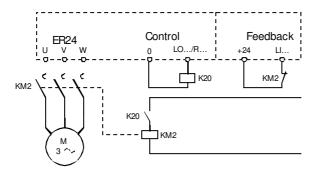
Output contactor feedback

The corresponding logic input should be at 1 when there is no run command and at 0 during operation.

In the event of an inconsistency, the drive trips in FCF2 if the output contactor fails to close (Llx at 1) and in FCF1 if it is stuck (Llx at 0).

The [Delay to motor run] (dbS) parameter can be used to delay tripping in fault mode when a run command is sent and the [Delay to open cont.] (dAS) parameter delays the detected fault when a stop command is set.

Note: FCF2 (contactor failing to close) can be reset by the run command changing state from 1 to 0 (0 --> 1 --> 0 in 3-wire control).



The [Out. contactor ass.] (OCC) and [Output contact. fdbk] (rCA) functions can be used individually or together.

Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued)			
OCC-	[OUTPUT CONTACTOR CMD]			
OCC	[Out. contactor ass.]		[No] (nO)	
	Logic output or control relay.			
	[LO1] (LO1): Logical output LO1 [R2] (r2): Relay r2			
rCA	[Output contact. fdbk]		[No] (nO)	
	The motor starts up w hen the assigned input or bit changes to 0.			
	[No] (nO): Function inactive [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153			
dbS	[Delay to motor run]	0.05 to 60 s	0.15 s	
* ()	Time delay for: Motor control follow ing the sending of a run command Output contactor state monitoring, if the feedback is assigned. If the contactor fails to close at the end of the set time, the drive will lock in FCF2 mode. This parameter can be accessed if [Out. contactor ass.] (OCC) is assigned or if [Output contact. fdbk] (rCA) is assigned. The time delay must be greater than the closing time of the output contactor.			
dAS	[Delay to open cont.]	0 to 5.00 s	0.10 s	
*	Time delay for output contactor opening command following motor stop. This parameter can be accessed if [Output contact. fdbk] (rCA) is assigned. The time delay must be greater than the opening time of the output contactor. If it is set to 0, the detected fault will not be monitored. If the contactor fails to open at the end of the set time, the drive will lock in FCF1 fault mode.			

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Parameter that can be modified during operation or when stopped.

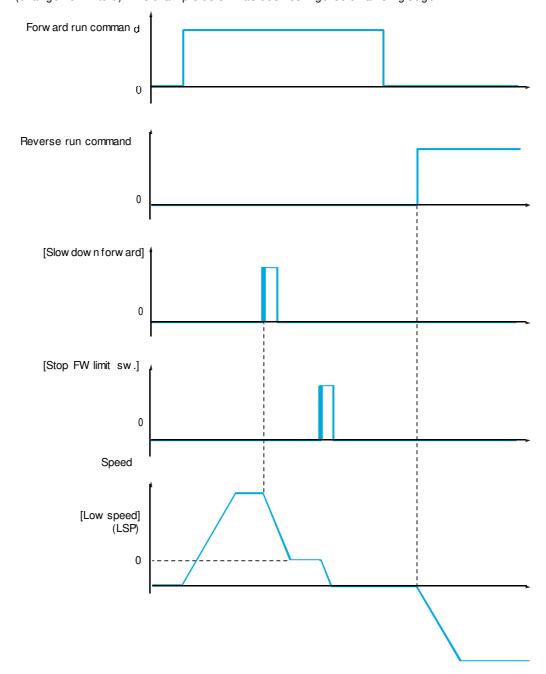
DRI- > CONF > FULL > FUN- > LPO-

POSITIONING BY SENSORS

This function is used for managing positioning using position sensors or limits witches linked to logic inputs or using control word bits:

- Slowing down
- Stopping

The action logic for the inputs and bits can be configured on a rising edge (change from 0 to 1) or a falling edge (change from 1 to 0). The example below has been configured on a rising edge:



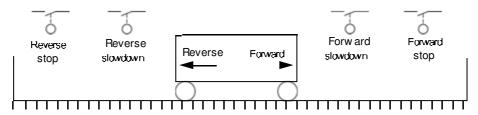
The slowdown mode and stop mode can be configured.

The operation is identical for both directions of operation. Slowdown and stopping operate according to the same logic, described below.

Example: Forward slowdown, on rising edge

- Forward slowdown takes place on a rising edge (change from 0 to 1) of the input or bit assigned to forward slowdown if this rising edge occurs in forward operation. The slowdown command is then stored, even in the event of a power outage. Operation in the opposite direction is authorized at high speed. The slowdown command is deleted on a falling edge (change from 1 to 0) of the input or bit assigned to forward slowdown if this falling edge occurs in reverse operation.
- A bit or a logic input can be assigned to disable this function.
- Although forward slowdown is disabled while the disable input or bit is at 1, sensor changes continue to be monitored and saved.

Example: Positioning on a limit switch, on rising edge



AWARNING

LOSS OF CONTROL

- · Verify correct connection of the limits witches.
- Verify the correct installation of the limit switches. The limit switches must be mounted in a position far enough away from the mechanical stop to allow for an adequate stopping distance.
- You must release the limit switches before you can use them.
- · Verify the correct function of the limits witches

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Operation with short cams:

AWARNING

LOSS OF CONTROL

When operating for the first time or after a reset of the configuration to the factory settings, the motor must always be started outside of the Slowdown and Stop ranges.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

A WARNING

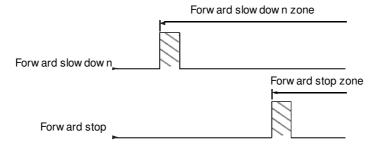
LOSS OF CONTROL

When the drive is switched off, it stores the range which it is currently in.

If the system is moved manually while the drive is off, you must restore the original position before switching it on again.

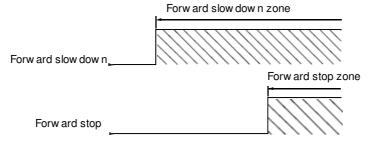
Failure to follow these instructions can result in death, serious injury, or equipment damage.

In this instance, when operating for the first time or after restoring the factory settings, the drive must initially be started outside the slowdown and stop zones in order to initialize the function.



Operation with long cams:

In this instance, there is no restriction, which means that the function is initialized across the whole trajectory.



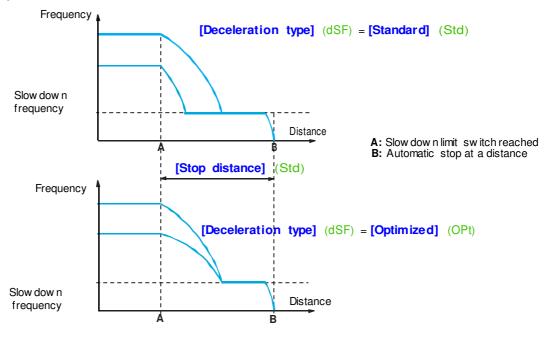
Stop at distance calculated after deceleration limit switch

This function can be used to control the stopping of the moving part automatically once a preset distance has been traveled after the slowdown limits witch.

On the basis of the rated linear speed and the speed estimated by the drive when the slowdown limit switch is tripped, the drive will induce the stop at the configured distance.

This function is useful in applications where one manual-reset overtravel limit switch is common to both directions. It will then only respond to help management if the distance is exceeded. The stop limit switch retains priority in respect of the function.

The [Deceleration type] (dSF) parameter can be configured to obtain either of the functions described below:



Note:

- If the deceleration ramp is modified while stopping at a distance is in progress, this distance will not be
 observed.
- If the direction is modified while stopping at a distance is in progress, this distance will not be observed.

A WARNING

LOSS OF CONTROL

Verify that the configured distance is actually possible.

This function does not replace the limit switch.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)				
LPO-	[POSITIONING BY SENSORS]				
	Note: This function cannot be used with certain other functions. Follow the instructions on page <u>163</u> .				
SAF	[Stop FW limit sw.]		[No] (nO)		
	Stop sw itch forward.				
	[No] (nO): Not assigned				
LI1	[LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153				
SAr	[Stop RV limit sw.]		[No] (nO)		
	Stop switch reverse.				
	Identical to [Stop FW lim it sw.] (SAF) above.				
SAL	[Stop limit config.]		[Active low] (LO)		
	▲ WARNIN	G			
	LOSS OF CONTROL				
*	If [Stop limit config.] (SAL) is set to [Active high] (HIG), the	stop command will b	be activated on active		
	signal and the stop command will not be applied if the connection	on is removed.			
	Verify that using this setting does not result in unsafe condition				
	Failure to follow these instructions can result in death, ser	lous injury, or equip	ment damage.		
	Stop sw itch activation level.				
	This parameter can be accessed if at least one limit switch or one stop set	nsor has been assigned	. It defines the positive or		
	negative logic of the bits or inputs assigned to the stop.				
	[Active low] (LO): Stop controlled on a falling edge (change from 1 to 0) o				
	[Active high] (HIG): Stop controlled on a rising edge (change from 0 to	o 1) of the assigned bits			
dAF	[Slowdown forward]		[No] (nO)		
	Slow down attained forward. Identical to [Stop FW lim it sw.] (SAF) above.				
dAr	[Slowdown reverse]		[No] (nO)		
	Slow down attained reverse.				
	Identical to [Stop FW limit sw.] (SAF) above.				
dAL	[Slowdown limit cfg.]		[Active low] (LO)		
	▲ WARNING				
	LOSS OF CONTROL				
*	If [Slowdown limit cfg.] (dAL) isset to [Active high] (HIG), th	e slowdown comma	nd willbe activated on		
	active signal and the slowdown command will not be applied if the connection is removed.				
	Verify that using this setting does not result in unsafe condition				
	Failure to follow these instructions can result in death, ser	ious injury, or equip	ment damage.		
	This parameter can be appeared if at least one limit assistable as one almost	un concer has been see	igned It defines the positive		
	This parameter can be accessed if at least one limit switch or one slow down or negative logic of the bits or inputs assigned to the slow down.	wit sensor has been ass	igned. it dennes the positive		
1.0		on (1) of the assistant hits	or inputo		
HIG	[Active low] (LO): Slowdown controlled on a falling edge (change from 1 t [Active high] (HIG): Slowdown controlled on a rising edge (change from 1 telephone)				
	<u> </u>				

DRI- > CONF > FULL > FUN- > LPO-

Code	Name / Description	Adjustment range	Factory setting	
CLS	[Disable limit sw.]	•	[No] (nO)	
	▲ WARNING			
*	LOSS OF CONTROL			
	If [Disable limit sw.] (CLS) is set to an input and activated, the limit switch management will be inhibited. Verify that activating this function does not result in unsafe conditions.			
	Failure to follow these instructions can result in death, se		ment damage.	
	This parameter can be accessed if at least one limit switch or one senso The action of the limit switches is disabled when the assigned bit or input		drive is stopped or being	
	slow ed down by limit sw itches, it will restart up to its speed reference.		anno so osoppos es comig	
	[No] (nO): Function inactive			
	[LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153			
PAS	[Stop type]		[Ramp stop] (rMP)	
*	This parameter can be accessed if at least one limit sw itch or one senso	r has been assigned.	_	
rMP	[Ram p stop] (rMP): Follow ramp	100	1 (105)	
	[Fast stop] (FSt): Fast stop (ramp time reduced by [Ramp divider] ([Freewheel] (nSt): Freewheel stop	(dCF), see [Hamp divide	r (dCF) page <u>93</u>)	
dSF	[Deceleration type]		[Standard] (Std)	
*	This parameter can be accessed if at least one limit sw itch or one senso	r has been assigned.		
	[Standard] (Std): Uses the [Deceleration] (dEC) or [Deceleration 2]			
OPt	[Optimized] (OP:t): The ramp time is calculated on the basis of the actual to limit the operating time at low speed (optimization of the cycle time: the			
Std	speed). [Stop distance]		[No] (nO)	
*	This parameter can be accessed if at least one limit switch or one senso	r has been assigned.	[NO] (NO)	
	Activation and adjustment of the "Stop at distance calculated after the slo	w down limit sw itch" funct	ion.	
nO –	[No] (nO): Function inactive (the next tw o parameters will, therefore, be 0.01 to 10.00: Stop distance range in meters	inaccessible)		
nLS	[Rated linear speed]	0.20 to 5.00 m/s	1.00 m/s	
*	This parameter can be accessed if at least one limit sw itch or one senso set to [No] (nO). Rated linear speed in meters/second.	r has been assigned and [Stop distance] (Std) is not	
SFd	[Stop corrector]	50 to 200%	100%	
*	This parameter can be accessed if at least one limit switch or one senso	r has been assigned and [Stop distance] (Std) is not	
	set to [No] (nO). Scaling factor applied to the stop distance to compensate, for example, a	non-linear ramp.		
MStP	[Memo Stop]		[No] (nO)	
*	This parameter can be accessed if at least one limit sw itch or one senso With or w hithout memorisation stop sw itch	r has been assigned.		
nO YES	[No] (nO): No memorisation of limit switch [YES] (YES): Memorisation of limit switch		_	
PrSt	[Priority restart]		[No] (nO)	
*	This parameter can be accessed if at least one limit switch or one senso Priority given to the starting even if switch stop is activated.	r has been assigned.		
nO YES	[No] (nO): No priority restart if stopswitchis activated [YES] (YES): Priority to restart even if stopswitch is activated			
TES	This parameter is forced to [No] (nO) if [Memo Stop] (MStP) is set	to [YES] (YES).		

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

PARAMETER SET SWITCHING

A set of 1 to 15 parameters from the [SETTINGS] (SEt-) menu on page 89 can be selected and 2 or 3 different values assigned. These 2 or 3 sets of values can then be switched using 1 or 2 logic inputs or control word bits. This switching can be performed during operation (motor running).

It can also be controlled on the basis of 1 or 2 frequency thresholds, whereby each threshold acts as a logic input (0 = threshold not reached, 1 = threshold reached).

	Values 1	Values 2	Values 3
Parameter 1	Parameter 1	Parameter 1	Parameter 1
Parameter 2	Parameter 2	Parameter 2	Parameter 2
Parameter 3	Parameter 3	Parameter 3	Parameter 3
Parameter 4	Parameter 4	Parameter 4	Parameter 4
Parameter 5	Parameter 5	Parameter 5	Parameter 5
Parameter 6	Parameter 6	Parameter 6	Parameter 6
Parameter 7	Parameter 7	Parameter 7	Parameter 7
Parameter 8	Parameter 8	Parameter 8	Parameter 8
Parameter 9	Parameter 9	Parameter 9	Parameter 9
Parameter 10	Parameter 10	Parameter 10	Parameter 10
Parameter 11	Parameter 11	Parameter 11	Parameter 11
Parameter 12	Parameter 12	Parameter 12	Parameter 12
Parameter 13	Parameter 13	Parameter 13	Parameter 13
Parameter 14	Parameter 14	Parameter 14	Parameter 14
Parameter 15	Parameter 15	Parameter 15	Parameter 15
Input LI or bit or frequency threshold	0	1	0 or 1
2 values			
Input LI or bit or frequency threshold	0	0	1
3 values			

Note: Do not modify the parameters in the **[SETTINGS]** (**SEt-**) menu, because any modifications made in this menu (**[SETTINGS]** (**SEt-**)) will be lost on the next power-up. The parameters can be adjusted during operation in the **[PARAM. SET SWITCHING]** (**MLP-**) menu, on the active configuration.

Note: Parameter set switching cannot be configured from the integrated displayterminal.

Parameters can only be adjusted on the integrated displayterminal if the function has been configured previously via the graphic displayterminal, by PC Software or via the bus or communication network. If the function has not been configured, the [PARAM. SET SWITCHING] (MLP-) menu and the [SET 1] (PS1-), [SET 2] (PS2-), [SET 3] (PS3-) submenus will not appear.

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		
MLP-	[PARAM. SET SWITCHING]		
CHA1	[2 parameter sets]		[No] (nO)
	Sw itching 2 parameter sets.		
nO FtA	[No] (nO): Not assigned [Freq. Th.att.] (FtA): Switching via [Freq. threshold] (Ftd) page 2	2 <u>53</u>	
	[Freq. Th. 2 attained] (F2A): Switching via [Freq. threshold 2] (F2d [LI1] (LI1): Logical input LI1		
	[] (): See the assignment conditions on page 153		
CHA2	[3 parameter sets]		[No] (nO)
	Identical to [2 parameter sets] (CHA1) page 230.		
	Sw itching 3 parameter sets. Note: In order to obtain 3 parameter sets, [2 parameter sets] (CHA1) mus	t also be configured.	
SPS	[PARAMETER SELECTION]		
	This parameter can only be accessed on the graphic display terminal if [2 p Making an entry in this parameter opens a w indow containing all the adjusti		
	Select 1 to 15 parameters using ENT (a then appears next to the parar ENT.	neter). Parameter(s) can	also be deselected using
	Example:		
	PARAMETER SELECTION SETTINGS		
	Ramp increment		
MLP-	[PARAM. SET SWITCHING] (continued)		
PS1-	[SET 1]		
	This parameter can be accessed if at least 1 parameter has been selected Making an entry in this parameter opens a settings w indow containing the s		
	selected. With the graphic display terminal:		·
*			
()	SEI1 Acceleration		
S101	Deceleration: 9.67 s		
	Acceleration 2 : 12.58 s 9.51 s Deceleration 2 : 13.45 s		
S115	Begin Acc round: 2.3 s Min = 0.1 Max = 999.9 Code Quick << >> Quick		
	With the integrated display terminal:		
	Proceed as in the Settings menu using the parameters that appear.		
MLP-	[PARAM. SET SWITCHING] (continued)		
PS2-	[SET 2]		
*	This parameter can be accessed if at least 1 parameter has been selected	in [PARAMETER SELEC	TION].
()	Identical to [SET 1] (PS1-) page 230.		
S201			
S215			

Code	Name / Description	Adjustment range	Factory setting
MLP-	[PARAM. SET SWITCHING] (continued)	-	
PS3-	[SET 3]		
*	This parameter can be accessed if [3 parameter sets] (CHA2) is not [No] in [PARAMETER SELECTION].	nO) and if at least 1 para	ameter has been selected
()	Identical to [SET 1] (PS1-) page <u>230</u> .		
S301			
 S315			



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

Note: We recommend that a parameter sets witching test is carried out while stopped and a check is made to verify that it has been performed correctly.

Some parameters are interdependent and in this case may be restricted at the time of switching.

Interdependencies between parameters must be respected, even between different sets.

Example: The highest [Low speed] (LSP) must be below the lowest [High speed] (HSP).

DRI- > CONF > FULL > FUN- > MMC-

MULTIMOTORS / MULTICONFIGURATIONS

Motor or configuration switching [MULTIMOTORS/CONFIG.] (MMC-)

The drive may contain up to 3 configurations, which can be saved using the

[FACTORY SETTINGS] (FCS-) menu, page 81.

Each of these configurations can be activated remotely, enabling adaptation to:

- 2 or 3 different motors or mechanisms (multimotor mode)
- 2 or 3 different configurations for a single motor (multiconfiguration mode)

The two switching modes cannot be combined.

Note: The following conditions MUST be observed:

- Switching may only take place when stopped (drive locked). If a switching request is sent during operation,
 it will not be executed until the next stop.
- In the event of motor switching, the following additional conditions apply:
 - When the motors are switched, the power and control terminals concerned must also be switched as appropriate.
 - The maximum power of the drive must not be exceeded by any of the motors.
- All the configurations to be switched must be set and saved in advance in the same hardware configuration, this being the definitive configuration (option and communication cards). Failure to follow this instruction can cause the drive to lock on an [Incorrect config.] (CFF) state.

Menus and parameters switched in multimotor mode

- [SETTINGS] (SEt-)
- [MOTOR CONTROL] (drC-)
- [INPUTS / OUTPUTS CFG] (I_O-)
- [COMMAND] (CtL-)
- [APPLICATION FUNCT.] (Fun-) with the exception of the [MULTIMOTORS/CONFIG.] function (to be configured once only)
- [FAULT MANAGEMENT] (FLt)
- [MY MENU]
- [USER CONFIG.]: The name of the configuration specified by the user in the [FACTORY SETTINGS] (FCS-) menu

Menus and parameters switched in multiconfiguration mode

As in multimotor mode, except for the motor parameters that are common to the 3 configurations:

- Rated current
- · Thermal current
- · Rated voltage
- · Rated frequency
- · Rated speed
- Rated power
- IR compensation
- Slip compensation
- · Synchronous motor parameters
- · Type of thermal protection
- Thermal state
- The auto-tuning parameters and motor parameters that can be accessed in expert mode
- Type of motor control

Note: No other menus or parameters can be switched.

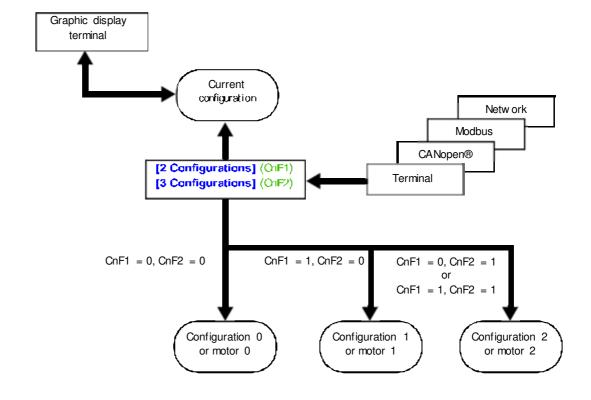
DRI- > CONF > FULL > FUN- > MMC-

Transfer of a drive configuration to another one, with graphic display terminal, when the drive uses [MULTIMOTORS/CONFIG.] (MMC-) function

Let A be the source drive and B the drive addressed. In this example, switching is controlled by logic input.

- 1. Connect graphic display terminal to the drive A.
- 2. Put logic input LI ([2 Configurations] (CnF1)) and LI ([3 Configurations] (CnF2)) to 0.
- 3. Download configuration 0 in a file of graphic display terminal (example: file 1 of the graphic display terminal).
- 4. Put logic input LI ([2 Configurations] (CnF1)) to 1 and leave logic input LI ([3 Configurations] (CnF2)) to 0.
- 5. Download configuration 1 in a file of graphic display terminal (example: file 2 of the graphic display terminal).
- 6. Put logic input LI ([3 Configurations] (CnF2)) to 1 and leave logic input LI ([2 Configurations] (CnF1)) to 1.
- 7. Download configuration 2 in a file of graphic display terminal (example: file 3 of the graphic display terminal).
- 8. Connect graphic display terminal to the drive B.
- 9. Put logic input LI ([2 Configurations] (CnF1)) and LI ([3 Configurations] (CnF2)) to 0.
- 10. Make a factory setting of the drive B.
- 11. Download the configuration file 0 in the drive (file 1 of graphic displayterminal in this example).
- 12. Put logic input LI ([2 Configurations] (CnF1)) to 1 and leave logic input LI
- ([3 Configurations] (CnF2)) to 0.
- 13. Download the configuration file 1 in the drive (file 2 of graphic display terminal in this example).
- 14. Put logic input LI ([3 Configurations] (CnF2)) to 1 and leave logic input LI
- ([2 Configurations] (CnF1)) to 1.
- 15. Download the configuration file 2 in the drive (file 3 of graphic display terminal in this example).

Note: Steps 6, 7, 14 et 15 are necessary only if **[MULTIMOTORS/CONFIG.]** (MMC-) function is used with 3 configurations or 3 motors.



Switching command

Depending on the number of motors or selected configurations (2 or 3), the switching command is sent using one or two logic inputs. The table below lists the possible combinations.

LI 2 m otors or configurations	LI 3 m otors or configurations	Num ber of configurations or active motors
0	0	0
1	0	1
0	1	2
1	1	2

Schematic diagram for multimotor mode

NOTICE

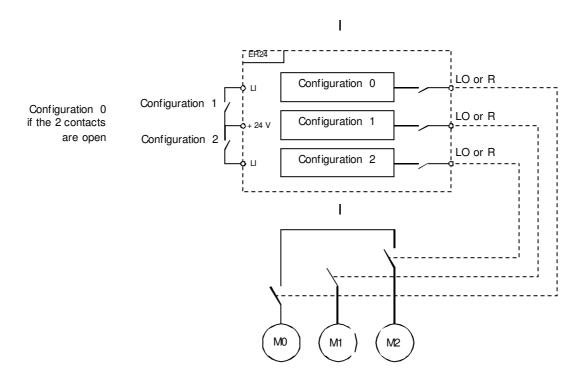
MOTOR OVERHEATING

The motor thermal state of each motor is not saved when drive is switched off.

When the drive is switched on, it is not aware of the thermal state of the connected motor or motors.

 To enable correct temperature monitoring of the motors, install an external temperature sensor for each motor.

Failure to follow these instructions can result in equipment damage.



Auto-tuning in multimotor mode

This auto-tuning can be performed:

- Manually using a logic input when the motorchanges.
- Automatically each time the motor is activated for the 1st time after switching on the drive, if the
 [Automatic autotune] (AUt) parameter on page 109 is set to [Yes] (YES).

Motor thermal states in multimotor mode:

The drive helps to protect the three motors individually. Each thermal state takes into account all stop times, if the drive power is not switched off.

Configuration information output

In the [INPUTS / OUTPUTS CFG] (I_O -) menu, a logic output can be assigned to each configuration or motor (2 or 3) for remote information transmission.

Note: As the [INPUTS / OUTPUTS CFG] (I_O-) menu is switched, these outputs must be assigned in all configurations in which information is required.

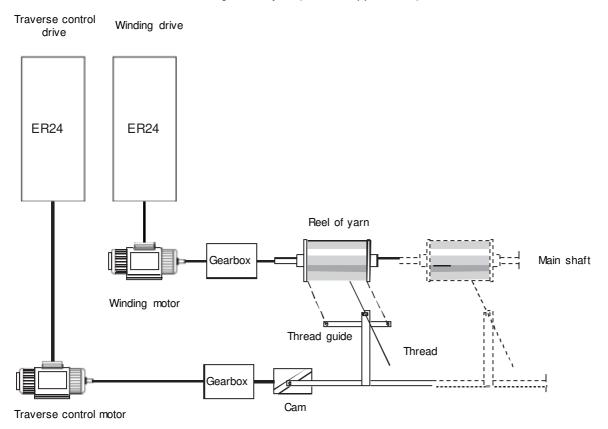
Code	Name / Description	Adjustment range	Factory setting		
FUn-	[APPLICATION FUNCT.] (continued)				
MMC-	[MULTIMOTORS/CONFIG.]				
CHM	[Multimotors] [No] (nO)				
	NOTICE MOTOR OVERHEATING When the drive is switched off, the thermal states of the connected motors are not saved. When the drive is switched on again, the drive is not aware of the thermal states of the connected motors. • Use separate temperature sensors for each connected motor for thermal monitoring. Failure to follow these instructions can result in equipment damage.				
nO VES	[No] (nO): Multiconfiguration possible [Yes] (YES): Multimotor possible				
CnF1	[2 Configurations] Sw itching of 2 motors or 2 configurations.		[No] (nO)		
	[No] (nO): No switching [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153				
CnF2	[3 Configurations]		[No] (nO)		
	Sw itching of 3 motors or 3 configurations.				
	Identical to [2 Configurations] (CnF1) page 235.				
	Note: In order to obtain 3 motors or 3 configurations, [2 Configuration	ns] (CnF1) must also be	e configured.		

AUTO TUNING BY LOGIC INPUT

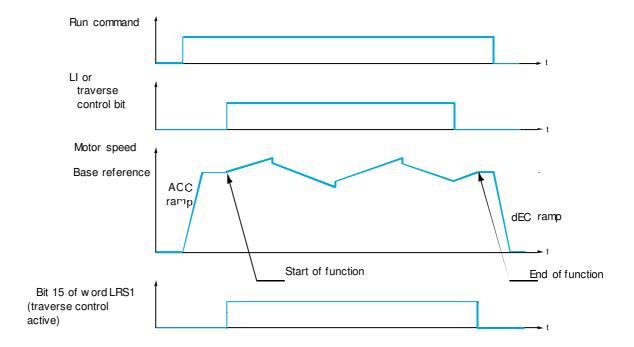
Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		-
tnL-	[AUTO TUNING BY LI]		
tUL	[Auto-tune assign.]		[No] (nO)
	Auto-tuning is performed w hen the assigned input or bit changes to 1. Note: Auto-tuning causes the motor to start up.		
nO	[No] (nO): Not assigned		
	[LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		

TRAVERSE CONTROL

Function for winding reels of yarn (in textile applications):



The speed of rotation of the cam must follow a precise profile to ensure that the reel is steady, compact and linear:



The function starts when the drive has reached its base reference and the traverse control command has been enabled.

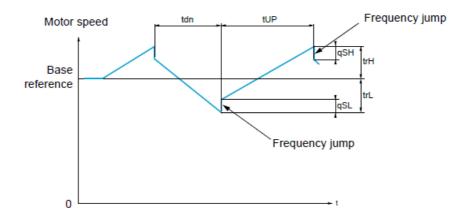
When the traverse control command is disabled, the drive returns to its base reference, following the ramp determined by the traverse control function. The function then stops, as soon as it has returned to this

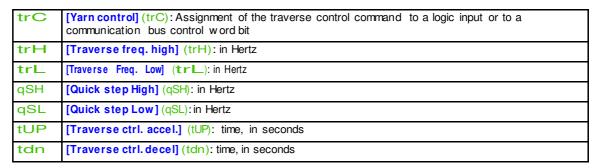
reference.

Bit 15 of word LRS1 is at 1 while the function is active.

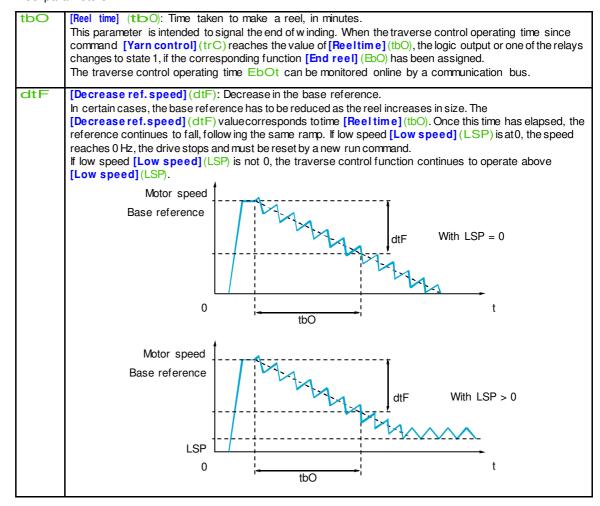
Function parameters

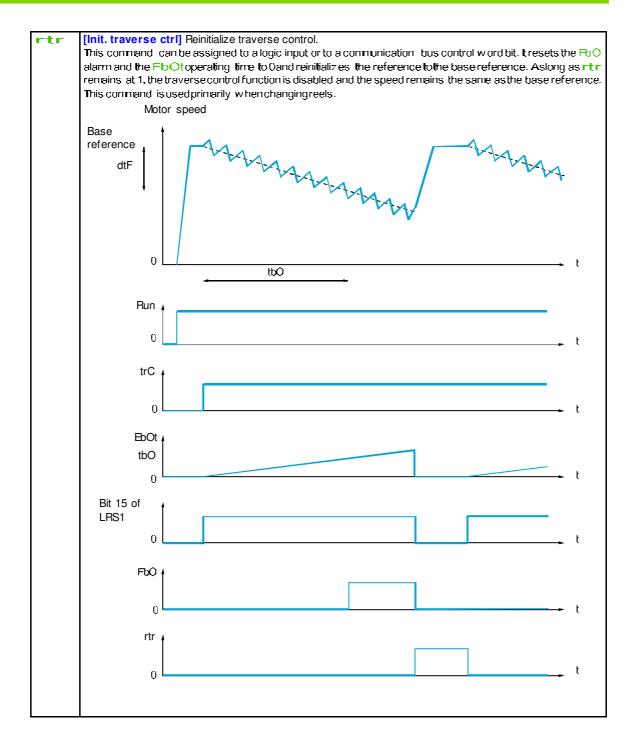
These define the cycle of frequency variations around the base reference, as shown in the diagram below:





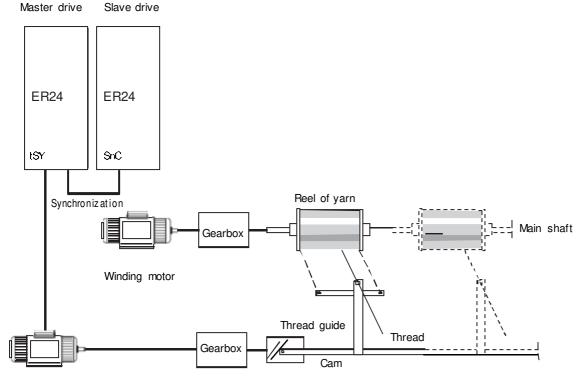
Reel parameters:





DRI- > CONF > FULL > FUN- > TRO-

Counter wobble

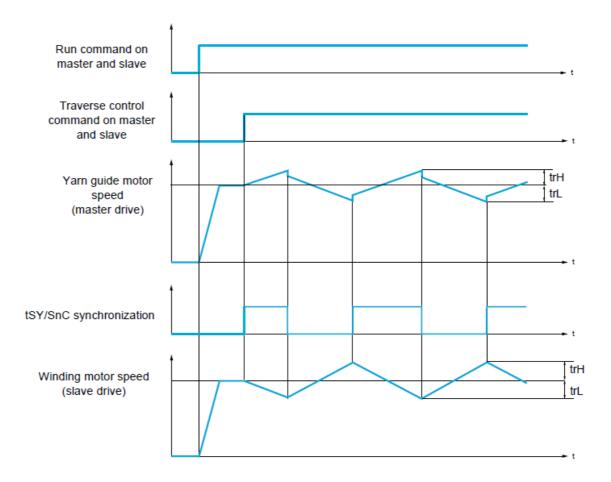


Thread guide motor

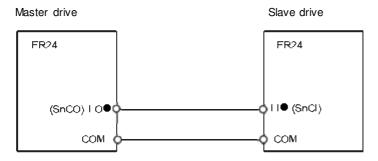
The Counter wobble function is used in certain applications to obtain a constant yarn tension when the Traverse control function is producing considerable variations in speed on the yarn guide motor ([Traverse freq. high] (trH) and [Traverse Freq. low] (trL), see [Traverse freq. high] (trH) page 242).

Two motors must be used (one master and one slave).

The master controls the speed of the yarn guide, the slave controls the winding speed. The function assigns the slave a speed profile, which is in antiphase to that of the master. This means that synchronization is required, using one of the master's logic outputs and one of the slave's logic inputs.



Connection of synchronization I/O



The starting conditions for the function are:

- Base speeds reached on both drives
- [Yarn control] (trC) input activated
- Synchronization signal present

Note: The [Quick step High] (qSH) and [Quick step Low] (qSL) parameters should generally be kept at 0.

Code	Name / Description	Adjustment range	Factory setting	
FUn-	[APPLICATION FUNCT.] (continued	d)		
trO-	[TRAVERSE CONTROL]			
	Note: This function cannot be used with certain other functions. Follow the instructions on page 163.			
trC	[Yarn control]		[No] (nO)	
	The Traverse control cycle starts when the assigne	d input or bit changes to 1 and stops wine	n it changes to U.	
nC LI1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	1 1/ \. Coo the cooleanment conditions on near 15	<u>3</u>		
trH	[Traverse freq. high]	0 to 10 Hz	4 Hz	
*	Traverse frequency high.		•	
()				
(1)	Treverse Fuer Level	0 to 10 Hz	4 Hz	
trL *	[Traverse Freq. Low] Traverse frequency low.	0 10 10 12	412	
	Traverse frequency low.			
()				
(1)				
qSH	[Quick step High]	0 to [Traverse freq. high] (trH) 0 Hz	
*	Quick step high.		.	
()				
(1) qSL	[Quick step Low]	0 to [Traverse Freq. Low]	trL) OHz	
43L *	Quick step low.	o to [maverse med. Low] (UTE TOTAL	
	quick step low.			
()				
(1)				
tUP	[Traverse ctrl. accel.]	0.1 to 999.9 s	4 s	
*	Acceleration traverse control.		•	
()				
tdn	[Traverse ctrl. decel]	0.1 to 999.9 s	4 s	
*	Deceleration traverse control.			
()				
tbO	[Reel time]	0 to 9,999 min	0 min	
*	Reel execution time.	2 13 2,300		
()				
EbO	[End reel]		[No] (nO)	
*	The assigned output or relay changes to state 1 v	when the traverse control operating time	reaches the [Reel time] (tb	
nC	[No] (nO): Not assigned			
	[LO1] (LO1): Logical output LO1			
r2 dO1	• • ` '	gic output. Selection can be made if [AO:	1 assignment] (AO1) page 14	
uOl	is set to [No] (nO).	g.o carpar concentration nade in [AC	. 2001gon(] (1.01) page 14	

Code	Name / Description	Adjustment range	Factory setting
SnC	[Counter wobble] [No] (nO)		
*	Synchronization input. To be configured on the w inding drive (slave) only.		
nO LI1 	[No] (nO): Function inactive, thereby helping to prevent access to other parameters [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		
tSY	[Sync. wobble] [No] (nO)		
*	Synchronization output. To be configured on the yarn guide drive (master) only.		
nO LO1 r2 dO1	[LO1] (LO1) [R2] (r2)		
dtF	[Decrease ref. speed]	0 to 599 Hz	0 Hz
*	Decrease in the base reference during the traverse control cycle.		
O			
rtr	[Init. traverse ctrl]		[No] (nO)
*	When the state of the assigned input or bit changes to 1, the traverse control operating time is reset to 0, along with [Decrease ref. speed] (dtF).		
nO LI1 	[No] (nO): Function not assigned [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153		

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
 - Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL>CHS-

HIGH SPEED SWITCHING

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.] (continued)		
CHS-	[HSP SWITCHING]		
SH2	[2 High speed]		[No] (nO)
	High Speed Switching.		
nO	[No] (nO): Function not assigned		
FtA	[Freq. Th. attain.] (FtA): Frequency threshold attained [Freq. Th. 2 attained] (F2A): Frequency threshold 2 attained		
LI1	[LI1] (LI1): Logical input LI1		
	[] (): See the assignment conditions on page 153		
SH4	[4 High speed]		[No] (nO)
	High Speed Sw itching.		
	Note: In order to obtain 4 High speed, [2 High speed] (SH2) must also be configured.		
	Identical to [2 High speed] (SH2) page 244.		
HSP	[High speed]	0 to 599 Hz	50 Hz
O	Motor frequency at maximum reference, can be set between [Low speed] (LSP) and [Max frequency] (tFr). The factory setting changes to 60 Hz if [Standard mot.freq] (bFr) is set to [60Hz NEM A] (0).		
HSP2	[High speed 2]	0 to 599 Hz	50 Hz
*	Visible if [2 High speed] (SH2) is not set to [No] (nO).		
()	Identical to [High speed] (HSP) page 244.		
HSP3	[High speed 3]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (SH4) is not set to [No] (nO).		<u> </u>
()	Identical to [High speed] (HSP) page 244.		
HSP4	[High speed 4]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (SH4) is not set to [No] (nO).		
()	Identical to [High speed] (HSP) page 244.		
48			

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

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Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > DCC-

DC Bus

Code	Name / Description	Adjustment range	Factory setting
FUn-	[APPLICATION FUNCT.]		
dCC-	[DC Bus]		
dCCM	[DC-Bus chaining] DC Bus chaining configuration [No] (nO): Not assigned		[No] (nO)
MAIn	[Bus & Main] (MAIn): The drive is supplied by both DC Bus and supply mains. [Only Bus] (bUS): The drive is supplied by DC Bus only.		
	 GROUND FAULT MONITORING DISABLED, NO ERROR DETECTION Setting this parameter to [Bus & Main] (Main) deactivates ground fault monitoring. Only use this parameter after a thorough risk assessment in compliance with all regulations and standards that apply to the device and to the application. Implement alternative ground fault monitoring functions that do not trigger automatic error responses of the drive, but allow for adequate, equivalent responses by other means in compliance with all applicable regulations and standards as well as the risk assessment. Commission and test the system with ground fault monitoring enabled. During commissioning, verify that the drive and the system operate as intended by performing tests and simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. 		
dCCC	[DC-Bus compat.] DC Bus chaining compatibility Visible if [DC-Bus chaining] (dCCM) above is not set to [No] (nO).		[Altivar] (AtU)
	[Altivar] (AtU): Only ER24 drives are on the DC Bus chain. [Lexium] (LHM): At least one Lexium 32 drive is on the DC Bus chain.		
*	- For EP24K / /B not depending on [DC-Bus compat.] (dCCC) the parameters [Mains voltage] (UrES), [Undervoltag level] (USL), [Braking level] (Ubr) are forced to their default value. - For EP24/4K/B, if [DC-Bus compat.] (dCCC) is set to [Altivar] (AtU) the parameters [Mains voltage] (UrES), [Undervoltage level] (USL), [Braking level] (Ubr) are forced to their default value.		ns voltage] (UrES),
	For E24/4K/B if [DC-Bus compat.] (dCCC) is set to [Lexium] (LHM) the p [Undervoltage level] (USL) are forced to their default value, [Braking level] (Ustrigger in [Overbraking] (ObF) at a DC Bus level of 820 Vdc instead of 880 Vdc	lbr) is forced to 780 \	/dc and the drive will Lexium 32 drives.
IPL	[Input phase loss] Drive behaviour in case of input phase loss detected fault.		According to drive rating.
*	Cannot be accessed if drive rating is ER24K/B Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr) and [DC-Bus chaining] (dCCM) above is set to [No] (nO).		
nO YES	[Ignore] (nO): Detected fault ignored [Freewheel] (YES): Detected fault with freewheel stop [Input phase loss] (IPL) is forced to [Ignore] (nO) if [DC-Bus chaining] (d) See [Input phase loss] (IPL) in the Programming Manual (DRI- > CONF >		[Only Bus] (bUS).

DRI- > CONF > FULL > DCC-

SCL3 [Ground short circuit] [Freewheel] (YES) Direct ground short-circuit fault detection behaviour Can be accessed for drives rating ER24-5.5 ... -15.0/4K/B. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr) and [DC-Bus chaining] (dCCM) above is not set to [No] (nO). [Ignore] (nO): Detected fault ignored nO [Freewheel] (YES): Detected fault with freewheel stop [Ground short circuit] (SCL3) is forced to [Ignore] (nO) for EP24-5.5 ... -15.0/4K/B drives if [DC-Bus chaining] (dCCM) above is set to [Bus & Main] (MAIn). Note: If [Ground short circuit] (SCL3) is set to [Ignore] (nO), integrated safety functions (except Safe Torque Off) for ER24-5.5 ...-15.0/4K drives cannot be used, otherwise the drive will trigger in [Safe function fault] (SAFF) state. A A DANGER GROUND FAULT MONITORING DISABLED, NO ERROR DETECTION Setting this parameter to [Ignore] (nO) deactivates ground fault monitoring. * Only use this parameter after a thorough risk assessment in compliance with all regulations and standards that apply to the device and to the application. Implement alternative ground fault monitoring functions that do not trigger automatic error responses of the drive, but allow for adequate, equivalent responses by other means in compliance with all applicable regulations and standards as well as the risk assessment. Commission and test the system with ground fault monitoring enabled. During commissioning, verify that the drive and the system operate as intended by performing tests and simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. According to drive According to drive **UrES** [Mains Voltage] voltage rating voltage rating Rated voltage of the supply mains in Vac. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr) and [DC-Bus chaining] (dCCM) above is set to [No] (nO). * For ER24...K (B): [200V ac] (200): 200 Volts AC 200 [220V ac] (220): 220 Volts AC 220 230 [230V ac] (230): 230 Volts AC 240 [240V ac] (240): 240 Volts AC (factory setting) LHM [Lexium] (LHM): [Mains voltage] (UrES), [Undervoltage level] (USL), [Braking level] (Ubr) are forced to their default For ER24.../4K (B): 380 [380V ac] (380): 380 Volts AC [400V ac] (400): 400 Volts AC 400 [440V ac] (440): 440 Volts AC 440 460 [460V ac] (460): 460 Volts AC 500 [500V ac] (500): 500 Volts AC (factory setting) LHM [Lexium] (LHM): [Mains voltage] (UrES), [Undervoltage level] (USL) are forced to their default value, [Braking level] (Ubr) is forced to 780 Vdc and the drive will trigger in [Overbraking] (ObF) at a DC Bus level of 820 Vdc instead of 880 Vdc

()

Parameters described in this page can be accessed by: DRI- > CONF > FULL > DCC-100 to 276 Vac USL [Undervoltage level] According to drive rating Undervoltage fault level setting in Volts. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr), [DC-Bus chaining] (dCCM) above is set to [No] (nO) and * [Mains voltage] (UrES) is not set to [Lexium] (LHM). The factory setting is determined by the drive voltage rating: - For ER24-...K/B : 141 Vac - For ER24-.../4K/B : 276 Vac The adjustment range is determined by the [Mains voltage] (UrES) value. See [Undervoltage level] (USL) in the Programming Manual (DRI- > CONF > FULL > FLT- > USB-). 335 to 820 Vdc According to drive Ubr [Braking level] rating Braking transistor command level. Visible if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (Epr) and [DC-Bus chaining] (dCCM) above is set to [No] (nO). * The factory setting is determined by the drive voltage rating: - For ER24-...K/B: 395 Vdc



The adjustment range is determined by the [Mains voltage] (UrES) value.

See [Braking level] (Ubr) in the Programming Manual (DRI- > CONF > FULL > DRC-).

- For ER24-.../\$K/B: 820 Vdc

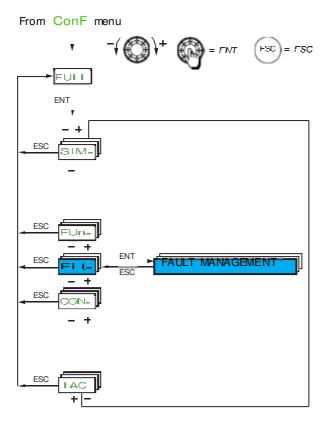
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Fault Management

With integrated display terminal:

Summary of functions:

Code	Nam e	Page
PtC	[PTC MANAGEMENT]	<u>250</u>
rSt	[FAULT RESET]	<u>251</u>
Atr	[AUTOMATIC RESTART]	<u>252</u>
AIS	[ALARMS SETTING]	<u>252</u>
FLr	[CATCHON THE FLY]	<u>253</u>
tHt	[MOTOR THERMAL PROT.]	<u>255</u>
OPL	[OUTPUT PHASE LOSS]	<u>256</u>
IPL	[INPUT PHASE LOSS]	<u>256</u>
OHL	[DRIVE OVERHEAT]	<u>257</u>
SAt	[THERMAL ALARM STOP]	<u>258</u>
EtF	[EXTERNAL FAULT]	<u>258</u>
USb	[UNDERVOLTAGE MGT]	<u>259</u>
tlt	[IGBT TESTS]	<u>260</u>
LFL	[4-20m A LOSS]	<u>260</u>
InH	[FAULT INHIBITION]	<u>261</u>
CLL	[COM. FAULT MANAGEMENT]	<u>261</u>
Sdd	[ENCODER FAULT]	<u>263</u>
tld	[TORQUE OR I LIM. DETECT]	<u>264</u>
FqF	[FREQUENCY METER]	<u>266</u>
dLd	[DYNAMIC LOAD DETECT.]	<u>267</u>
tnF	[AUTO TUNING FAULT]	<u>268</u>
PPI	[CARDS PAIRING]	<u>269</u>
ULd	[PROCESS UNDERLOAD]	<u>270</u>
OLd	[PROCESS OVERLOAD]	<u>272</u>
LFF	[FALLBACK SPEED]	<u>272</u>
FSt	[RAMP DIVIDER]	<u>272</u>
dCI	[DC INJECTION]	<u>273</u>



The parameters in the **[FAULT MANAGEMENT]** (FLt-) menu can only be modified when the drive is stopped and there is no run command, except for parameters with a () symbol in the code column, which can be modified with the drive running or stopped.

DRI- > CONF > FULL > FLT- > PTC-

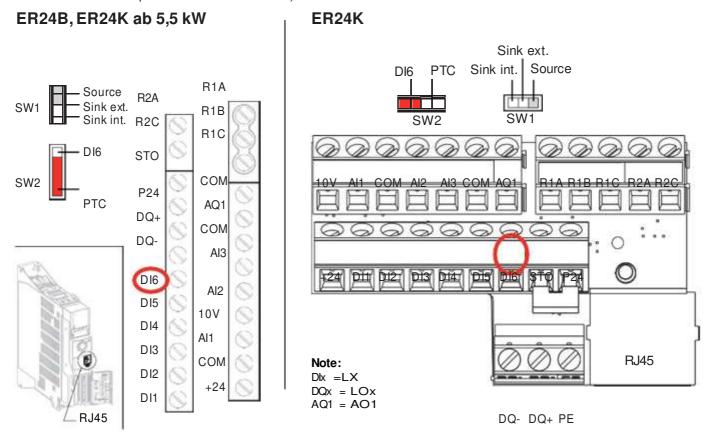
PTC probe

1 set of PTC probe can be managed by the drive in order to help to protect the motor: on logic input LI6 converted for this use by switch SW2 on the control block.

The PTC probe is monitored for the following detected faults:

- Motor overheating
- Sensor break
- · Sensor short-circuit

Protection via PTC probe does not disable protection via l^2t calculation performed by the drive (the two types of protection can be combined).



Code	Name / Description	Adjustment range	Factory setting
FULL	[FULL] (continued)	•	
FLt-	[FAULT MANAGEMENT]		
PtC-	[PTC MANAGEMENT]		
PtCL	[LI6 = PTC probe]		[No] (nO)
	Check first that the sw itch SW2 on the control block is set to PTC.		
	[No] (nO): Not used		
AS	[Always] (AS): PTC probe are monitored permanently, even if the power supply is not connected (as long as the control remains		
rdS	connected to the pow er supply) [Pow er ON] (rdS): PTC probe are monitored w hile the drive pow er supply is connected		
	[Motor ON] (rS): PTC probe are monitored while the motor power supply is connected		

Code Name / Description Adjustment range **Factory setting** FLt-[FAULT MANAGEMENT] (continued) [FAULT RESET] rStrSF [Fault reset] [No] (nO) Detected faults are cleared manually when the assigned input or bit changes to 1, if the cause of the detected fault has disappeared. The STOP/RESET key on the graphic display terminal performs the same function. Following detected faults can be cleared manually: ASF, brF, bLF, CnF, COF, dLF, EPF1, EPF2, FbES, FCF2. InF9. InFA. InFb. LCF. LFF3. ObF. OHF. OLC. OLF. OPF1. OPF2. OSF. OtFL. PHF. PtFL, SCF4, SCF5, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF and ULF. Note: If [Reset restricted fault configuration] (HrFC) is setto [Yes] (YES), the additional following detected fault can be cleared manually: OCF, SCF1, SCF3. See page 252 [No] (nO): Function inactive nO [Yes] (YES): Logical input LI1 1.11 [...] (...): See the assignment conditions on page 153 rPA [No] (nO) [Product reset assig.] The Restart function performs a Fault Reset and then restarts the drive. During this Restart procedure, the drive goes through the same steps as if it had been switched off and on again. Depending on the wiring and the configuration of the drive, this may result in immediate and unanticipated operation. The Restart function can be assigned to a digital input. **▲ WARNING** * UNANTICIPATED EQUIPMENT OPERATION The Restart function performs a Fault Reset and restarts the drive. • Verify that activating this function does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage meter can only be modified if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (EPr) mode Drive reinitialization via logic input. Can be used to reset all detected faults without having to disconnect the drive from the power supply. The drive is reinitialized on a rising edge (change from 0 to 1) of the assigned input. The drive can only be reinitialized w hen locked. To assign reinitialization, press and hold down the ENT key for 2 s. nO [No] (nO): Function inactive [LI1] (LI1): Logical input LI1 1.11 [LI6] (LIG): Logical input LI6 LI6 LAI1 [LAI1] (LAI1):Logical input AI1 LAI2 [LAI2] (LAI2): Logical input AI2 [OL01] (OL01): Function blocks: Logical Output 01 **OL01** [OL10] (OL10): Function blocks: Logical Output 10 **OL10** rP [No] (nO) [Product reset] The Restart function performs a Fault Reset and then restarts the drive. During this Restart procedure, the drive goes through the same steps as if it had been switched off and on again. Depending on the wiring and the configuration of the drive, this may result in immediate and unanticipated operation. ▲ WARNING UNANTICIPATED EQUIPMENT OPERATION The Restart function performs a Fault Reset and restarts the drive. Verify that activating this function does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage This parameter can only be accessed if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (LAC) mode. Drive reinitialization. Can be used to reset all detected faults without having to disconnect the drive from the power supply. [No] (nO): Function inactive [Yes] (YES): Reinitialization. Press and hold down the ENT key for 2 s. The parameter changes back to [No] (nO) YES automatically as soon as the operation is complete. The drive can only be reinitialized when locked.

DRI- > CONF > FULL > FLT- > RST-

DRI- > CONF > FULL > FLT- >RST-/ATR-/ALS-

Code	Name / Description	Adjustment range	Factory setting	
HrFC	[Reset restricted fault configuration]		[No] (nO)	
	This parameter can only be accessed if [3.1 ACCESS LEVEL] (LAC) is set to [Expert] (□) mode.			
*	Can be used to select the access level of [Fault reset] (rSF) to reset detected faults w ithout having to disconnect the drive from the power supply. see page 251			
	Note: If [Resetrestricted fault configuration] (HrFC) is set to [Yes] (YES), the additional following detected fault can be cleared manually: OCF, SCF1, SCF3.			
nO YES	[No] (nO): Function inactive [Yes] (YES): Function active			
FLt-	[FAULT MANAGEMENT] (continued)			
Atr-	[AUTOMATIC RESTART]			
Atr	[Automatic restart]		[No] (nO)	
₹2 s	This function can be used to automatically performindividual or multiple Fault Resets. If the cause of the error that has triggered the transition to the operating state Fault disappears within while this function is active, the drive resumes normal operation. While the Fault Reset attempts are performed automatically, the output signal "Operating state Fault" is not available. If the attempts to perform the Fault Reset are not successful, the drive remains in the operating state Fault and the output signal "Operating state Fault" becomes active.			
	▲ WARNING			
	UNANTICIPATED EQUIPMENT OPERATION			
	 Verify that activating this function does not result in unsafe conditions. Verify that the fact that the output signal "Operating state Fault" is not available while this function is active does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage 			
	The error relay remains activated if this function is active. The speed reference and the operating direction must be maintained. Use 2-wire control ([2/3 wire control] (tCC) is set to [2 wire] (2C) and [2 wire type] (tCt) is set to [Level] (LEL), see			
	[2/3 wire control] (tCC) page 85). If the restart has not taken place once the configurable time tAr has elapsed, the procedure is aborted and the drive remains locked until it is turned off and then on again. The error codes, w hich permit this function, are listed on page 311.			
nO YES	[No] (nO): Function inactive [Yes] (YES): Automatic restart, after locking in fault state, if the detected fault has disappeared and the other operating conditions permit the restart. The restart is performed by a series of automatic attempts separated by increasingly longer waiting periods: 1 s, 5 s, 10 s, then 1 minute for the following attempts.			
tAr	[Max. restart time]		[5 minutes] (5)	
*	This parameter appears if [Automatic restart] (Atr) is set to [Yes] (YES). It can be used to limit the number of consecutive restarts on a recurrent detected fault.			
5	[5 m in] (5):5 minutes			
10	[10 m inutes] (10): 10 minutes [30 m inutes] (30): 30 minutes			
1h	[1 hour] (1h): 1 hour			
3h	[2 hours] (2h): 2 hours [3 hours] (3h): 3 hours [Unlimited] (Ct): Unlimited			
FLt-	[FAULT MANAGEMENT] (continued)			
ALS-	[ALARM SETTING]			
Ctd	[Current threshold]	0 to 1.5 ln (1)	INV	
O	Motor current threshold.		1	
(1)				

DRI- > CONF > FULL > FLT- > FLR-

Code	Name / Description	Adjustment range	Factory setting
Ftd	[Freq. threshold]	0 to 599 Hz	50 Hz
O	Motor frequency threshold.		•
F2d	[Freq. threshold 2]	0 to 599 Hz	50 Hz
O	Motor frequency threshold.		
ttH	[High torque thd.]	-300 to 300%	100%
O	High torque frequency threshold.		
ttL	[Low torque thd.]	-300 to 300%	50%
O	Low torque frequency threshold.		•
FqL	[Pulse warning thd.]	0 to 20,000 Hz	0 Hz
*	Frequency level. Visible if [Frequency meter] (FqF) is not [No] (nO).		•
FLt-	[FAULT MANAGEMENT] (continued)		
FLr-	[CATCH ON THE FLY]		
	Note: This function cannot be used with certain other functions. Follow the	he instructions on page <u>16</u>	<u>2</u> .
FLr	[Catch on the fly]		[No] (nO)
	Used to enable a smooth restart if the run command is maintained after the following events: - Loss of supply mains or disconnection. - Clearance of current detected fault or automatic restart. - Freew heel stop. The speed given by the drive resumes from the estimated speed of the motor at the time of the restart, then follows the ramp to the reference speed. This function requires 2-wire level control. When the function is operational, it activates at each run command, resulting in a slight delay of the current (0.5 s max). [Catch on the fly] (FLr) is forced to [No] (nO) if brake logic control [Brake assignment] (bLC) is assigned (page 194) or if [Auto DC injection] (AdC) is set to [Continuous] (Ct) page 176.		
nO YES	• - • (- /		

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > FLT- > THT-

Motor thermal protection

Function

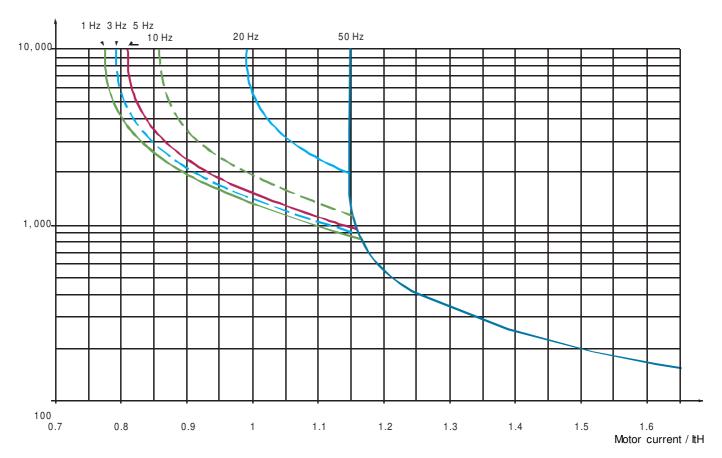
Thermal protection by calculating the I²t.

Note: The motor thermal state is not saved when the drive is switched off.

- Self-cooled motors: The tripping curves depend on the motor frequency.
- Force-cooled motors: Only the 50 Hz tripping curve needs to be considered, regardless of the motor frequency.

The following curves represent the triggering time in seconds:

Triggering time in seconds



CAUTION

RISK OF DAMAGE TO THE MOTOR

External protection against overloads is required under the following circumstances:

- When the product is being switched on again, as there is no memory to record the motor thermal state
- When supplying more than one motor
- When supplying motors with ratings less than 0.2 times the nominal drive current
- · When using motor switching

Failure to follow these instructions can result in equipment damage.

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)		
tHt-	[MOTOR THERMAL PROT.]		
tHt	[Motor protect. type] [Self cooled] (ACL)		
	Note: An error will occur when the thermal state reaches 118% of the back below 100%.	ne rated state and reactivation w	ill occur when the state falls
ACL	[No] (nO): No protection [Self cooled] (ACL): For self-cooled motors [Force-cool] (FCL): For force-cooled motors		
ttd	[Motor therm. level]	0 to 118%	100%
()	Threshold for motor thermal alarm (logic output or relay).		
(1)	Mark Callery Levell	0 to 1100/	11000/
ttd2	[Motor2 therm. level]	0 to 118%	100%
()	Threshold for motor 2 thermal alarm (logic output or relay).		
ttd3	[Motor3 therm. level]	0 to 118%	100%
O	Threshold for motor 3 thermal alarm (logic output or relay).		
OLL	[Overload fault mgt]		[Freewheel] (YES)
	OVERHEATING AND DAMAGE TO THE MOTOR Depending on the settings of this parameter, the error response to detected errors is disabled or the transition to the operating state Fault is suppressed if an error is detected. • Verify that the settings of this parameter do not result in equipment damage. • Implement alternative monitoring functions for disabled monitoring functions. Failure to follow these instructions can result in equipment damage.		
YES Stt LFF rLS rMP FSt	not been removed (2) [Spd maint.] (rLS): The drive maintains the speed being applied when the detected fault occurred, as long as the detected fault is present and the run command has not been removed (2) [Ramp stop] (rMP): Stop on ramp [Fast stop] (FSt): Fast stop		ing to the restart conditions pe] (t t) page 125 if a logic output, for example) and the run command has d, as long as the detected
MtM	[Mot THR memo]		[No] (nO)
	Motor thermal state memorization.		
nO YES	[No] (nO): Motor thermal state is not stored at pow er off [Yes] (YES): Motor thermal state is stored at pow er off		

DRI- > CONF > FULL > OPL-/IPL-

Code	Name / Description	Adjustment range	Factory setting	
FLt-	[FAULT MANAGEMENT] (continued)			
OPL-	[OUTPUT PHASE LOSS]			
OPL	[Output Phase Loss]		[Yes] (YES)	
_				
2 s	A A DANGE	R		
	HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH			
	If output phase monitoring is disabled, phase loss and, by implication, accidental disconnection of cables, are not detected.			
	Verify that the setting of this parameter does not result in uns Failure to follow these instructions will result in death or set			
	railure to follow these instructions will result in death of si	erious irijui y.		
	Note: [Output phase loss] (OPL) is set to [No] (nO) when [Motor control type] (Ctt) page 105 is set to [Sync. mot.] (SYn). For other [Motor control type] (Ctt) configurations, [Output phase loss] (OPL) is forced to [Yes] (YES) if brake logic control is configured.			
YES	[No] (nO): Function inactive [Yes] (YES): Tripping on [Output phase loss] (OPL) with freew heel stop [Output cut] (OAC): No fault triggered, but management of the output voltage in order to avoid an overcurrent when the link with the motor is re-established and catch on the fly performed (even if this function has not been configured). The drive sw itches to [Output cut] (SOC) state after [OutPh time detect] (Odt) time. Catch on fly is possible as soon as the drive is in Stand by output cut [Output cut] (SOC) state.			
Odt	[OutPh time detect]	0.5 to 10 s	0.5 s	
()	Time delay for taking the [Output Phase Loss] (OPL) detected fault into	account.	•	
FLt-	[FAULT MANAGEMENT] (continued)			
IPL-	[INPUT PHASE LOSS]			
IPL	[Input phase loss]		According to drive rating	
* \$\frac{1}{2}\$	Cannot be accessed if drive rating is ATVpppM2. In this case, no factory settings value. Factory setting: [Freewheel] (YES) for drive rating ER24pppN4p. If 1 phase disappears and if this leads to performance decrease, the drive switches to fault mode [Input phase loss] (PHF). If 2 or 3 phases disappear, the drive trips in [Input phase loss] (PHF).			
nO	[Ignore] (nO): Detected fault ignored [Freewheel] (YES): Detected fault with freewheel stop			

dCI

tHA

()

2 s

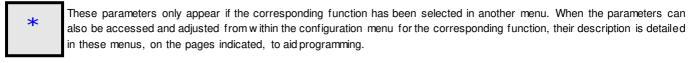
DRI- > CONF > FULL > FLT- > OHL-Parameters described in this page can be accessed by: Code Name / Description Factory setting Adjustment range FLt-[FAULT MANAGEMENT] (continued) [DRIVE OVERHEAT] OHL: OHL [Overtemp fault mgt] [Freew heel] (YES) NOTICE OVERHEATING AND DAMAGE TO THE MOTOR Depending on the settings of this parameter, the error response to detected errors is disabled or the transition to the operating state Fault is suppressed if an error is detected. Verify that the settings of this parameter do not result in equipment damage. Failure to follow these instructions can result in equipment damage. Behavior in the event of the drive overheating. Note: An error will occur when the thermal state reaches 118% of the rated state and reactivation will occur when the state falls back below 90%. nO [Ignore] (nO): Detected fault ignored YES [Freewheel] (YES): Freewheel stop Stt [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire type] (tCt) page 125 if controlis via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop. **LFF** [fallback spd] (LFF): Change to fallback speed, maintained as long as the detected fault persists and the run command has not been removed (2) [Spd maint.] (rLS): The drive maintains the speed being applied when the detected fault occurred, as long as the detected fault is present and the run command has not been removed (2) **rMP** [Ramp stop] (rMP): Stop on ramp **FSt** [Fast stop] (FSt): Fast stop

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) menu.
- (2) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.

0 to 118%

100%

[DC injection] (dCl): DC injection stop. This type of stop cannot be used with certain other functions. See table on page 163



Parameter that can be modified during operation or when stopped.

Threshold for drive thermal alarm (logic output or relay).

[Drv therm. state al]

To change the assignment of this parameter, press the ENT key for 2 s.

Deferred stop on thermal alarm

This function helps to prevent the drive stopping between two steps of the process if the drive or motor overheats, by authorizing operation until the next stop. At the next stop, the drive is locked until the thermal state falls back to a value, which undershoots the set threshold by 20%. Example: A threshold set at 80% enables reactivation at 60%.

One thermal state threshold must be defined for the drive, and one thermal state threshold for the motor(s), which will trigger the deferred stop.

Code	Name / Description Adjustment range Factory setting				
FLt-	[FAULT MANAGEMENT] (continued)				
SAt-	[THERMAL ALARM STOP]				
SAt	[Thermal alarm stop] [No] (nO)				
	Thermal alarm stop function allow to set a custom alarm thermal reached, the drive trips in freewheel stop.	level for the drive or the moto	or. When one of these levels is		
nO YES	[No] (nO): Function inactive (in this case, the following parameter [Yes] (YES): Freewheel stop on drive or motor thermal alarm	rs cannot be accessed)			
tHA	[Drv therm. state al]	0 to 118%	100%		
O	Thermal state threshold of the drive tripping the deferred stop.				
ttd	[Motor therm. level]	0 to 118%	100%		
O	Thermal state threshold of the motor tripping the deferred stop.				
ttd2	[Motor2 therm. level]	0 to 118%	100%		
O	Thermal state threshold of the motor 2 tripping the deferred stop.				
ttd3	[Motor3 therm. level]	0 to 118%	100%		
()	Thermal state threshold of the motor 3 tripping the deferred stop.				
FLt-	[FAULT MANAGEMENT] (continued)				
EtF-	[EXTERNAL FAULT]				
EtF	[External fault ass.]		[No] (nO)		
	If the assigned bit is at 0, there is no external fault. If the assigned bit is at 1, there is an external fault. Logic can be configured via [External fault config] (LEt) if a logic input has been assigned.				
	[No] (nO): Function inactive [Ll1] (Ll1): Logical input Ll1 [] (): See the assignment conditions on page 153				
LEt	[External fault config]		[Active high] (HIG)		
*	Parameter can be accessed if the external fault has been assigned to a logic input. It defines the positive or negative logic of the input assigned to the detected fault.				
LO HIG	[Active low] (LO): Triggering on falling edge (change from 1 to 0) of the assigned input [Active high] (HIG): Triggering on rising edge (change from 0 to 1) of the assigned input				

DRI- > CONF > FULL > FLT- > ETF-/USB-

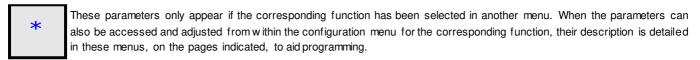
Type of stop in the event of an external fault. [Ignore] (nO): External fault ignored [Freewheel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In	this age, the fault		
[Ignore] (nO): External fault ignored [Freewheel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In relay does not open and the drive is ready to restart as soon as the detected fault disappears, according conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire]	this ages, the fault		
[Free wheel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In relay does not open and the drive is ready to restart as soon as the detected fault disappears, according conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire]	this case the fault		
[Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In relay does not open and the drive is ready to restart as soon as the detected fault disappears, according conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire]	this again the fault		
relay does not open and the drive is ready to restart as soon as the detected fault disappears, according conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire]			
	relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart		
output, for example) in order to indicate the cause of the stop.	output, for example) in order to indicate the cause of the stop.		
LFF [fallback spd] (LFF): Change to fallback speed, maintained as long as the detected fault persists and the not been removed (1)	[Land Land Land Land Land Land Land Land		
rLS [Spd maint.] (rLS): The drive maintains the speed being applied when the detected fault occurred, as keeping applied when the detected fault occurred applied applied when the detected fault occurred applied applied when the detected fault occurred applied app	ong as the detected		
fault is present and the run command has not been removed (1) [Ram p stop] (rMP): Stop on ramp			
FSt [Fast stop] (FSt): Fast stop [DC injection] (dC I): DC injection stop. This type of stop cannot be used with certain other functions. See	table on page 165		
FLt- [FAULT MANAGEMENT] (continued)	table on page 100		
USb- [UNDERVOLTAGE MGT]			
USb [UnderV. fault mgt] [Std fault	lt1 (O)		
Behavior of the drive in the event of an undervoltage.			
	(E) 'II		
O [Std fault] (O): The drive trips and the external fault signal is triggered (the fault relay assigned to [No drive be opened)			
1 [Fit worelay] (1): The drive trips but the external fault signal is not triggered (the fault relay assigned to remains closed)	[No drive flt] (FLt)		
[Alarm](2): Alarmand fault relay remain closed. The alarm can be assigned to a logic output or a relay			
	g to drive voltage		
Rated voltage of the supply mains in V.			
For ER24K/B: 200 [200V ac] (200): 200 Volts AC			
220 [220V ac] (220): 220 Volts AC 230 [230V ac] (230): 230 Volts AC			
240 [240 ac] (240): 240 Volts AC			
For ER24/4K/B:			
380 [380V ac] (380): 380 Volts AC			
400 [400 ac] (400): 400 Volts AC 440 [440 ac] (440): 440 Volts AC			
4 =0 [460V ac] (4 =0): 460 Volts AC			
500 [500V ac] (500): 500 Volts AC (factory setting) USI [Undervoltage level] 100 to 276 V According	a to drive reting		
USL [Undervoltage level] 100 to 276 V According Undervoltage fault level setting in Volts. The factory setting is determined by the drive voltage rating.	ig to drive rating		
USt [Undervolt. time out] 0.2 s to 999.9 s 0.2 s			
Time delay for taking undervoltage detected fault into account.			
StP [UnderV. prevention] [No] (nC	D)		
Behavior in the event of the undervoltage prevention level being reached.	,		
nO [No] (nO): No action MMS [DC Maintain] (MMS): This stop mode uses the inertia to maintain the DC bus voltage as long as possib	ole		
rMP [Ramp stop] (rMP): Stop following an adjustable ramp [Max stop time] (StM) LnF [Lock-out] (LnF): Lock (freew heel stop) without error			
tSM [UnderV. restart tm] 1.0 s to 999.9 s 1.0 s			
Time delay before authorizing the restart after a complete stop for [UnderV. prevention] (StP) = [Rar	mpstop] (rMP), if		
the voltage has returned to normal.			
\circ			

DRI- > CONF > FULL > FLT- > TTT- / LFL-Parameters described in this page can be accessed by: Code Name / Description Adjustment range Factory setting 133 to 261 V UPL According to drive rating [Prevention level] Undervoltage prevention level setting in Volts, which can be accessed if [UnderV. prevention] (StP) is not [No] (nO). The * adjustment range and factory setting are determined by the drive voltage rating and the [Mains voltage] (UrES) 0.01 to 60.00 s 1.00 s StM [Max stop time] * Ramp time if [UnderV.prevention] (StP) is set to [Ramp stop] (rMP). () 1 to 9,999 s 9,999 s tbS [DC bus maintain tm] DC bus maintain time if [UnderV.prevention] (StP) is set to [DC Maintain] (MMS). () FLt-[FAULT MANAGEMENT] (continued) **IIGBT TESTS** + | + -Strt [IGBT test] [No] (nO) [No] (nO): No test [Yes] (YES): The IGBTs are tested on power up and every time a run command is sent. These tests cause a slight delay (a YES few ms). In the event of a detected fault, the drive will lock. The following faults can be detected: - Drive output short-circuit (terminals U-V-W): SCF display. - IGBT inoperable: xtF, where x indicates the number of the IGBT concerned. - IGBT short-circuited: x2F, where x indicates the number of the IGBT concerned. [FAULT MANAGEMENT] (continued) _t-[4-20mA LOSS] _FL-LFL3 [AI3 4-20mA loss] [Ignore] (nO) nO [Ignore] (nO): Detected fault ignored. This is the only possible configuration if [Al3 min. value] (CrL3) page 134 is not greater than 3 mA YES [Freew heel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without fault tripping. In this case, the Stt fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire type] (tCt) page 125 if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop [Fallback spd] (LFF): Change to fallback speed, maintained as long as the detected fault persists and the run command has not been removed (1)

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.

[Spd maint.] (rLS): The drive maintains the speed being applied when the detected fault occurred, as long as the detected

[DC injection] (dC 1): DC injection stop. This type of stop cannot be used with certain other functions. See table on page 163



Parameter that can be modified during operation or when stopped.

[Ramp stop] (rMP): Stop on ramp

[Fast stop] (FSt): Fast stop

fault is present and the run command has not been removed (1)

rMP

FSt

dCI

DRI- > CONF > FULL > FLT- > INH-/CLL-

Parameter can be accessed in [Expert] mode

Active detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Follow ing faults can be inhibited: AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLG, OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. 100 [No] (nO): Function inactive [Li1] (Li1): Logical input Ll1 [] (): See the assignment conditions on page 153 [FLt- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT]	Code	Name / Description	Adjustment range	Factory setting	
In H If Fault inhibit assign.] In rare cases, the monitoring functions of the drive may be unw anted because they impede the purpose of the application typical example is a smoke extractor fan operating as a part of a fire protection system if a fire occurs, the smoke extract should operate as long as possible, even if, for example, the permissible ambient temperature of the drive is exceeded, the applications, damage to or destruction of the device may be acceptable as collateral damage, for example, to keep other day from occurring whose hazard potentials assessed to be more severe. A parameter is provided to disable certain monitoring functions is such applications, so that automatic error detection and automatic error responses of the device are no longer active. You must implement alternative monitoring functions for dismonitoring functions and/or master control systems to adequately respond to conditions which correctly to detected errors. For example, if overtemperature monitoring of the drive is disabled, the drive of a smoke extractor fan may itself cause a error is go undected. An overtemperature condition can be, for example, signated in a control room without the drive being stopped immediately and automatically by its internal monitoring functions. ** ** ** ** ** ** ** ** **	FLt-	[FAULT MANAGEMENT] (continued)			
In rare cases, the monitoring functions of the drive may be unw anted because they impede the purpose of the application typical example is a smoke extractor fan operating as pand of a fire protection system. If a fire occurs, the smoke extracts should operate as long as possible, even if, for example, the permissible ambient temperature of the drive is exceeded. In applications, damage to or destruction of the device may be acceptable as collateral damage, for example, to keep other damage, and the provision of the device are provided to disable certain monitoring functions in such applications so that automatic error detection and automatic error responses of the device are no longer active. You must implement alternative monitoring functions for dismonitoring functions that allow operators and/or master control systems to adequately respond to conditions which corre to detected errors. For example, if overtemperature monitoring of the drive is disabled, the drive of a smoke extractor fan may itself cause a errors go undetected. An overtemperature condition can be, for example, signaled in a control room without the drive beit stopped immediately and automatically by its internal monitoring functions. ** ** ** ** ** ** ** ** **	InH-	[FAULT INHIBITION]			
ypical example is a smoke extractor fan operating as a part of a fire protection system. If a fire occurs, the smoke extracts should operate as long as possible, even if, for example, the permissible arribent temperature of the drive is exceeded. In applications, damage to or destruction of the device may be acceptable as collateral damage, for example, to keep other day from occurring whose hazard potentials as assessed to be more severe. A parameter is provided to disable certain monitoring functions in such applications so that automatic error detection and automatic error responses of the device are no longer active. You must implement alternative monitoring functions for dismonitoring functions that allow operators and/or master control systems to adequately respond to conditions which corre to detected errors. For example, if overtemperature monitoring of the drive is disabled, the drive of a smoke extractor fan may itself cause a errors go undetected. An overtemperature condition can be, for example, signaled in a control room without the drive beit stopped immediately and automatically by its internal monitoring functions. ** **DANGER** MONITORING FUNCTIONS DISABLED, NO ERROR DETECTION • Only use this parameter after a thorough risk assessment in compliance with all regulations and standard as as well as the risk assessment. • Implement alternative monitoring functions for disabled monitoring functions that do not trigger automal error responses of the drive, but allow for adequate, equivalent responses by other means in complian with all applicable regulations and standards as well as the risk assessment. • Commission and test the system with the monitoring functions enabled. • During commissioning, verify that the drive and the system operate as intended by performing tests as simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is acti	InH	[Fault inhibit assign.]		[No] (nO)	
MONITORING FUNCTIONS DISABLED, NO ERROR DETECTION Only use this parameter after a thorough risk assessment in compliance with all regulations and standar that apply to the device and to the application. Implement alternative monitoring functions for disabled monitoring functions that do not trigger automa error responses of the drive, but allow for adequate, equivalent responses by other means in complian with all applicable regulations and standards as well as the risk assessment. Commission and test the system with the monitoring functions enabled. During commissioning, verify that the drive and the system operate as intended by performing tests are simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is nactive detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any formof operation are not affected by function. Following faults can be inhibited: An F, On F, OOF, OFF 1, dLF, En F, EPF1, EPF2, FCF2, In FA, In Fb, LFF3, ObF, OHF, OLC OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, the ULF. INO [NO] (nO): Function inactive Li1 [Li1] (Li1): Logical input LI1 [Li1] (Li1): Logical input LI1 [Li1] (Li1): Logical input LI1 [Li1] (Li1): Logical input LI1 [Li2] (Li2): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) [COM. FAULT MANAGEMENT] [Freewheel] (YES)		typical example is a smoke extractor fan operating as a part of a fire protect should operate as long as possible, even if, for example, the permissible an applications, damage to or destruction of the device may be acceptable as of from occurring whose hazard potential is assessed to be more severe. A parameter is provided to disable certain monitoring functions in such appautomatic error responses of the device are no longer active. You must impronitoring functions that allow operators and/or master control systems to to detected errors. For example, if overtemperature monitoring of the drive is disabled, the driverors go undetected. An overtemperature condition can be, for example, is	s a smoke extractor fan operating as a part of a fire protection system. If a fire occurs, the smoke extractor fan s long as possible, even if, for example, the permissible ambient temperature of the drive is exceeded. In such nage to or destruction of the device may be acceptable as collateral damage, for example, to keep other damage hose hazard potential is assessed to be more severe. rovided to disable certain monitoring functions in such applications so that automatic error detection and esponses of the device are no longer active. You must implement alternative monitoring functions for disabled ions that allow operators and/or master control systems to adequately respond to conditions which correspond is. Invertemperature monitoring of the drive is disabled, the drive of a smoke extractor fan may itself cause a fire if cted. An overtemperature condition can be, for example, signaled in a control room without the drive being		
MONITORING FUNCTIONS DISABLED, NO ERROR DETECTION • Only use this parameter after a thorough risk assessment in compliance with all regulations and standar that apply to the device and to the application. • Implement alternative monitoring functions for disabled monitoring functions that do not trigger automal error responses of the drive, but allow for adequate, equivalent responses by other means in compliant with all applicable regulations and standards as well as the risk assessment. • Commission and test the system with the monitoring functions enabled. • During commissioning, verify that the drive and the system operate as intended by performing tests are simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inacted by function. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Following faults can be inhibited: AnE, CnE, COE, CrE1, dLE, EnE, EPE1, EPE2, ECE2, InEA, InEb, LEE3, Obe, OHE, OLE, OLE, OPE1, OPE2, OSE, OtEL, PHE, PtEL, SLE1, SLE2, SLE3, SOF, SPE, SSE, tJE, tnE ULE. [In] (LI): Logical input LI1 (LI):	*	A DANGER	?		
Only use this parameter after a thorough risk assessment in compliance with all regulations and standar that apply to the device and to the application. Implement alternative monitoring functions for disabled monitoring functions that do not trigger automa error responses of the drive, but allow for adequate, equivalent responses by other means in complian with all applicable regulations and standards as well as the risk assessment. Commission and test the system with the monitoring functions enabled. During commissioning, verify that the drive and the system operate as intended by performing tests are simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inactive, detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Following faults can be inhibited: AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLC, OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. INO [No] (no): Function inactive [LII] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) [INetwork fault mgt] [Freewheel] (YES)	720				
error responses of the drive, but allow for adequate, equivalent responses by other means in complian with all applicable regulations and standards as well as the risk assessment. • Commission and test the system with the monitoring functions enabled. • During commissioning, verify that the drive and the system operate as intended by performing tests are simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inactive detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any formof operation are not affected by function. Following faults can be inhibited: Anfe, Coff, Coff, Crf1, dLF, Enf, EPF1, EPF2, FCF2, InFA, InFb, LFF3, Obf, OHF, OLG OLF, OPF1, OPF2, OSF, OtfL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. INO [No] (nO): Function inactive [L11] (L11): Logical input LI1 [] (): See the assignment conditions on page 153 FLT- [FAULT MANAGEMENT] (continued) CLL- [Network fault mgt] [Freewheel] (YES)	23	Only use this parameter after a thorough risk assessment in contact.		gulations and standards	
During commissioning, verify that the drive and the system operate as intended by performing tests are simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inactive detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Following faults can be inhibited: Anf. Cnf. COF, Crf. dLF, Enf. EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLC OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. INO (No) (nO): Function inactive [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)		 Implement alternative monitoring functions for disabled mon error responses of the drive, but allow for adequate, equivalent 	ent responses by othe		
simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inactive detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Following faults can be inhibited: Anf, Cnf, Cof, Crf1, dLf, Enf, EPF1, EPF2, FCF2, InFA, InFb, LFF3, Obf, OHF, OLCOLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnFULF. IND [No] (nO): Function inactive [Li1] (Li1): Logical input Li1 [] (): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)		· · · · · · · · · · · · · · · · · · ·			
If the assigned input or bit is at 0, detected fault monitoring is active. If the assigned input or bit is at 1, fault monitoring is inactive detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Following faults can be inhibited: AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLCOLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnFULF. INO [No] (nO): Function inactive [LI1] (LI1): Logical input LI1 [] (): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)					
Active detected faults are cleared on a rising edge (change from 0 to 1) of the assigned input or bit. Note: The Safe Torque Off function and any detected faults that help to prevent any form of operation are not affected by function. Follow ing faults can be inhibited: AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLG OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. 100 [No] (nO): Function inactive [L11] (L11): Logical input L11 [] (): See the assignment conditions on page 153 FLT- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)		Failure to follow these instructions will result in death or serious injury.			
AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLC OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF ULF. nO [No] (nO): Function inactive [Ll1] (Ll1): Logical input Ll1 [] (): See the assignment conditions on page 153 F Lt - [FAULT MANAGEMENT] (continued) CLL - [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)		e: The Safe Torque Off function and any detected faults that help to prevent any formof operation are not affected by this			
LI1 [LI1]: Logical input LI1 [] (): See the assignment conditions on page 153 FLt- [FAULT MANAGEMENT] (continued) CLL- [COM. FAULT MANAGEMENT] CLL [Network fault mgt] [Freewheel] (YES)		AnF, CnF, COF, CrF1, dLF, EnF, EPF1, EPF2, FCF2, InFA, InFb, LFF3, ObF, OHF, OLC, OLF, OPF1, OPF2, OSF, OtFL, PHF, PtFL, SLF1, SLF2, SLF3, SOF, SPF, SSF, tJF, tnF and			
CLL- [COM. FAULT MANAGEMENT] [Network fault mgt] [Freewheel] (YES)	LI1	[LI1] (LI1): Logical input LI1			
[Freewheel] (YES) A WARNING	FLt-	[FAULT MANAGEMENT] (continued)			
▲ WARNING	CLL-	[COM. FAULT MANAGEMENT]			
	CLL	[Network fault mgt]		[Freewheel] (YES)	
LOSS OF CONTROL		▲ WARNIN	G		
If this was no shade a set of the second (see) field by a second set of the second section is a fine shade.					
 Only use this setting after a thorough risk assessment in compliance with all regulations and standards 		If this parameter is set to [Ignore] (nO), fieldbus module communication monitoring is disabled. • Only use this setting after a thorough risk assessment in compliance with all regulations and standards			
that apply to the device and to the application.					
Only use this setting for tests during commissioning. Variety that communication magnituding the communication and a local property of the communication and the communication a			ofour committee of		
 Verify that communication monitoring has been re-enabled before completing the commissioning procedure and performing the final commissioning test. Failure to follow these instructions can result in death, serious injury, or equipment damage. 		procedure and performing the final commissioning test.			

DRI- > CONF > FULL > FLT- > CLL-

Code	Name / Description	Adjustment range	Factory setting
	Behavior of the drive in the event of a communication interruption with a communication card.		
YES	[Ignore] (nO): Detected fault ignored [Free w heel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without fault tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire type] (tCt) page 125 if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for		
LFF	example) in order to indicate the cause of the stop [Fallback spd] (LFF): Change to fallback speed, maintained as long as the sear removed (1).	e detected fault persists	and the run command has
rLS	not been removed (1) [Spd maint.] (rLS): The drive maintains the speed being applied when the	e detected fault occurred	d, as long as the detected
rMP FSt	fault is present and the run command has not been removed (1) [Ram p stop] (rMP): Stop on ramp		
dCI	[Fast stop] (FSt): Fast stop [DC injection] (dCl): DC injection stop. This type of stop cannot be used	w ith certain other function	ons. See table on page 163
COL	[CANopen fault mgt]		[Freewheel] (YES)
	▲ WARNIN	G	
	LOSS OF CONTROL	tion monitoring in dia a	hlad
	If this parameter is set to [Ignore] (nO), CANopen communication monitoring is disabled. • Only use this setting after a thorough risk assessment in compliance with all regulations and standards		
	that apply to the device and to the application.		
	 Only use this setting for tests during commissioning. Verify that communication monitoring has been re-enabled before completing the commissioning 		
	procedure and performing the final commissioning test.		
	Failure to follow these instructions can result in death, serious injury, or equipment damage.		
	Behavior of the drive in the event of a communication interruption with inte	egrated CANopen®.	
	[Ignore] (nO): Detected fault ignored		
YES Stt	[Freewheel] (YES): Freewheel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Str) fault relay does not open and the drive is ready to restart as soon as the drive conditions of the active command channel (for example, according to [2/3 with 125 if control is via the terminals). Configuring an alarm for this detected from the conditions of the active command channel (for example, according to [2/3 with 125 if control is via the terminals).	etected fault disappears, re control] (tCC) and [, according to the restart 2 wire type] (t t) page
LEE	example) in order to indicate the cause of the stop. [fallback spd] (LFF): Change to fallback speed, maintained as long as the	e detected fault persists	and the run command has
rLS	not been removed (1) [Spd maint.] (rLS): The drive maintains the speed being applied when the	•	
rMP	fault is present and the run command has not been removed (1) [Ram p stop] (rMP): Stop on ramp		
FSt dCl	[Fast stop] (FSt): Fast stop	w ith certain other function	ons. See table on page 165
SLL	[Modbus fault mgt]	William Street Fariotic	[Freewheel] (YES)
	▲ WARNIN	G	
	LOSS OF CONTROL		
	If this parameter is set to [Ignore] (nO), Modbus communication		
	 Only use this setting after a thorough risk assessment in conthat apply to the device and to the application. 	npilance with all regula	itions and standards
	Colorado and to another and the applications		

Only use this setting for tests during commissioning.

 $procedure \ and \ performing \ the \ final \ commissioning \ test.$

Verify that communication monitoring has been re-enabled before completing the commissioning

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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DRI- > CONF > FULL > FLT- > CLL-/SDD-

this case, the to the restart (t t) page ogic output, for command has the detected
to the restart (t t) page ogic output, for command has the detected
command has the detected
Ξ S)
d parameters ed feedback are a configured, the
c

DRI- > CONF > FULL > FLT- > TLD-

Code	Name / Description	Adjustment range	Factory setting
tld-	[TORQUE OR I LIM. DETECT]		
SSb	[Trq/l limit. stop]		[Ignore] (nO)
	Behavior in the event of switching to torque or current limitation.		
nO	[Ignore] (nO): Detected fault ignored		
YES	[Freewheel] (YES): Freew heel stop		
Stt	[Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without fault tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] (tCC) and [2 wire type] (tCt) page 125 if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop		
LFF	[fallback spd] (LFF): Change to fallback speed, maintained as long as the not been removed (1)	e detected fault persists	and the run command has
	[Spd m aint.] (rLS): The drive maintains the speed being applied when the detected fault occurred, as long as the detected fault is present and the run command has not been removed (1)		
	[Ramp stop] (rMP): Stop on ramp		
	[Fast stop] (FSt): Fast stop [DC injection] (dCl): DC injection stop. This type of stop cannot be used	with certain other function	one See table on page 165
StO	[Trq/I limit. time out]	0 to 9,999 ms	1,000 ms
()	(If [Trq/I limit.stop] (SSb) has been configured) Time delay for taking SSF limitation into account.		

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for $2\,\mathrm{s}$.

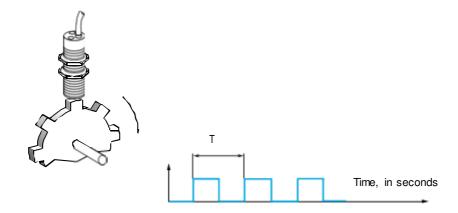
DRI- > CONF > FULL > FLT- > FQF

Use of the "Pulse input" input to measure the speed of rotation of the motor

This function uses the "Pulse input" input and can only be used if the "Pulse input" input is not being used for another function.

Example of use

An indexed disk driven by the motor and connected to a proximity sensor can be used to generate a frequency signal that is proportional to the speed of rotation of the motor.



When applied to the "Pulse input" input, this signal supports:

- Measurement and display of the motor speed: signal frequency = 1/T. This frequency is displayed by means of the [Pulse in. work. freq.] (FqS) parameter, page 50.
- Overspeed detection (if the measured speed exceeds a preset threshold, the drive will trigger an error).
- Brake failure detection, if brake logic control has been configured: If the speed does not drop sufficiently
 quickly following a command to engage the brake, the drive will trigger an error. This function can be used
 to detect worn brake linings.
- Detection of a speed threshold that can be adjusted using [Pulse warning thd.] (FqL) page 102 and is assignable to a relay or logicoutput, see page 138.

DRI- > CONF > FULL > FLT- > FQF-

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)		
FqF-	[FREQUENCY METER]		
FqF	[Frequency meter]		[No] (nO)
	Activation of the speed measurement function.		
nO YES	[No] (nO): Function inactive. In this case, none of the function parameters of [Yes] (YES): Function active, assignment only possible if no other functions		ne "Pulse input" input
FqC	[Pulse scal. divisor]	1.0 to 100.0	1.0
O	Scaling factor for the "Pulse input" input (divisor). The frequency measured [Pulse in. work.freq.] (FqS) parameter, page $\underline{50}$.	is displayed by means of	the
FqA	[Overspd. pulse thd.]		[No] (nO)
	Activation and adjustment of overspeed monitoring: [Overspeed] (SOF).		
nO –	[No] (nO): No overspeed monitoring 1 Hz to 20.00 kHz: Adjustment of the frequency tripping threshold on the "Pulse input" input divided by [Pulse scal. divisor] (FqC).		ру
tdS	[Pulse overspd delay]	0.0 s to 10.0 s	0.0 s
	Time delay for taking overspeed detected fault into account.		
Fdt	[Level fr. pulse ctrl] [No] (nO)		[No] (nO)
	Activation and adjustment of monitoring for the Pulse input (speed feedback	(): [Speed fdback loss]	(SPF).
nO –	[No] (nO): No monitoring of speed feedback 0.1 Hz to 599 Hz: Adjustment of the motor frequency threshold for tripping a speed feedback detected fault (difference between the estimated frequency and the measured speed).		fault (difference between
Fqt	[Pulse thd. wo Run]		[No] (nO)
	Activation and adjustment of brake monitoring: [Brake feedback] (brF). If brake logic control [Brake assignment] (bLC) page 194 is not configured, this parameter is forced to [No] (nO).		rced to [No] (nO).
nO –	[No] (nO): No brake monitoring 1 Hz to 1,000 Hz: Adjustment of the motor frequency threshold.		
tqb	[Pulse wo Run delay]	0.0 s to 10.0 s	0.0 s
	Time delay for taking brake monitoring into account.		

DRI- > CONF > FULL > FLT- > DLD-

Load variation detection

This detection is only possible with the High-speed hoisting function. It can be used to detect if an obstacle has been reached, triggering a sudden (upward) increase or (downward) decrease in the load.

Load variation detection triggers a [Dynamic load fault] (dLF). The [Dyn. load Mgt.] (dLb) parameter can be used to configure the response of the drive in the event of this detected fault.

Load variation detection can also be assigned to a relay or a logic output.

There are two possible detection modes, depending on the configuration of high-speed hoisting:

Speed reference mode
 [High speed hoisting] (HSO) page 205 is set to [Speed ref] (SSO).
 Torque variation detection.

During high-speed operation, the load is compared to that measured during the speed step. The permissible load variation and its duration can be configured. If exceeded, the drive switches to fault mode.

Current limitation mode
[High speed hoisting] (HSO) page 205 is set to [Current Limit] (CSO).

On ascend, during high-speed operation, an increase in load will result in a drop in speed. Even if high-speed operation has been activated, if the motor frequency drops below the [I Limit Frequency] (SCL) threshold page 205, the drive will switch to fault mode. The detection is realised only for a positive variation of the load and only in the high speed area (area upper to [I Limit Frequency] (SCL)).

On descend, operation takes the form of Speed reference mode.

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)		
dLd-	[DYNAMIC LOAD DETECT.]		
	Load variation detection. This can be accessed if [High speed hoisting]	(HSO) page 205 is not [No] (nO).
tLd	[Dynamic load time]		[No] (nO)
	Activation of load variation detection and adjustment of time delay for taking load variation detected fault [Dynamic load fault] (dLF) into account.		
nO –	[No] (nO): No load variation detection 0.00 s to 10.00 s: Adjustment of the time delay for taking detected fault into account.		
dLd	[Dynamic load threshold]	1 to 100%	100%
	Adjustment of the threshold for load variation detection, as a % of the load measured during the speed step.		
dLb	[Dyn. load Mgt.] [Freewheel] (YES)		
	Behavior of the drive in the event of a load variation detected fault.		
YES	[Ignore] (nO): Detected fault ignored [Free w heel] (YES): Freew heel stop [Per STT] (Stt): Stop according to configuration of [Type of stop] (Stt) page 173, without tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel, (for example, according to [2/3 wire control] (tCC) and [2 wire type] (tCt) page 125 if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example in order to indicate the cause of the stop		
LFF	[Fallback spd.] (LFF): Change to fallback speed, maintained as long as the detected faultpersists and the run command has		
	not been removed (1) [Spd m aint.] (rLS): The drive maintains the speed at the time the detected fault occurred, as long as the detected fault persists and the run command has not been removed (1)		
rMP FSt	[Ramp stop] (rMP): Stop on ramp [Fast stop] (FSt): Fast stop		

DRI- > CONF > FULL > FLT- > TNF-

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)	-	-
tnF-	[AUTO TUNING FAULT]		
tnL	[Autotune fault mgt]		[Freewheel] (YES)
	[Ignore] (nO): Detected fault ignored [Freew heel] (YES): Freew heel stop		

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



DRI- > CONF > FULL > FLT - > PPI-

Card pairing

Function can only be accessed in [Expert] (EPr) mode.

This function is used to detect whenever a card has been replaced or the software has been modified in any way.

When a pairing password is entered, the parameters of the card currently inserted are stored. On every subsequent power-up, these parameters are verified and, in the event of a discrepancy, the drive locks in HCF fault mode. Before the drive can be restarted, you must revert to the original situation or re-enter the pairing password.

The following parameters are verified:

- The type of card for: all cards.
- The software version for: the control block, the communication cards.
- The serial number for: the control block.

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)	-	
PPI-	[CARDS PAIRING]		
PPI	[Pairing password]	[OFF] (OFF) to 9,999	[OFF] (OFF)
*			
	The [OFF] (OFF) value signifies that the card pairing function is inactive The [ON] (On) value signifies that card pairing is active and that an access the event of a card pairing detected fault As soon as the code has been entered, the drive is unlocked and the code of the PPI code is an unlock code knownonly to BLEMO Product Support.		order to start the drive in



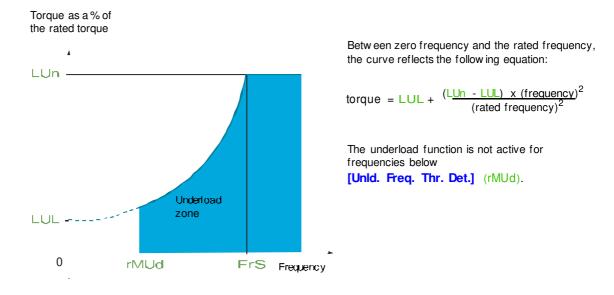
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > FLT - > ULD-

Process underload detected fault

A process underload is detected when the next event occurs and remains pending for a minimum time [Unld T. Del. Detect] (ULt), which is configurable:

- The motor is in steady state and the torque is below the set underload limit ([Unid. Thr. 0. Speed.] (LUL), [Unid. Thr. Nom. Speed.] (LUn), [Unid. Freq. Thr. Det.] (rMUd) parameters).
- The motor is in steady state when the offset between the frequency reference and motor frequency falls below the configurable threshold [Hysteresis Freq. Att.] (Srb).

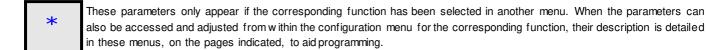


A relay or a logic output can be assigned to the signaling of this detected fault in the **[INPUTS / OUTPUTS CFG]** (\blacksquare _O-) menu.

Code	Name / Description	Adjustment range	Factory setting
FLt-	[FAULT MANAGEMENT] (continued)		
ULd-	[PROCESS UNDERLOAD]		
ULt	[Unid T. Del. Detect.]	0 to 100 s	0 s
	Underload detection time delay. A value of 0 deactivates the function and makes the other parameters inac	ccessible.	
LUn	[Unid. Thr. Nom. Speed.]	20 to 100%	60%
*	Underload threshold at rated motor frequency ([Rated motorfreq.] (FrS) page <u>86</u>), as a % of the rated	motor torque.
()			
LUL	[Unid. Thr. 0. Speed.]	0 to [Unid.Thr.Nom.Speed] (LUn)	0%
*	Underload threshold at zero frequency, as a % of the rated motor torque.		•
()			
rMUd	[Unid. Freq. Thr. Det.]	0 to 599 Hz	0 Hz
*	Minimum frequency underload detection threshold.		•
()			
Srb	[Hysteresis Freq. Att.]	0.3 to 599 Hz	0.3 Hz
*	Maximum deviation between the frequency reference and the motor frequ	ency, which defines steady sta	ate operation.
O			

DRI- > CONF > FULL > FLT - > ULD-

Code	Name / Description	Adjustment range	Factory setting
UdL	[Underload Managmt.]		[Freewheel] (YES)
*	Behavior on sw itching to underload detection.		
YES rMP	[Ignore] (nO): Detected fault ignored [Freewheel] (YES): Freewheel stop [Ramp stop] (rMP): Stop on ramp [Fast stop] (FSt): Fast stop		
FtU	[Underload T.B. Rest.]	0 to 6 min	0 min
*	This parameter cannot be accessed if [Underload Mangmt.] (UdL) Minimum time permitted betw een an underload being detected and any In order to allow an automatic restart, the value of [Max. restart time] (tone minute.	y automatic restart.	his parameter by at least



Process overload detected fault

A process overload is detected when the next event occurs and remains pending for a minimum time **[Ovld Time Detect.]** (tOL), which is configurable:

- The drive is in current limitation mode.
- The motor is in steady state and the current is above the set overload threshold [Ovld Detection Thr.] (LOC).

The motor is in steady state when the offset between the frequency reference and motor frequency falls below the configurable threshold [Hysteresis Freq. Att.] (Srb).

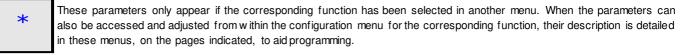
A relay or a logic output can be assigned to the signaling of this detected fault in the <code>[INPUTS / OUTPUTS CFG] (I $_O$ -) menu.</code>

Code	Name / Description	Adjustment range	Factory setting			
FLt-	[FAULT MANAGEMENT] (continued)					
OLd-	[PROCESS OVERLOAD]					
tOL	[Ovld Time Detect.]	0 to 100 s	0 s			
	Overload detection time delay. A value of 0 deactivates the function and makes the other parar	meters inaccessible.				
LOC	[Ovld Detection Thr.]	70 to 150%	110%			
*	Overload detection threshold, as a % of the rated motor current than the limit current in order for the function to w ork.	[Rated mot. current] (nCr) page <u>86</u> . T	his value must be less			
()						
(1)						
Srb	[Hysteresis Freq.Att.]	0 to 599 Hz	0.3 Hz			
*	Maximum deviation between the frequency reference and the m	notor frequency, which defines steady st	ate operation.			
()						
(1)						
OdL	[Ovld.Proces.Mngmt]		[Freewheel] (YES)			
*	Behavior on switching to overload detection.					
	[Ignore] (nO): Detected fault ignored [Freewheel] (YES): Freewheel stop					
rMP FSt	[Ramp stop] (rMP): Stop on ramp [Fast stop] (FSt): Fast stop					
FtO	[Overload T.B.Rest.]	0 to 6 min	0 min			
*	This parameter cannot be accessed if [Ovld.Proces.Mngmt] (0		•			
()	Minimum time permitted between an overload being detected and any automatic restart. In order to allow an automatic restart, the value of [Max. restart time] (tAr) page 252 must exceed this parameter by at least					
	one minute.					
(1)						
FLt-	[FAULT MANAGEMENT] (continued)					
LFF-	[FALLBACK SPEED]	T	Tarr			
LFF	[Fallback speed]	0 to 599 Hz	0 Hz			
	Selection of the fallback speed.					
FLt-	[FAULT MANAGEMENT] (continued)					
FSt-	[RAMP DIVIDER]					
dCF	[Ramp divider]	0 to 10	4			
*	The ramp that is enabled ([Deceleration] (dEC) or [Deceleration] requests are sent.	on 2] (dE2)) is then divided by this coeff	icient when stop			
()	Value 0 corresponds to a minimum ramp time.					
(1)						

Code	Name / Description	Adjustment range	Factory setting		
FLt-	[FAULT MANAGEMENT] (continued)				
dCI-	[DC INJECTION]				
ldC	[DC inject. level 1]	0.1 to 1.41 ln (2)	0.64 ln (2)		
		NOTICE			
*	OVERHEATING AND DAMAGE TO THE MO	OTOR			
()	Verify that the connected motor is properly ra		oplied in terms of amount		
(1) (3)	and time in order to avoid overheating and da Failure to follow these instructions can re				
, , , ,	Failure to follow these instructions can re	suit in equipment damage.			
	Level of DC injection braking current activated via log	ic input or selected as stop mode.			
tdl	[DC injection time 1]	0.1 to 30 s	0.5 s		
			•		
		NOTICE			
*	OVERHEATING AND DAMAGE TO THE MO	OTOR			
75	Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount				
()	and time in order to avoid overheating and da	mage to the motor.			
(1) (3)	Failure to follow these instructions can result in equipment damage.				
	Maximum current injection time [DC inject. level 1] (IdC). After this time, the injection current becomes				
	[DC inject. level 2] (dC2).	ide). After this time, the injection current	becomes		
ldC2	[DC inject. level 2]	0.1 ln (2) to [DC inject. level 1	1] (IdC) 0.5 ln (2)		
			•		
		NOTICE			
*	OVERHEATING AND DAMAGE TO THE MOTOR				
7.4	Verify that the connected motor is properly ra		oplied in terms of amount		
()	and time in order to avoid overheating and da	mage to the motor.	'		
(1) (3)	Failure to follow these instructions can re	sult in equipment damage.			
	Injection current activated by logic input or selected as elapsed.	s stop mode, once period of time [DC injection]	on time 1] (tol 1) has		

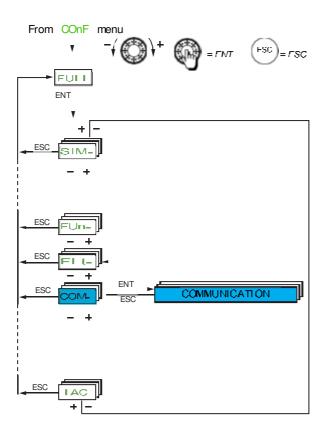
* * * * * * * * * * * * *	0.5 s				
Verify that the connected mater is properly rated for the DC injection current to be applied in terr Verify that the connected mater is properly rated for the DC injection current to be applied in terr					
Verify that the connected meter is properly rated for the DC injection current to be applied in terr					
Verify that the connected motor is properly rated for the DC injection current to be applied in terr	OVERHEATING AND DAMAGE TO THE MOTOR				
	to be applied in terms of amount				
and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.					

- (1) The parameter can also be accessed in the [SETTINGS] (SEt-) and [APPLICATION FUNCT.] (FUn-) menus.
- (2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
- (3) These settings are independent of the [AUTO DC INJECTION] (AdC-) function.



Communication

With integrated display terminal:



Code	Name / Description	Adjustment range	Factory setting
FULL	[FULL] (continued)	·	•
COM-	[COMMUNICATION]		
ICS-	[COM. SCANNER INPUT]		
	[Scan. IN1 address] (nMA1) to [Scan. IN4 address] (nMA4) (see Modbus & CANopen® communication manual).	could be used for Fast Task of the	e communication scanner
nMA1	[Scan. IN1 address]		3,201
	Address of the 1st input w ord.		
nMA2	[Scan. IN2 address]		8,604
	Address of the 2nd input w ord.		
nMA3	[Scan. IN3 address]		0
	Address of the 3rd input w ord.		
nMA4	[Scan. IN4 address]		0
	Address of the 4th input w ord.		
nMA5	[Scan. IN5 address]		0
	Address of the 5th input w ord.		
nMA 🖫	[Scan. IN6 address]		0
	Address of the 6th input w ord.		
nMA7	[Scan. IN7 address]		0
	Address of the 7th input w ord.		
nMA8	[Scan. IN8 address]		0
	Address of the 8th input w ord.		

[COMMUNICATION] (continued) [COM. SCANNER OUTPUT] [Scan. Out1 address] (nCA1) to [Scan. Out4 address] (nCA4) could (see Modbus & CANopen® communication manual). [Scan.Out1 address]	be used for Fast Task of th	
[Scan. Out1 address] (nCA1) to [Scan. Out4 address] (nCA4) could (see Modbus & CANopen® communication manual).	be used for Fast Task of th	
(see Modbus & CANopen® communication manual).	be used for Fast Task of th	
[Scan.Out1 address]		ne communication scanner
		8,501
Address of the 1st output w ord.		
[Scan.Out2 address]		8,602
Address of the 2nd output w ord.		
[Scan.Out3 address]		0
Address of the 3rd output w ord.		
[Scan.Out4 address]		0
Address of the 4th output w ord.		
[Scan.Out5 address]		0
Address of the 5th output w ord.		
[Scan.Out6 address]		0
Address of the 6th output w ord.		
[Scan.Out7 address]		0
Address of the 7th output w ord.		
[Scan.Out8 address]		0
Address of the 8th output w ord.		
[COMMUNICATION] (continued)		
[MODBUS NETWORK]		
[Modbus Address]	[OFF] (OFF) to 247	[OFF] (OFF)
[OFF] (OFF) 1 to 247		
[Modbus add Com. C.]	[OFF] (OFF) to 247	[OFF] (OFF)
IOFFI (OFF)		
[Modbus baud rate]		[19.2 Kbps] (192)
48-96-192-384 kbps on the integrated display terminal. 4800, 9600, 19200 or 38400 bauds on the graphic display terminal.		
[Modbus format]		[8-E-1] (8E1)
8O1 - 8E1 - 8n1, 8n2		
[Modbus time out]	0.1 to 30 s	10.0 s
0.1 to 30 s		
[Mdb com stat]		
[r0t0] (rOtO): Modbus no reception, no transmission = communication [r0t1] (rOt1): Modbus no reception, transmission [r1t0] (r1tO): Modbus reception, no transmission [r1t1] (r1t1): Modbus reception and transmission	idle	
	[Scan.Out2 address] Address of the 2nd output w ord. [Scan.Out3 address] Address of the 3rd output w ord. [Scan.Out4 address] Address of the 4th output w ord. [Scan.Out5 address] Address of the 5th output w ord. [Scan.Out6 address] Address of the 6th output w ord. [Scan.Out7 address] Address of the 7th output w ord. [Scan.Out8 address] Address of the 8th output w ord. [Scan.Out8 address] Address of the 8th output w ord. [COMMUNICATION] (continued) [MODBUS NETWORK] [Modbus Address] [OFF] (OFF) 1 to 247 [Modbus add Com. C.] [OFF] (OFF) 1 to 247 [Modbus baud rate] 4 8 - 9 6 - 19 2 - 38 4 kbps on the integrated display terminal. 4800, 9600, 19200 or 38400 bauds on the graphic display terminal. [Modbus format] 801 - 8E1 - 8n1, 8n2 [Modbus time out] 0.1 to 30 s [Mdb com stat] [1010] (rOtO): Modbus no reception, no transmission = communication [1011] (rOt1): Modbus reception, no transmission	IScan.Out2 address Address of the 2nd output w ord. IScan.Out3 address Address of the 3rd output w ord. IScan.Out4 address Address of the 4th output w ord. IScan.Out5 address Address of the 5th output w ord. IScan.Out6 address Address of the 5th output w ord. IScan.Out7 address Address of the 7th output w ord. IScan.Out8 address Address of the 8th output w ord. IScan.Out8 address Address of the 8th output w ord. IScan.Out8 address Address of the 8th output w ord. IScan.Out8 address IMODBUS NETWORK IMODBUS NETWORK IMODBUS NETWORK IMODBUS Address IMODBUS A

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Code	Name / Description	Adjustment range	Factory setting	
COM-	[COMMUNICATION] (continued)	<u> </u>	<u>.</u>	
CnO-	[CANopen]			
AdCO	[CANopen address]	[OFF] (OFF) to 127	[OFF] (OFF)	
OFF	[OFF] (OFF): OFF 1 to 127			
bdCO	[CANopen bit rate]		[250 kbps] (250)	
125 250 500	[50 kbps] (50): 50,000 Bauds [125 kbps] (125): 125,000 Bauds [250 kbps] (250): 250,000 Bauds [500 kbps] (500): 500,000 Bauds [1 Mbps] (1M): 1 MBauds			
ErCO	[Error code]	0 to 5	-	
	Read-only parameter, cannot be modified.		1	
COM-	[COMMUNICATION] (continued)			
Cbd-	[COMMUNICATION CARD]			
	See the specific documentation for the card used.			
LCF-	[FORCED LOCAL]			
FLO	[Forced local assign.]		[No] (nO)	
	Forced local assignment. Forced local mode is active when the input is at state 1. [Forced local assign.] (FLO) is forced to [No] (nO) if [Profile] (Characteristics)	HCF) is set to [I/O prof	ile] (IO) page <u>154</u> .	
	[No] (nO): Function inactive [LI1] (LI1): Logical input LI1			
LAI1 LAI2	[LI6] (LI€): Logical input LI6 [LAI1] (LAI1): Logical input AI1 [LAI2] (LAI2): Logical input AI2 [OL01] (OL01): Function blocks: Logical Output 01			
OL10	[OL10] (OL10): Function blocks: Logical Output 10			
FLOC	[Forced local Ref.]	[No] (nO)		
	Forced local reference source assignment.			
AI1 AI2 AI3 LCC	[No] (nO): Not assigned (control via the terminals with zero reference) [Al1] (Al1): Analog input [Al2] (Al2): Analog input [Al3] (Al3): Analog input [HMI] (LCC): Assignment of the reference and command to the graphic display terminal or remote display terminal. Reference: [HMI Frequency ref.] (LFr) page 50. Command: RUNSTOP/FWD/REV keys. [RP] (P): Pulse input			
	[OA01] (OA01): Function blocks: Analog Output 01 [OA10] (OA10): Function blocks: Analog Output 10			
FLOt	[Time-out forc. local]	0.1 to 30 s	10.0 s	
	0.1 to 30 s.		1.5.5 5	
*	This parameter can be accessed if [Forced local assign.] (FLO) is not s Time delay before communication monitoring is resumed on leaving force			

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

Access Level

See [Access Level] (LAC) page 280.

Interface (ItF)

What's in this Chapter?

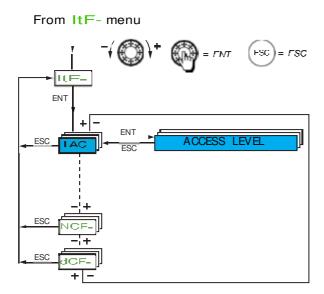
This chapter contains the following topics:

Topic	Page
Access Level (LAC)	<u>280</u>
Language (LnG) Monitoring Configuration (MCF)	
Monitoring Configuration (MCF)	<u>283</u>
Display configuration (dCF)	<u>287</u>

ITF-

Access Level (LAC)

With integrated display terminal:



Code	Name / Description	Factory setting	
ItF-	[3 INTERFACE]	•	
LAC	[3.1 ACCESS LEVEL]	[Standard] (Std)	
()			
	[Basic] (bAS): Limited access to [SIMPLY START] (SIM-), [1.2 MONITORING] (MOn-), [SETTINGS] (SEt-), [FACTORY SETTINGS] (FCS-), [5 PASSWORD] (COd) and [3.1 ACCESS LEVEL] (LAC-) menus. Only one function can be assigned to each input.		
AdU Epr	[Standard] (Std): Access to all menus on the integrated display terminal. Only one function can be assign [Advanced] (AdU): Access to all menus on the integrated display terminal. Several functions can be assign [Expert] (Err): Access to all menus on the integrated display terminal and access to additional parameter be assigned to each input.	ned to each input.	

()

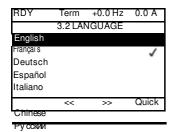
Comparison of the menus that can be accessed on the graphic display terminal/integrated display terminal

				Ac	cces	s le	ve
[1 DRIVE MENU] (drl-	[1.1 SPEED REFERENCE] (rEF	-)					
	[1.2 MONITORING] (MOn-)	Inno (M. 2)					
		MWO- (Monitoring motor)					
		IOM- (VO MAP)					1
		SAF- (Monitoring Safety) MFb- (Monitoring Function	Dioaka)	-			1
		CMM- (Communication Map)		4			1
		MPI-(Monitoring PI)		-			1
		PEt-(Monitoring Power tin	me)	-			1
		ALr-(Alarms) (1)		-			1
		SSt- (Other state) (1)		1			1
		COd- (Password)					1
	[1.3 CONFIGURATION] (COnF)	()		AS			1
	, (32)	MYMn- (My Menu)		þ			
		FCS- (Factory Settings)		Basic			
		FULL (Full)		1 "			l
			SIM- (Simply Start)				
			SEt- (Settings)				1
			FbM- (Function Blocks)	1	Std	ηn	
[2 IDENTIFICATION] (Old-) (1)					Adı	1
[3 INTERFACE] (It F-)	(1)				Standard	peo	Pr
	[3.1 ACCESS LEVEL] (LAC)				S	Advanced	Ш
	[3.2 LANGUAGE] (LnG)					Ā	Expert
[4 OPEN / SAVE AS] (tr							Ш
[5 PASSWORD] (COd-							1
	A single function can be assigned to	o each input.					1
[1 DRIVE MENU] (dri-		dGt- (Diagnostics)					1
	[1.3 CONFIGURATION] (COnF)	FULL (Full)					1
			drC- (Motor Control)				
			Outputs Configuration)				
			CtL- (Command)				1
			FUn- (Application function)				
			FLt- (Fault Management)				
			COM- (Communication)				
[3 INTERFACE] (It I = −) (1)	[3.3 MONITORING CONFIG.] (M	CF-)					
	A single function can be assigned to	o each input.					1
	[3.4 DISPLAY CONFIG.] (dCF-) (1)				-	
	Several functions can be assigned	to each input.		_			
Expert parameters	Several functions can be assigned	to each input					
	Several relictions can be assigned	to caominput.					_

⁽¹⁾ Can be accessed only with graphic display terminal.

ITF-

Language (LnG)



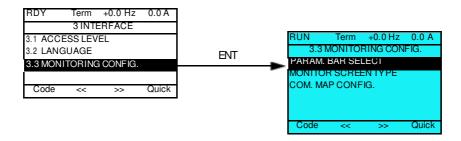
When only one selection is possible, the selection made is indicated by Example: Only one language can be chosen.

Code	Name / Description	Factory setting
LnG	[3.2 LANGUAGE]	[Language 0] (LnG0)
()	Current language index.	
LnG0	[Language 0] (LnG0)	
LnG9	 [Language 9] (LnG9)	



Monitoring Configuration (MCF)

This menu can only be accessed with the graphic display terminal.



This can be used to configure the information displayed on the graphic display screen during operation.



[PARAM. BAR SELECT]: Selection of 1 to 2 parameters displayed on the top line (the first 2 cannot be modified).

[MONITOR SCREEN TYPE]: Selection of parameters displayed in the centre of the screen and the display mode (digital values or bar graph form at).

[COM. MAP CONFIG.]: Selection of the words displayed and their format.

ITF- > MCF-

Code	Name / Description
MCF-	[3.3 MONITORING CONFIG]

Code	Name / Description		
PbS-	[PARAM. BAR SELECT]		
	[Al1] [Al2] [Al3] [AO1] [ETA state world] [Alarm groups] [Frequency ref.] [Output frequency] [Motor current] [Motor speed] [Motor voltage] [Motor torque] [Mains voltage] [Motor thermal state] [Drv. thermal state] [Consumption] [Run time] [Power on time] [IGBT alarm counter] [Min. freq time] [PID reference] [PID feedback] [PID error] [PID Output] [Config. active] [Utilised param. set]	in V in V in mA in V in Hz: parameter displayed in factory configuration in Hz in A: parameter displayed in factory configuration in rpm in V in W as a % in V as a % in Whor kWh depending on drive rating in hours (length of time the motor has been switched on) in hours (length of time the drive has been switched on) in seconds (total time of IGBT overheating alarms) in seconds as a % in Hz CNF0, 1 or 2 (see page 232) SET1, 2 or 3 (see page 230)	
	Select the parameter using ENT (a then appears next to the parameter). Parameter(s) can also be deselected using ENT. 1 or 2 parameters can be selected. Example: PARAM. BAR SELECT MONITORING MONITORING		

ITF- > MCF- > MSC-

Monitor screen type

Code	Name / Description		Factory setting		
MSC-	[MONITOR SCREEN TYPE]				
Mdt	[Display value type]		[Digital] (dEC)		
()	[Digital] (dEC) [Bar graph] (bAr) [List] (LISt)				
MPC	[PARAMETER SELECTION]				
*	[AI1] [AI2] [AI3] [AO1] [ETA state world] [Alarm groups] [Frequency ref.] [Output frequency] [Pulse in. w ork. freq.] [Motor current] [Motor speed] [Motor power] [Motor torque] [Mains voltage] [Motor thermal state] [Drv. thermal state] [Consumption] [Run time] [Power on time] [IGBT alarm counter] [Min. freq time] [PID reference] [PID fee dback] [PID error] [PID Output] Select the parameter(s) using ENT (a		onfiguration ng been sw itched on) peen sw itched on) ating alarms) n also be deselected using ENT.		
	Motor speed Min Motor s 1250 rpm 0 1250 r	peed max pm 1500 Frequency ref. Motor current: urrent max Motor speed:	35.0 Hz 80.0 A DRING 50.1Hz 80 A 1250 rpm 80% : 80% Quick		

*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

()

ITF- > MCF- > A DL-/DCF-

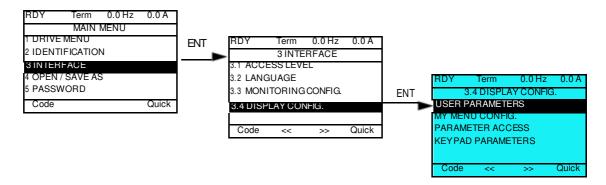
Communication map configuration

Code	Name / Description	Factory setting
AdL-	[COM. MAP CONFIG.]	-
IAd1	[Word 1 add. select.]	0
()	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	e jog dial.
FAd1	[Format word 1]	[Hex] (HE)
()	Format of w ord 1.	
HE SIG nSG	[Hex] (HE) [Signed] (SIG) [Unsigned] (nSG)	
IAd2	[Word 2 add. select.]	0
()	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	
FAd2	[Format word 2]	[Hex] (HE)
()	Format of w ord 2.	
HE SIG nSG	[Hex] (HE) [Signed] (SIG) [Unsigned] (nSG)	
IAd3	[Word 3 add. select.]	0
()	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	e jog dial.
FAd3	[Format word 3]	[Hex] (HE)
()	Format of w ord 3.	
HE SIG nSG	[Hex] (HE) [Signed] (SIG) [Unsigned] (nSG)	
IAd4	[Word 4 add. select.]	0
()	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	e jog dial.
FAd4	[Format word 4]	[Hex] (HE)
()	Format of w ord 4.	
	[Hex] (HE) [Signed] (SIG) [Unsigned] (nSG)	
	Then, it will be possible to view the selected words in the [COMMUNICATIONMAP] submenu of the [1.2 Meanple:	IONITORING] menu.
	RUN Term +35.0 Hz 80.0 A	
	<< >> Quick	

()

Display configuration (dCF)

This menu can only be accessed with the graphic display terminal. It can be used to customize parameters or a menu and to access parameters.

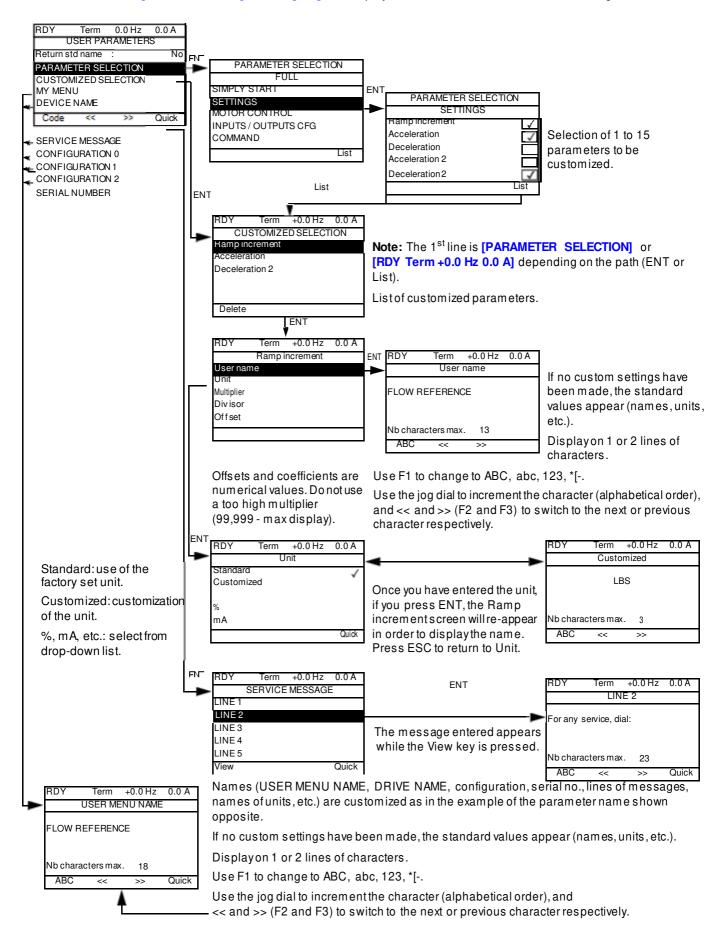


- USER PARAMETERS: Customization of 1 to 15 parameters.
- MY MENU: Creation of a customized menu.
- PARAMETER ACCESS: Customization of the visibility and protection mechanisms of menus and parameters.
- KEYPAD PARAMETERS: Adjustment of the contrast and stand-by mode of the graphic display terminal (parameters stored in the terminal rather than in the drive).

Code	Name / Description
dCF-	[3.4 DISPLAY CONFIG]

User parameters

If [Return std name] is set to [Yes], the displayreverts to standard but the custom settings remain stored.



Parameters described in this page can be accessed by:

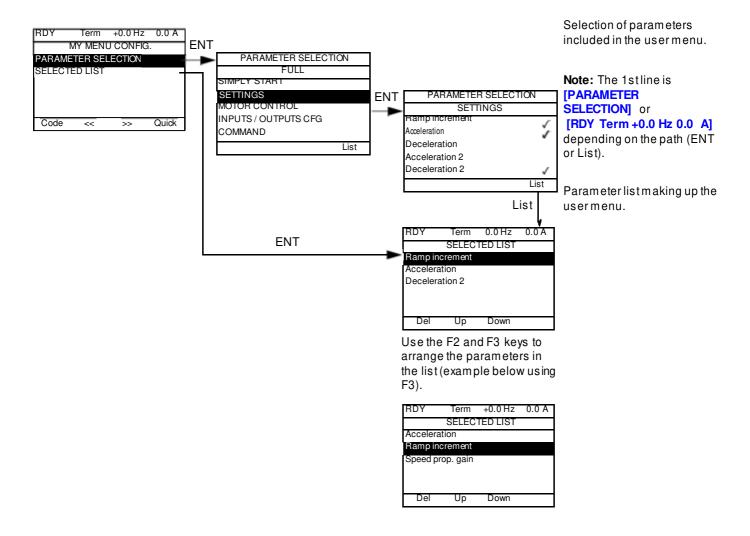
ITF- > DCF- > CUP-/SER-

Code	Name / Description	Factory setting	
CUP-	[USER PARAMETERS]		
GSP	[Return std name]	[No] (nO)	
()	Display standard parameters instead of customised ones.		
	[No] (nO) [Yes] (YES)		
MYMN	[MY MENU]		
PAn	[DEVICE NAME]		
SEr-	[SERVICE MESSAGE]		
SML01	[LINE 1]		
SML02	-		
SML03	[LINE 3]		
SML04			
SML05			
	[CONFIGURATION 0]		
CFN02			
	[CONFIGURATION 2]	-	
PSn	[SERIAL NUMBER]	-	

()

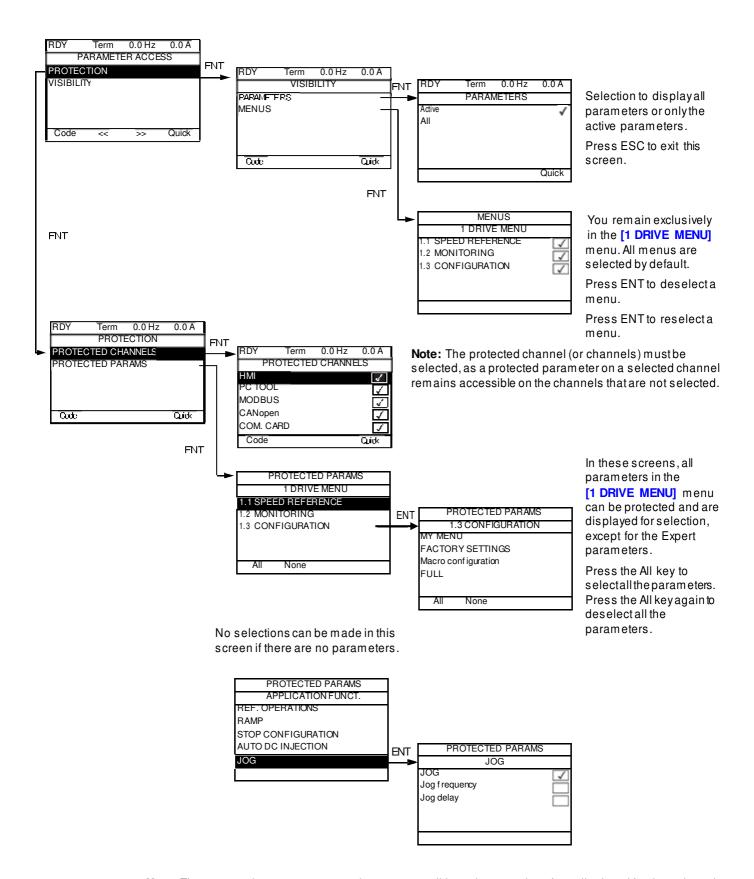
Parameter that can be modified during operation or when stopped.

My Menu config.



Code	Name / Description
MYC-	[MY MENU CONFIG.]

Parameter access



Note: The protected parameters are no longer accessible and are not, therefore, displayed for the selected channels.

Parameters described in this page can be accessed by:

ITF- > DCF- > PAC- > PRO- > PCD-/UIS-

Code	Name / Description	Factory setting		
pAC-	[PARAMETER ACCESS]			
prO-	[PROTECTION]			
pCd-	[PROTECTED CHANNELS]			
P S Mdb CAn	[HMI] (COn): Graphic display terminal or remote display terminal [PC Tool] (P S): PC Software [Modbus] (Mdb): Integrated Modbus [CANopen] (CAn): Integrated CANopen® [Com. card] (nH): Communication card (if inserted)			
UIS-	[VISIBILITY]			
PUIS	[PARAMETERS] [Active] (ACt)			
()	Parameter visibility: only active ones, or all parameters.			
	[Active] (ACt) [AII] (ALL)			

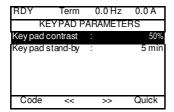
()

Parameter that can be modified during operation or when stopped.

Parameters described in this page can be accessed by:

ITF- > DCF- > CNL-

Keypad parameters

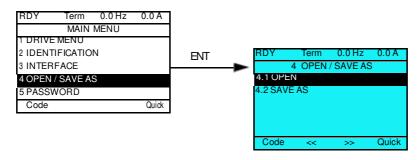


Code	Name / Description Adjustment range Factory se		Factory setting
CnL-	[KEYPAD PARAMETERS]	-	
CrSt	[Keypad contrast] 0 to 100% 50%		
O	Contrast of the keypad.		
CSbY	[Keypad stand-by]	[No] (nO) to 10 min	5 min
()	Graphic keypad standby delay.		
nO	[No] (nO): No		

Parameter that can be modified during operation or when stopped.

Open / Save as (trA)

This menu can only be accessed with the graphic display terminal.



[4.1 OPEN]: To download one of the 4 files from the graphic displayterminal to the drive.

0.0 Hz Term 4. OPEN / SAVE A ENT RDY Term 0.0 Hz 0.0 A 0.0 Hz 0.0 A 4.1 OPEN 4.1 OPEN RDY Term See details on the **ENT** DOWNLOAD GROUP 4.2 SAVE AS next page. File 2 Empty All File 3 Empty File 4 Empty Driv e configuration Quick Code << >> Motor parameters Communication Quick << >> ENT Quick Note: Opening an empty file has no effect. 0.0 A DOWNLOAD PLEASE CHECK THAT THE DRIVE WIRING IS OK ENT ESC = abort ENT = continue Code Quick RDYTerm 0.0 Hz 0.0 A ENT 0.0 A File 1 Used ENT DOWNLOAD File 2 Free File 3 Free Free File 4 TRANSFER IN PROGRESS Code Quick Saving to a used file deletes and replaces the configuration contained in this 0.0 Hz 0.0 A file. DOWNLOAD DONE ENT or ESC to continue

[4.2 SAVE AS]: To download the current drive configuration to the graphic displayterminal.

Various messages may appear when the download is requested:

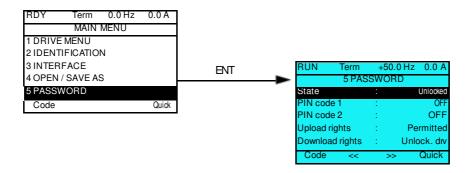
- [TRANSFER IN PROGRESS]
- [DONE]
- Error messages if download notpossible
- [Motor parameters are NOT COMPATIBLE. Do you want to continue?]: In this case, the download is
 possible, but the parameters will be restricted.

DOWNLOAD GROUP

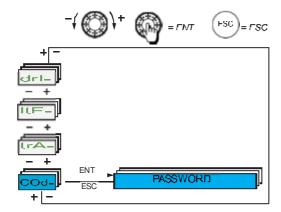
[None]:		No parameters	
[AII]:		All parameters in all menus	
[Drive configuration]:		The entire [1 DRIVE MENU] w ithout [COMMUNICATION]	
[Motor parameters]:	[Rated motor volt.] (UnS)	In the [MOTOR CONTROL] (drC-) menu	
	[Rated motor freq.] (FrS)		
	[PSI align curr. max] (NCr)		
	[Rated motor speed] (nSP)		
	[Motor 1 Cosinus phi] (COS)		
	[Rated motor power] (nPr)		
	[Motorparam choice] (MPC)		
	[Tune selection] (StUn)		
	[Mot. therm. current] (■七H)		
	[IR compensation] (UFr)		
	[Slip compensation] (SLP)		
	[Cust stator resist.] (rSA)		
	[Lfw] (LFA)		
	[Cust. rotor t const.] (trA)		
	[Nominal I sync.] (nCrS)		
	[Nom motor spdsync] (nSPS)		
	[Pole pairs] (PPnS)		
	[Syn. EMF constant] (PHS)		
	[Autotune L d-axis] (LdS)		
	[Autotune L q-axis] (LqS)		
	[Nominal freq sync.] (FrSS)		
	[Cust. stator R syn] (rSAS)		
	[Motor torque] (tqS)		
	[U1] (U1)		
	[F1] (F1)		
	[U2] (U2)		
	[F2] (F2)		
	[U3] (U3)		
	[F3] (F3)		
	[U4] (U4)		
	[F4] (F4)		
	[U5] (U5)		
	[F5] (F5)		
	The motor parameters that can be accessed in [Expert] (EPr) mode, page 261.		
	[Mot. therm. current] (■ TH)	In the [SETTINGS] (SEt-) menu	
[Communication]:		All the parameters in the [COMMUNICATION] menu	

Password (COd)

With graphic display terminal

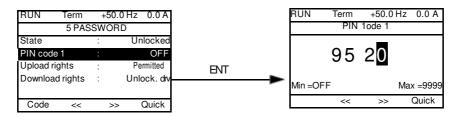


With integrated display terminal



Enables the configuration to be protected with an access code or a password to be entered in order to access a protected configuration.

Example with graphic displayterminal:



- The drive is unlocked when the PIN codes are set to [Unlocked] (OFF) (no password) or when the correct
 code has been entered. All menus are visible.
- Before protecting the configuration with an access code, you must:
 - Define the [Upload rights] (ULr) and [Download rights] (dLr).
 - Make a careful note of the code and keep it in a place where you will be able to find it.

- The drive has 2 access codes, enabling 2 access levels to be setup:
 - PIN code 1 is a public unlock code:6969.
 - PIN code 2 is an unlock code known only to BLEMO Product Support. It can only be accessed in [Expert] (EPr) mode.
 - Only one PIN1 or PIN2 code can be used, the other must remain set to [OFF] (OFF).

Note: When the unlock code is entered, the user access code appears.

The following items are access-protected:

- Return to factory settings ([FACTORY SETTINGS] (FCS-) menu.
- The channels and parameters protected by the [MY MENU] (MYMn -) as well as the menu itself.
- The custom displaysettings ([3.4 DISPLAY CONFIG.] (dCF-) menu).

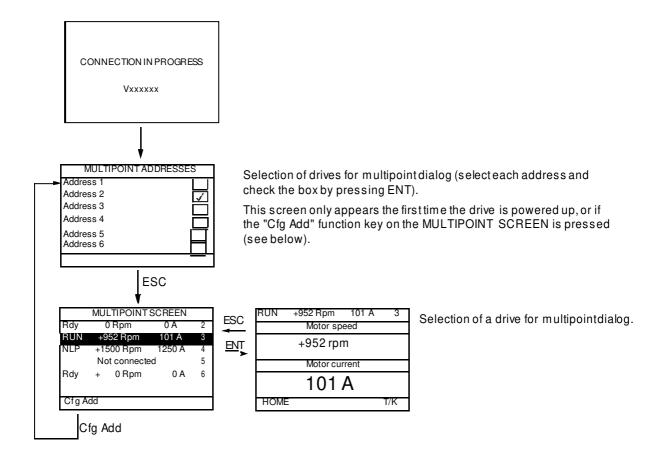
Code	Name / Description	Factory setting		
COd-	[5 PASSWORD]			
CSt	[State]	[Unlocked] (ULC)		
	Information parameter, cannot be modified.			
	[Locked] (LC): The drive is locked by a password [Unlocked] (ULC): The drive is not locked by a password			
COd	[PIN code 1]	[OFF] (OFF) to 9,999	[OFF] (OFF)	
	1st access code. The value [OFF] (OFF) indicates that no password has been set [Unlocked] (ULC). The value [ON] (On) indicates that the drive is protected and an access code must be entered in order to unlock it. Once the correct code has been entered, it remains on the display and the drive is unlocked until the next time the power supply is disconnected. PIN code 1 is a public unlock code: 6969.			
COd2	[PIN code 2]	[OFF] (OFF) to 9,999	[OFF] (OFF)	
	This parameter can only be accessed in [Expert] (EP) mode. 2nd access code. The value [OFF] (OFF) indicates that no password has been set [Unlocked] (ULC). The value [ON] (On) indicates that the drive is protected and an access code must be entered in order to unlock it. Once the correct code has been entered, it remains on the display and the drive is unlocked until the next time the power supply is disconnected. PIN code 2 is an unlock code known only to BLEMO Product Support. When [PIN code 2] (COd2) is not set to [OFF] (OFF), the [1.2 MONITORING] (MOn-) menu is the only one visible. Then if [PIN code 2] (COd2) is set to [OFF] (OFF) (drive unlocked), all menus are visible. If the display settings are modified in [3.4 DISPLAY CONFIG.] (dCF-) menu, and if [PIN code 2] (COd2) is not set to [OFF] (OFF), the visibility configured is kept. Then if [PIN code 2] (COd2) is set to OFF (drive unlocked), the visibility configured in [3.4 DISPLAY CONFIG.] (dCF-) menu is kept.			
ULr	[Upload rights] [Permitted] (ULr0)			
	Reads or copies the current configuration to the drive.			
	[Permitted] (ULr0): The current drive configuration can be uploaded to the graphic display terminal or PC Softw are. [Not allow ed] (ULr1): The current drive configuration can only be uploaded to the graphic display terminal or PC Sofw are if the drive is not protected by an access code or if the correct code has been entered.			
dLr	[Download rights] [Unlock. drv] (dLr			
	Writes the current configuration to the drive or dow nloads a configuration to	the drive.		
dLr0				
dLr1	w hich is the same as the access code for the configuration to be dow nloaded. [Unlock.drv] (dLr1): A configuration file can be dow nloaded to the drive or a configuration in the drive can be modified if the			
	drive is unlocked (access code entered) or is not protected by an access code.			
dLr2	drive is unlocked (access code entered) or is not protected by an access code.			

Multipoint Screen

Multipoint Screen

Communication is possible between a graphic display terminal and a number of drives connected on the same bus. The addresses of the drives must be configured in advance in the **[COMMUNICATION]** (COM-) menu using the **[Modbus Address]** (Add) parameter, page 276.

When a number of drives are connected to the same graphic display terminal, it automatically displays the following screens:



In multipoint mode, the command channel is not displayed. From left to right, the state, then the 2 selected parameters, and finally the drive address appear.

All menus can be accessed in multipoint mode. Only drive control via the graphic display terminal is not authorized, apart from the Stop key, which locks all the drives.

If there is an error on a drive, this drive is displayed.

Maintenance and Diagnostics



What's in this Part?

This part contains the following chapters:

Chapter	Chapter Nam e		
11	Maintenance	<u>305</u>	
12	Diagnostics and Troubleshooting		

Maintenance

Limitation of Warranty

The warranty does not apply if the product has been opened, except by BLEMO services.

Servicing

CAUTION

RISK OF DAMAGE TO THE DRIVE

Adapt the following recommendations according to the environment conditions: temperature, chemical, dust. Failure to follow these instructions can result in equipment damage.

It is recommended to do the following in order to optimize continuity of operation.

Environment	Part concerned	Action	Periodicity
Knock on the product	Housing - control block (led - display)	Check the drive visual aspect	At least each year
Corrosion	Terminals - connector - screws - EMC plate	Inspect and clean if required	
Dust	Terminals - fans - blow holes		
Temperature	Around the product	Check and correct if required	
Cooling	Fan	Check the fan operation	
		Replace the fan	After 3 to 5 years, depending on the operating conditions
Vibration	Terminal connections	Check tightening at recommended torque	At least each year

Note: The fan operation depends on the drive thermal state. The drive may be running and the fan not.

Spares and repairs

Serviceable product. Please refer to your Customer Care Centre.

Long time storage

If the drive was not connected to mains for an extended period of time, the capacitors must be restored to their full performance before the motor is started. See page 39.

Fan replacement

It is possible to order a new fan for the ER24 maintenance, see the commercial references on www.blemo.com.

Fans may continue to run for a certain period of time even after power to the product has been disconnected.

CAUTION

RUNNING FANS

Verify that fans have come to a complete standstill before handling them.

Failure to follow these instructions can result in equipment damage.

Diagnostics and Troubleshooting



What's in this Chapter?

This chapter contains the following topics:

Topic	Page
Error code	<u>308</u>
Clearing the detected fault	<u>308</u>
Fault detection codes w hich require a power reset after the detected fault is cleared	<u>309</u>
Fault detection codes that can be cleared with the automatic restart function after the cause has disappeared	<u>311</u>
Fault detection codes that are cleared as soon as their cause disappears	<u>314</u>
Option card changed or removed	<u>314</u>
Control block changed	<u>314</u>
Fault detection codes displayed on the remote display terminal	<u>315</u>

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Read and understand the instructions in "Safety Information" chapter before performing any procedure in this chapter.

Failure to follow these instructions will result in death or serious injury.

Error code

- If the displaydoes not light up, check the power supply to the drive.
- The assignment of the Fast stop or Freewheel functions will help to prevent the drive starting if the corresponding logic inputs are not powered up. The ER24 then displays [Freewheel] (nSt) in freewheel stop and [Fast stop] (FSt) in fast stop. This is normal since these functions are active at zero so that the drive will be stopped if there is a wire break.
- Check that the run command input is activated in accordance with the selected control mode
 ([2/3 wire control] (tCC) and [2 wire type] (tCt) parameters, page 85).
- If an input is assigned to the limit switch function and this input is at zero, the drive can only be started up by sending a command for the opposite direction (see page 224).
- If the reference channel or command channel is assigned to a communication bus, when the power supply is connected, the drive will display [Freewheel] (nSt) and remain in stop mode until the communication bus sends a command.

Code	Name / Description	
dGt-	[DIAGNOSTICS]	
	This menu can only be accessed with the graphic display terminal. It displays detected faults and their cause in plain text and can be used to carry out tests, see page 64.	

Clearing the detected fault

In the event of a non resettable detected fault:

- Disconnect all power, including external control power that may be present.
- · Lock all power disconnects in the open position.
- Wait 15 minutes to allow the DC bus capacitors to discharge (the drive LEDs are not indicators of the absence of DC bus voltage).
- Measure the voltage of the DC bus between the PA/+ and PC/- terminals to ensure that the voltage is less than 42 Vdc.
- If the DC bus capacitors do not discharge completely, contact your local BLEMO representative. Do not repair or operate the drive.
- · Find and correct the detected fault.
- Restore power to the drive to confirm the detected fault has been rectified.

In the event of a resettable detected fault, the drive can be reset after the cause is cleared:

- By switching off the drive until the display disappears completely, then switching on again.
- Automatically in the scenarios described for the [AUTOMATIC RESTART] (Atr-) function, page 252.
- By means of a logic input or control bit assigned to the [FAULT RESET] (rSt-) function, page 251.
- By pressing the STOP/RESET key on the graphic displaykeypad if the active channel command is the HMI (see [Cmd channel 1] (Cd1) page 155).

Fault detection codes which require a power reset after the detected fault is cleared

The cause of the detected fault must be removed before resetting by turning off and then back on.

ASF, brF, SOF, SPF and tnF detected faults can also be cleared remotely by means of a logic input or control bit ([Fault reset] (rSF) parameter, page $\underline{251}$).

Detected Fault	Nam e	Probable cause	Remedy
AnF	[Load slipping]	The difference between the output frequency and the speed feedback is not correct.	Check the motor, gain and stabillity parameters. Add a braking resistor. Check the size of the motor/drive/load. Check the encoder's mechanical coupling and its w iring. Check the setting of parameters
ASF	[Angle Error]	This occurs during the phase-shift angle measurement, if the motor phase is disconnected or if the motor inductance is too high.	Check the motor phases and the maximum current allow ed by the drive.
brF	[Brake feedback]	The brake feedback contact does not match the brake logic control. The brake does not stop the motor quickly enough (detected by measuring the speed on the "Pulse input" input).	Check the feedback circuit and the brake logic control circuit. Check the mechanical state of the brake. Check the brake linings.
CrF1	[Precharge]	Charging relay control detected fault or charging resistor damaged.	Turn the drive off and then turn on again. Check the internal connections. Contact BLEMO Product Support.
EEF1	[Control Eeprom]	Internal memory detected fault, control block.	Check the environment (electromagnetic compatibility). Turn off, reset, return to factory settings.
EEF2	[Power Eeprom]	 Internal memory detected fault, power card. 	Contact BLEMO Product Support.
FCF1	[Out. contact. stuck]	The output contactor remains closed although the opening conditions have been met.	Check the contactor and its w iring. Check the feedback circuit.
HdF	[IGBT desaturation]	Short-circuit or grounding at the drive output.	Check the cables connecting the drive to the motor, and the motor insulation.
ILF	[internal com. link]	Communication interruption betw een option card and drive.	Check the environment (electromagnetic compatibility). Check the connections. Replace the option card. Contact BLEMO Product Support.
InF1	[Rating error]	The pow er card is different from the card stored.	Check the reference of the power card.
InF2	[Incompatible PB]	The pow er card is incompatible w ith the control block.	Check the reference of the power card and its compatibility.
InF3	[Internal serial link]	Communication interruption betw een the internal cards.	Check the internal connections. Contact BLEMO Product Support.
InF4	[Internal-mftg zone]	Internal data inconsistent.	Recalibrate the drive (performed by BLEMO Product Support).
InF6	[Internal - fault option]	The option installed in the drive is not recognized.	Check the reference and compatibility of the option. Check that the option is well inserted into the ER24.
InF9	[Internal-I measure]	The current measurements are incorrect.	Replace the current sensors or the pow er card. Contact BLEMO Product Support.
InFA	[Internal-mains circuit]	The input stage is not operating correctly.	Contact BLEMO Product Support.
InFb	[Internal-th. sensor]	The drive temperature sensor is not operating correctly.	Replace the drive temperature sensor. Contact BLEMO Product Support.
InFE	[internal- CPU]	Internal microprocessor detected fault.	Turn off and reset. Contact BLEMO Product Support.
SAFF	[Safety fault]	 Debounce time exceeded. SS1 threshold exceeded. Wrong configuration. SLS type overspeed detected. 	Check the safety functions configuration. Check the ER24 Integrated safety Functions manual Contact BLEMO Product Support.

Detected Fault	Nam e	Probable cause	Remedy
SOF	[Overspeed]	Instability or driving load too high.	Check the motor, gain and stability parameters. Add a braking resistor. Check the size of the motor/drive/load. Check the parameters settings for the [FREQUENCY METER] (FqF-) functionpage 266, if it is configured.
SPF	[Speed fdback loss]	Signal on "Pulse input" missing, if the input is used for speed measurement. Encoder feedback signal missing	 Check the wiring of the input cable and the detector used. Check the configuration parameters of the encoder. Check the wiring between the encoder and the drive. Check the encoder.

Fault detection codes that can be cleared with the automatic restart function after the cause has disappeared

These detected faults can also be cleared by turning on and off or by means of a logic input or control bit ([Fault reset] (rSF) parameter page $\underline{251}$).

Detected Fault	Nam e	Probable cause	Remedy						
bLF	[Brake control]	 Brake release current not reached. Brake engage frequency threshold [Brake engage freq] (bEn) only regulated when brake logic control is assigned. 	 Check the drive/motor connection. Check the motor w indings. Check the [Brake release FW] (r) and [Brake release Rev] (r d) settings page 194. Apply the recommended settings for [Brake engage freq] (b n). 						
CnF	[Com.network]	Communication interruption on communication card.	Check the environment (electromagnetic compatibility). Check the wiring. Check the time-out. Replace the option card. Contact BLEMO Product Support.						
COF	[CANopen com.]	Communication interruption on the CA Nopen® bus.	Check the communication bus. Check the time-out. Refer to the CANopen® User's manual.						
EPF1	[External flt-LI/Bit]	Event triggered by an external device, depending on user.	Check the device w hich caused the triggering and reset.						
EPF2	[External fault com.]	Event triggered by a communication netw ork.	Check for the cause of the triggering and reset.						
FbES	[FB stop flt.]	Function blocks have been stopped w hile motor w as running.	Check [Stop FB Stop motor] (FbSM) configuration.						
FCF2	[Out. contact. open.]	The output contactor remains open although the closing conditions have been met.	Check the contactor and its w iring. Check the feedback circuit.						
LCF	[input contactor]	• The drive is not turned on even though [Mains V. time out] (LC-t) has elapsed.	Check the contactor and its w iring. Check the time-out. Check the supply mains/contactor/drive connection.						
LFF3	[Al3 4-20m A loss]	Loss of the 4-20 mA reference on analog input Al3.	Check the connection on the analog inputs.						
ObF	[Overbraking]	Braking too sudden or driving load.Supply voltage too high.	 Increase the deceleration time. Install a braking resistor if necessary. Activate the [Decrampadapt.] (brA) function page 172, if it is compatible with the application. Check the supply voltage. 						
OCF	[Overcurrent]	Parameters in the [SETTINGS] (SEt-) and [MOTOR CONTROL] (drC-) menus are not correct. Inertia or load too high. Mechanical locking.	Check the parameters. Check the size of the motor/drive/load. Check the state of the mechanism. Decrease [Currentlimitation] (CLI). Increase the switching frequency.						
OHF	[Drive overheat]	Drive temperature too high.	Check the motor load, the drive ventilation and the ambient temperature. Wait for the drive to cool down before restarting.						
OLC	[Proc. overload flt]	Process overload.	Check and remove the cause of the overload. Check the parameters of the [PROCESS OVERLOAD] (OLd-) function, page 272.						
OLF	[Motor overload]	Triggered by excessive motor current.	Check the setting of the motor thermal protection, check the motor load. Wait for the motor to cool down before restarting.						
OPF1	[1 output phase loss]	• Loss of one phase at drive output.	Check the connections from the drive to the motor.						

Detected Fault	Nam e	Probable cause	Remedy						
OPF2	[3 m otor phaseloss]	Motor not connected or motor power too low. Output contactor open. Instantaneous instability in the motor current.	 Check the connections from the drive to the motor. If an output contactor is being used, set [Output Phase Loss] (OPL) to [Output cut] (OAC), page 256. Test on a low power motor or without a motor: In factory settings mode, motor phase loss detection is active [Output Phase Loss] (OPL) = [Yes] (YES). To check the drive in a test or maintenance environment, without having to use a motor with the same rating as the drive (in particular for high power drives), deactivate motor phase loss detection [Output Phase Loss] (OPL) = [No] (nO), see instructions given page 256. Check and optimize the following parameters: [IR compensation] (UFr) page 90, [Rated motor volt.] (UnS) and [Rated mot. current] (nCr) page 86 and perform [Auto tuning] (tUn) page 87. 						
OSF	[Mains overvoltage]	Supply voltage too high.Disturbed mains supply.	Check the supply voltage.						
OtFL	[LI6=PTC overheat]	Overheating of PTC probes detected on input LI6.	 Check the motor load and motor size. Check the motor ventilation. Wait for the motor to cool before restarting. Check the type and state of the PTC probes. 						
PtFL	[LI6=PTC probe]	PTC probe on input Ll6 open or short-circuited.	Check the PTC probe and the w iring between it and the motor/drive.						
SCF1	[Motor short circuit]	Short-circuit or grounding at the drive output.	 Check the cables connecting the drive to the motor, and the motor insulation. Reduce the sw itching frequency. Connect chokes in series with the motor. Check the adjustment of speed loop and brake. Increase the [Time to restart] (ttr), page 101. Increase the sw itching frequency. 						
SCF3	[Ground short circuit]	Significant earth leakage current at the drive output if several motors are connected in parallel.	Check the cables connecting the drive to the motor, and the motor insulation. Reduce the sw itching frequency. Connect chokes in series w ith the motor. Check the adjustment of speed loop and brake. Increase the [Time to restart] (ttr), page 101. Reduce the sw itching frequency.						
SCF4	[IGBT short circuit]	Pow er component detected fault.	Contact BLEMO Product Support.						
SCF5	[Motor short circuit]	Short-circuit at drive output.	Check the cables connecting the drive to the motor, and the motor's insulation. Contact BLEWO Product Support.						
SLF1	[Modbus com.]	Communication interruption on the Modbus bus.	Check the communication bus. Check the time-out. Refer to the Modbus User's manual.						
SLF2	[PC com.]	Communication interruption with PC Software.	Check the PC Software connecting cable. Check the time-out.						
SLF3	[HMIcom.]	Communication interruption with the graphic display terminal or remote display terminal.	Check the terminal connection Check the time-out.						
SSF	[Torque/currentlim]	Sw itch to torque or current limitation.	 Check if there are any mechanical problems. Check the parameters of [TORQUE LIMITATION] (tOL-) page 216 and the parameters of the [TORQUE OR I LIM. DETECT.] (tIC), page 264. 						
tJF	[IGBT overheat]	Drive overheated.	Check the size of the load/motor/drive. Reduce the sw itching frequency. Wait for the motor to cool before restarting.						

Detected Fault	Name	Probable cause	Remedy
tnF	[Auto-tuning]	 Special motor or motor w hose power is not suitable for the drive. Motor not connected to the drive. Motor not stopped 	 Check that the motor/drive are compatible. Check that the motor is present during auto-tuning. If an output contactor is being used, close it during auto-tuning. Check that the motor is stopped during tune operation.
ULF	[Proc. underload Flt]	Process underload.	Check and remove the cause of the underload. Check the parameters of the [PROCESS UNDERLOAD] (UId-) function, page 270.

Fault detection codes that are cleared as soon as their cause disappears

Detected Fault	Nam e	Probable cause	Remedy
CFF	[Incorrect config.]	Option card changed or removed.	Check that there are no card errors. In the event of the option card being changed/removed deliberately, see the remarks below.
		Control block replaced by a control block configured on a drive w ith a different rating.	Check that there are no card errors. In the event of the control block being changed deliberately, see the remarks below.
		The current configuration is inconsistent.	Return to factory settings or retrieve the backup configuration, if it is valid (see page <u>81</u>).
CFI CFI2	[Invalid config.]	Invalid configuration. The configuration loaded in the drive via the bus or communication network is inconsistent.	Check the configuration loaded previously. Load a compatible configuration.
CSF	[Ch. Sw. fault]	Sw itch to not valid channels.	Check the function parameters.
dLF	[Dynamic load fault]	Abnormal load variation.	Check that the load is not blocked by an obstacle. Removal of a run command causes a reset.
FbE	[FB fault]	Function blocks error.	See [FB Fault] (FbFt) for more details.
HCF	[Cards pairing]	The [CARDS PAIRING] (PPI-) function page 269 has been configured and a drive card has been changed.	 In the event of a card error, reinsert the original card. Confirm the configuration by entering the [Pairing password] (PP) if the card was changed deliberately.
PHF	[Input phase loss]	 Drive incorrectly supplied or a fuse blow n. One phase missing. 3-phase ER24 used on a single-phase supply mains. Unbalanced load. This protection only operates w ith the drive on load. 	 Check the pow er connection and thefuses. Use a 3-phase supply mains. Disable the detected fault by [Input phase loss] (IPL) = [No] (nO) page 86.
USF	[Undervoltage]	Supply mains too low. Transient voltage dip.	Check the voltage and the parameters of [UNDERV OLTAGE MGT] (USb-), page 259.

Option card changed or removed

When an option card is removed or replaced by another, the drive locks in [Incorrect config.] (CFF) fault mode on power-up. If the card has been deliberately changed or removed, the detected fault can be cleared by pressing the ENT key twice, which causes the factory settings to be restored (see page <u>81</u>) for the parameter groups affected by the card. These are as follows:

Card replaced by a card of the same type

• Communication cards: only the parameters that are specific to communication cards

Control block changed

When a control block is replaced by a control block configured on a drive with a different rating, the drive locks in [Incorrect config.] (CFF) fault mode on power-up. If the control block has been deliberately changed, the detected fault can be cleared by pressing the ENT key twice, which causes all the factory settings to be restored.

Fault detection codes displayed on the remote display terminal

Code	Nam e	Description
InIt	[Initialization in progress]	The microcontroller is initializing. Search underw ay for communication configuration.
COM. E (1)	[Communication error]	Time out detected fault (50 ms). This message is displayed after 20 attempts at communication.
A-17 (1)	[Alarm button]	A key has been held down for more than 10 seconds. The keypad is disconnected. The keypad w akes up when a key is pressed.
CLr (1)	[Confirmation of detected fault reset]	This is displayed when the STOP key is pressed once if the active command channel is the remote display terminal.
dEU.E (1)	[Drive disparity]	The drive brand does not match that of the remote display terminal.
rOM.E (1)	[ROM anomaly]	The remote display terminal detects a ROM anomaly on the basis of checksum calculation.
rAM.E (1)	[RAM anomaly]	The remote display terminal detects a RAM anomaly.
CPU.E (1)	[Other detected faults]	Other detected faults.

(1) Flashing

Annex



What's in this Part?

This part contains the following chapters:

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14	Index of Parameter Codes	<u>321</u>

Index of Functions

The following table represents the parameter codes:

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[+/- SPEED]	<u>185</u>
[+/-SPEED AROUND REF.]	<u>187</u>
[AUTO DC INJECTION]	<u>176</u>
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LINE CONTACTOR COMMAND	220
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PTC probe	<u>250</u>
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[RP assignment]	<u>128</u>
REFERENCE MEMORIZING	<u>188</u>
[STOP CONFIGURATION]	<u>173</u>
Stop at distance calculated after deceleration limit sw itch	<u>226</u>
Summing input / Subtracting input / Multiplier	<u>168</u>
Synchronous motor parameters	<u>112</u>
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Use of the "Pulse input" input to measure the speed of rotation of the motor	<u>265</u>

Index of Parameter Codes

13

The following table represents the parameter codes:

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r∈F-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL]	[INPUTS / OUTPUTS CFG]	[COMMAND] (CtL-)	[FUNCTION BLOCKS] (FIDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1t F−)	
AC2						<u>89</u>					171 187 212				
ACC					<u>87</u>	89					170				
AdC					_						176				
AdCO		1						 			 _		277		
Add		<u> </u>											276		
Al1A		<u>52</u>						<u>133</u>							
AI1C		<u>52</u>													
A11E								<u>134</u>							
A11F		<u>52</u>						<u>134</u>							
Al1S								<u>133</u>							
A11t								<u>133</u>							
A12A		<u>52</u>						<u>133</u>							
A12C		<u>52</u>													
A12E								134							
A12F		<u>52</u>						134							
A12S								134							
A12t	-	<u>53</u>			-		-	133 134	-	-	-	-		-	
A13A		<u>53</u>						134							
A13E	-	50			-		1	<u>134</u>		1	-	1		1	
A13F		<u>53</u>			-		-	134		1	 			-	
A13L					 			134							
A13S								135							
A13t		 		1			<u> </u>	134						<u> </u>	
AIC2								135			<u>210</u>				
AIU1	<u>46</u>	<u>50</u>													
ALGr		<u>63</u>													
AMOC													<u>276</u>		
AO1		<u>53</u>						<u>144</u>							
AO1C		<u>53</u>													
AO1F		<u>53</u>						<u>144</u>							

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r∈F-)	[12 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	SETTINGS SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (Ctl-)	[FUNCTION BLOCKS]	[APPLICATION FUNCT.]	FAULT MANAGEMENT]	[COMMUNICATION]	[3 INTERFACE] (It F−)	
		三三	₹	<u>\$</u> 0	<u>S</u> (S)	S ()	<u>Z</u> O		ਨੂੰ ਨੇ	豆厂	¥ ⊔	₹	<u>5</u> 0	<u>e</u> €	
AO1t								144							
AOH1		<u>53</u>						144							
AOL1		<u>53</u> <u>62</u>						<u>144</u>							
ASH1		<u>53</u>						144							
ASL1		<u>53</u>						144							
ASt							<u>114</u>	_			<u>190</u>				
Atr												252			
AUt							109 114								
AU1A								<u>135</u>							
AU2A								135							
bC											<u>194</u>				
bdCO													<u>277</u>		
bEd											<u>195</u>				
bEn						<u>101</u>					<u>195</u>				
bEt						<u>101</u>					<u>195</u>				
bFr					<u>86</u>		<u>105</u>								
bIP						101					<u>194</u>				
blr bLC						<u>101</u>					<u>195</u> <u>194</u>				
bMp									<u>157</u>		194				
bnS		<u>55</u>							107	<u>158</u>					
bnU		<u>56</u>								158					
bOA		_					120								
bOO							120								
brA											<u>172</u>				
brH0											<u>197</u>				
brH1											<u>197</u>				
brH2											<u>198</u>				
brr											<u>198</u>				
brt						<u>101</u>		401			<u>194</u>				
bSP		<u> </u>						<u>131</u>			101	<u> </u>		<u> </u>	
bSt		E E								150	<u>194</u>				
bUEr CCFG		<u>55</u>	<u> </u>	<u> </u>	<u>86</u>			<u> </u>		<u>158</u>	-	-	<u> </u>	-	
CCS					<u>50</u>				<u>155</u>						
Cd1									<u>155</u>						
Cd2									<u>155</u>						
CFG				<u>82</u>	<u>85</u>				100						
CFPS		<u>62</u>		<u> </u>							 	 		 	
CHA1		Η	 	<u> </u>				 			<u>230</u>		 		
CHA2											230				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (ref)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS] (FDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1tF-)	
CHCF									<u>154</u>						
CHM											<u>235</u>				
CL2						<u>95</u>					<u>218</u>				
CLI						<u>94</u>	<u>119</u>				<u>218</u>				
CLL												<u>261</u>			
CLO											<u>205</u>				
CLS											<u>228</u>				
CMdC		<u>56</u>													
CnF1											<u>235</u>				
CnF2											<u>235</u>				
CnFS		<u>62</u>													
COd		<u>75</u>													
COd2		<u>75</u>													
COF											<u>205</u>				
COL												<u>262</u>			
COP									<u>156</u>						
Юr											<u>205</u>				
COS							<u>107</u>								
CP1											<u>200</u>				
CP2											<u>200</u>				
CrH3		<u>53</u>						<u>134</u>							
CrL3		<u>53</u>						<u>134</u>							
CrSt														<u>293</u>	
CrtF							<u>118</u>								
CSbY														<u>293</u>	
CSt		<u>75</u>												<u>300</u>	
Ctd						<u>102</u>						<u>252</u>			
Ctt							<u>105</u>								
CtU		<u>56</u>								<u>158</u>	100				
dA2											<u>168</u>				
dA3	ļ		1		ļ			1			<u>169</u>				
dAF											<u>227</u>				
dAL								10-			<u>227</u>	000			
dAnF								<u>137</u>			007	<u>263</u>			
dAr			ļ			ļ		1		ļ	<u>227</u>	ļ			
dAS			ļ			ļ		1		ļ	223	ļ			
dbS											223				
dCCM								1			<u>245</u>				
dCCM		00	ļ			ļ		1		ļ	<u>245</u>	ļ			
dCC1		<u>66</u>						1							
dCC2		<u>67</u>									<u> </u>				
dCC3		<u>67</u>													

Code															CUSTOM ER SETTING
			[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START]	[SETTINGS] (SEt-)	[MOTOR CONTROL]	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS]	[APPLICATION FUNCT.]	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1 T F -)	
dCC4		<u>67</u>													
dCC5		<u>67</u>													
dCC		<u>67</u>													
dCC7		<u>67</u>													
dCC8	<u> </u>	<u>67</u>				00					470	070			
dCF dC I						<u>93</u>					<u>173</u>	<u>272</u>			
dE2	<u> </u>			<u> </u>		<u>89</u>		-	<u> </u>		<u>174</u>				
ULZ						03					<u>171</u> <u>187</u>				
dEC	 				<u>87</u>	<u>89</u>					<u>170</u>				
dLb												<u>267</u>			
dLd												<u>267</u>			
dLr		<u>75</u>												<u>300</u>	
dO1								<u>141</u>							
dO1d								<u>141</u>							
dO1H								<u>141</u>							
dO1S								<u>141</u>							
dP1		<u>64</u>													
dP2		<u>67</u>													
dP3		<u>67</u>													
dP4		<u>67</u>													
dP5	<u> </u>	<u>67</u>													
dP _≥		<u>67</u>													
dP8		<u>67</u>													
drC1		66 66													
drC2		66													
drC3		66													
drC4		66													
drC5		66													
drC⊯		66													
drC7		66													
drC8		<u>66</u>													
dSF											228				
dS											<u>187</u>				
dSP											<u>187</u>				
dtF											<u>243</u>				
EbO											<u>242</u>				
EPL												<u>259</u>			
EnU								<u>135</u>							
EnS		<u> </u>						<u>135</u>							
ErCO		<u> </u>										6==	<u>277</u>		
EtF												<u>258</u>			

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (rEF-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS]	[MOTOR CONTROL]	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS] (FLOM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (ItF-)	
F1							<u>118</u>								
F2							<u>118</u>								
F2d							102								
F3							<u>119</u>								
F4							<u>119</u>								
F5							<u>119</u>								
FAb							<u>120</u>								
FAd1														<u>286</u>	
FAd2														<u>286</u>	
FAd3														<u>286</u>	
FAd4												ļ.,		<u>286</u>	
FAnF								<u>136</u>				<u>263</u>			
FbCd										<u>158</u>					
FbdF										<u>159</u>					
FbFt		<u>55</u>								<u>158</u>					
FbrM										<u>159</u>					
FbSN										<u>159</u>					
FbSt		<u>55</u>	04							<u>158</u>					
FCS1 Fdt			<u>81</u>									<u>266</u>			
FFH							<u>118</u>					200			
FFM						<u>104</u>	110								
FFt						102					<u>173</u>				
FLI						102					189				
FLO											100		277		
FLOC													277		
FLOt													277		
FLr												<u>253</u>	-		
FLU						<u>95</u>	109				189				
Fn1									<u>157</u>						
Fn2									157						
Fn3			1	1		1	<u> </u>		157					1	
Fn4			1	1		1	<u> </u>		157					1	
FP I			1	1		1	<u> </u>				<u>212</u>			1	
FqA												<u>266</u>			
FqC			1									<u>266</u>		1	
FqF												266			
FqL			1			<u>102</u>	1					<u>253</u>			
FqS		<u>50</u>	1	1	1	1	1					1		1	
Fqt			1				1					<u>266</u>			
Fr1									<u>154</u>						
Fr1b											<u>167</u>				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (ref-)	[12 MONITORING] (MOn-)	[FACTORY SETTINGS]	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS]	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION] (COM-)	[3 INTERFACE] (1tF-)	
Fr2									<u>155</u>						
FrH	<u>50</u>	<u>50</u> <u>56</u>													
FrI							<u>116</u>								
FrS					<u>86</u>		<u>107</u>								
FrSS							<u>116</u>								
Frt											<u>171</u>				
FSt											<u>173</u>				
Ftd						<u>102</u>						<u>253</u>			
FtO						<u>103</u>						<u>272</u>			
FtU						<u>103</u>						<u>271</u>			
FtY			<u>81</u>												
GFS			<u>81</u>												
GSP														<u>289</u>	
HF1							<u>116</u>								
H1r							<u>116</u>					050			
HrFC											005	<u>252</u>			
HSO HSP					07	90					<u>205</u>				
HSP2					<u>87</u>	<u>89</u> <u>90</u>					244 244				
HSP3						90					244				
HSP4						90					244				
I2tA						<u>50</u>					219				
I2tM		<u>51</u>													
I2tI		_									219				
I2tt											219				
IA01										<u>160</u>	<u> </u>				
IA02										160					
IA03										<u>160</u>					
IA04										<u>160</u>					
IA05										<u>160</u>					
IA0 🖫										<u>160</u>			L		
IA07										<u>160</u>					
IA08										<u>160</u>					
IA09										<u>160</u>					
IA10										<u>160</u>					
IAd1														<u>286</u>	
IAd2														<u>286</u>	
IAd3														<u>286</u>	
IAd4														<u>286</u>	
Ibr					<u> </u>	<u>101</u>	ļ				<u>194</u>				
IbrA							444				<u>200</u>		1		
IdA							<u>111</u>								

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (ref)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (Ctl-)	[FUNCTION BLOCKS] (FIDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (ItF-)	
IdC						<u>93</u>					<u>174</u>	<u>273</u>			
ldC2						<u>93</u>					<u>175</u>	<u>273</u>			
ILO1										<u>159</u>					
IL02										<u>159</u>					
IL03										<u>159</u>					
IL04										<u>159</u>					
IL05										<u>159</u>					
ILO										<u>159</u>					
IL07										<u>159</u>					
IL08										<u>159</u>					
IL09										<u>159</u>					
IL10							440			<u>159</u>					
ILr							<u>116</u>					004			
InH						00					470	<u>261</u>			
Inr						<u>89</u>					<u>170</u>				
IntP					06						216 245	<u>256</u>			
Ird					<u>86</u>	101					<u>245</u> <u>194</u>	<u>236</u>			
ItH					<u>87</u>	<u>101</u> <u>90</u>					194				
JdC					<u>07</u>	<u>101</u>					<u>195</u>				
JF2						102					183				
JF3						103					183				
JFH						103		1			183				
JGF						95		1			<u>178</u>				
JGt						96					179				
JOG											178				
JPF			 	1		102	-	+	-		183				
L1A		<u>51</u>						127							
L1d								128							
L2A		<u>51</u>						128							
L2d	 		<u> </u>	1		1		128	1					1	
L3A		<u>51</u>						<u>127</u>							
L3d								128							
L4A		<u>51</u>						<u>128</u>							
L4d			1					<u>128</u>							
L5A		<u>51</u>						<u>127</u>							
L5d								<u>128</u>							
LBA		<u>51</u>						<u>128</u>							
Lᡎd								<u>128</u>							
LA01										<u>160</u>					
LA02										<u>160</u>					
LA03										<u>160</u>					

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r∈F-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (GrC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (CtL-)	[FUNCTION BLOCKS] (FDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE]	
LA04										<u>160</u>					
LA05										<u>160</u>					
LA0 💂										<u>160</u>					
LA07										<u>160</u>					
LA08								400		<u>160</u>					
LA1A		<u>51</u>						<u>128</u>							
LA1d LA2A		E4						128							
LA2A LA2d		<u>51</u>	-	-	-			128 128		-	-	-		-	
LAZO	-		-	-				128 136		-	1	<u>263</u>			
LAC								100				200		<u>280</u>	
LbA							<u>122</u>							200	
LbC						103	122								
LbC1							124								
LbC2							124				 				
LbC3							124								
LbF							124								
LC2											218				
LCr		<u>50</u>													
LCt											221				
LdS							<u>116</u>								
LES											<u>221</u>				
LEt												<u>258</u>			
LFA							<u>111</u>								
LFF												<u>272</u>			
LFL3												<u>260</u>			
LFr	<u>46</u>	<u>50</u>													
LFr1		<u>59</u>													
LFr2		<u>59</u>													
LFr3		<u>59</u>	-	-	1						ļ				
LIS1 LIS2	<u> </u>	<u>51</u> <u>51</u>			1						 	<u> </u>		<u> </u>	
LISZ		<u> </u>	_	-	-				-	<u> </u>	<u>221</u>	<u> </u>		<u> </u>	
LLC		<u> </u>	_	-	-				-	<u> </u>	<u> </u>	<u> </u>		282	
LIIG LO1				-					139					202	
LO1d	-	-	1	1	1				139	-	1	-		-	
LO1H									140						
LO1S		 							140	 	1	 		 	
LOC						<u>103</u>					+	<u>272</u>			
LP1						<u> </u>					200			†	
LP2	<u> </u>		1	<u> </u>	1				1		200				
LqS							<u>116</u>				† <u> </u>				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (rEF-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS] (FDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FL.t-)	[COMMUNICATION]	[3 INTERFACE] (1tF-)	
LSP					<u>87</u>	<u>89</u>									
LUL		<u> </u>				<u>103</u>						<u>270</u>			
LUn		<u> </u>				<u>103</u>						<u>270</u>			
M001		<u> </u>								<u>161</u>					
M002										<u>161</u>					
M003	<u> </u>	<u> </u>	—							<u>161</u>					
M004	<u> </u>	—	<u> </u>							<u>161</u>					
M005	<u> </u>	—	—			-	-			<u>161</u>					
M00 J	 	 	├─							161					
M007	 	 	 							161 161					
M1Ct		<u>58</u>								101					
M1EC		<u>58</u>	├──												
MStP		<u>50</u>									228				
MA2											220	<u>169</u>			
MA3		+	 									169			
MCr	\vdash	+					<u>116</u>					100			
Mdt	├──	+	 											<u>285</u>	
MFr	<u>46</u>	<u>50</u>				98								_	
MMF		50													
MPC		_					110								
MtM												255			
nbrP		<u>61</u>													
nbtP		<u>61</u>													
nC1		<u>58</u>													
nC2		<u>58</u>								1					
nC3		<u>58</u>			1	1	1			1		1	1	1	
nC4		<u>58</u>													
nC5		<u>58</u>													
nC₌		<u>59</u>													
nC7		<u>59</u>													
nC8		<u>59</u>													
nCA1													<u>276</u>		
nCA2													<u>276</u>		
nCA3													<u>276</u>		
nCA4													<u>276</u>		
nCA5		<u> </u>											<u>276</u>		
nCA≣		<u> </u>											<u>276</u>		
nCA7		<u> </u>											<u>276</u>		
nCA8			<u> </u>										<u>276</u>		
nCr					<u>86</u>		<u>107</u>								
nCrS							<u>113</u>								

Code															CUSTOM E R SETTING
	[1.1 SPEED REFERENCE] (rEF-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL]	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS] (FbM-)	[APPLICATION FUNCT.]	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1tF-)	
nLS											<u>228</u>				
nM1		<u>58</u>													
nM2		<u>58</u>													
nM3		<u>58</u>													
nM4		<u>58</u>													
nM5		<u>58</u>													
nM≝		<u>58</u>													
nM7		<u>58</u>													
nM8		<u>58</u>											075		
nMA1													<u>275</u>		
nMA2													<u>275</u>		
nMA3													<u>275</u>		
nMA4 nMA5													<u>275</u>		
nMA													<u>275</u>		
													<u>275</u>		
nMA7 nMA8													275 275		
nMtS		61											273		
nPr		<u>61</u>			96		107								
nrd					<u>86</u>		107 120								
nSP					<u>86</u>		107								
nSPS					<u>00</u>		113								
nSt							110				<u>173</u>				
ntJ		<u>74</u>									170				
OCC		1-1									223				
OdL											220	272			
Odt												256			
OHL					-	-						257		-	
OLL												255			
OPL												256			
OPr	-	<u>50</u>			1	1	1				 			1	
OSP											205				
Otr		<u>50</u>			†	†									
PAH		-				99					212				
PAL						99					211				
PAS						-					228				
PAU											212				
PCd					<u> </u>	<u> </u>								<u>292</u>	
PEr						99					<u>212</u>			t	
PES						-					200				
PF		<u>54</u>						<u>128</u>							
PFr		<u>54</u>			<u> </u>	<u> </u>		128						<u> </u>	

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (ref)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START]	[SETTINGS] (SEt-)	[MOTOR CONTROL]	[INPUTS / OUTPUTS CFG]	[COMMAND] (○tL-)	[FUNCTION BLOCKS] (FDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1t F=-)	
PG1								<u>135</u>							
PHS							<u>116</u>								
PIA		<u>54</u>						<u>128</u>							
PIC											<u>211</u>				
PIF											<u>210</u>				
PIF1											<u>210</u>				
PIF2	<u> </u>										<u>210</u>				
PII	<u> </u>							400			<u>210</u>				
PIL PIM	<u> </u>	<u>54</u>			ļ			<u>128</u>	ļ		010	ļ	ļ		
PIIVI PIP1											<u>213</u>				
PIP1											<u>210</u> <u>210</u>				
PIS											<u>210</u>				
POH						<u>99</u>					<u>212</u>				
POL						99					211				
PP	 					00					211	<u>269</u>			
PPnS							113								
Pr2											214				
Pr4											214				
prSt											228				
PrP						99					<u>211</u>				
PS1 📱											<u>181</u>				
PS2											<u>181</u>				
PS4											<u>181</u>				
PS8											<u>181</u>				
PSr						<u>99</u>					<u>212</u>				
PSt									<u>154</u>						
PtCL												<u>250</u>			
PtH		<u>62</u>									ļ			000	
PUIS						400					0.40			<u>292</u>	
qSH						<u>102</u>		<u> </u>			<u>242</u>				
qSL						<u>102</u>		100			<u>242</u>				
r1								138							
r1d r1F			-		-			138 139			1		-		
r2F								139 139							
r1H			-		1			139			1	1	1		
r1S								138							
r2								139							
r2d					1			139					1		
r2H								139							
r2S								139							

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (rEF-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS] (FbM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1t F−)	
rCA											<u>223</u>				
rCb											<u>167</u>				
rdAE							<u>117</u>								
rdG						<u>99</u>					<u>211</u>				
rEC1		<u>61</u>													
rFC									<u>155</u>						
rFCC		<u>56</u>									ļ				
rFLt		<u>74</u>					<u> </u>		ļ		<u> </u>	1			
rFr		<u>50</u>				00					011				
rIG						<u>99</u>			151		<u>211</u>				
rln rMUd						100			<u>154</u>			270			
rP						<u>103</u>						270 251			
rP11		<u>59</u>										201			
rP12		<u>59</u>													
rP13		<u>59</u>													
rP14		<u>59</u>													
rP2						99					<u>214</u>				
rP21		<u>60</u>									 				
rP22		60													
rP23		60													
rP24		60									 				
rP3		_				100					<u>214</u>				
rP31		<u>60</u>													
rP32		<u>60</u>													
rP33		<u>60</u>													
rP34		<u>60</u>													
rP4						<u>100</u>					<u>214</u>				
rPA												<u>251</u>			
rPC	<u>46</u>	<u>62</u>								L					
rPE		<u>62</u>													
rPF		<u>62</u>													
rPG						<u>99</u>					<u>211</u>				
rPI	<u>46</u>	<u>62</u>									<u>211</u>				
rPO		<u>62</u>													
rPr		<u>62</u>													
rPS											<u>171</u>				
rPt								100			<u>170</u>				
rrs							444	<u>126</u>							
rSA							111				1				
rSAS							<u>116</u>				005				
rSd											<u>205</u>				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r∈F-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration]	[SIMPLY START] (SIM-)	[SETTINGS]	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS]	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1t F−)	
rSF												<u>251</u>			
rSL											<u>213</u>				
rStL											<u>205</u>				
rtH		<u>62</u>													
rtr											<u>243</u>				
rUn								<u>126</u>							
S101											<u>230</u>				
S102											<u>230</u>				
S103											<u>230</u>				
S104											<u>230</u>				
S105											<u>230</u>				
S10 _■											<u>230</u>				
S107											<u>230</u>				
S108											<u>230</u>				
S109											<u>230</u>				
S110											<u>230</u>				
S111											<u>230</u>				
S112											<u>230</u>				
S113											<u>230</u>				
S114											230				
S115											<u>230</u>				
S201											230				
S202 S203											230 230				
S203											230				
S204											230				
S20 g											230				
S207											230				
S207		-			-	-			-		230	-		-	
S209											230				
S210		<u> </u>		1	-	-			<u> </u>		230	-	-	-	
S211											230				
S212											230				
S213											230				
S214											230				
S215		<u> </u>		1	 	 			<u> </u>		230	 	1	 	
S301		<u> </u>		1	 	 			<u> </u>		231	 	 	 	
S302		<u> </u>		1	 	 			<u> </u>		231	 	 	 	
S303		<u> </u>		1	 	 			<u> </u>		231	 	 	 	
S304											231				
S305					†	†					231				
S30 💂											231				

Code															CUSTOM ER SETTING
	[1.1 SPEED REFERENCE] (rEF-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS]	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (CtL-)	[FUNCTION BLOCKS] (FIDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE]	
S307											<u>231</u>				
S308											<u>231</u>				
S309											<u>231</u>				
S310											<u>231</u>				
S311											<u>231</u>				
S312											<u>231</u>				
S313	<u> </u>			<u> </u>							231			<u> </u>	
S314 S315				-							231 231			-	
S315 SA2	<u> </u>	1		-	<u> </u>	<u> </u>			-		<u>168</u>		<u> </u>	-	
SA3											168				
SAF1	<u> </u>	<u>69</u>									100				
SAF2		<u>70</u>													
SAL	 	H —									227				
SAr											227				
SAt												<u>258</u>			
SCL											<u>205</u>				
SCL3											<u>246</u>				
SCSI			<u>81</u>												
SdC1						<u>93</u>					<u>176</u> <u>195</u>				
SdC2						<u>94</u>					<u>177</u>				
Sdd												<u>263</u>			
SdS						<u>104</u>									
SF00		<u>70</u>													
SF01		<u>70</u>													
SF02 SF03		<u>71</u>							-						
SF03 SF04		71 71			<u> </u>				<u> </u>				<u> </u>		
SF05		<u>71</u> <u>72</u>													
SF0		<u>72</u>		-	<u> </u>				<u> </u>				<u> </u>	-	
SF07		<u>72</u>													
SF08		<u>73</u>		 	 				 				 	 	
SF09		73													
SF10		<u>73</u>													
SF11		74													
SFC						<u>90</u>	<u>118</u>								
SFd											<u>228</u>				
SFFE		<u>55</u> <u>69</u>													
SFr						<u>94</u>	<u>119</u>								
SFt							<u>119</u>								
SH2											<u>244</u>				

Code							1		•		ı				CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F−)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (CtL-)	[FUNCTION BLOCKS] (FbM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (F-Lt-)	[COMMUNICATION]	[3 INTERFACE] (1t F−)	
SH4											<u>244</u>				
SIr							<u>117</u>								
SIt						<u>90</u>	<u>118</u>								
SLL						00	440					<u>262</u>			
SLP SLSS		E 4				<u>90</u>	<u>118</u>								
SMOt		<u>54</u>					11/								
SnC	 		-				<u>114</u>		<u> </u>	1	<u>243</u>	<u> </u>	1		
SOP	 						120				<u> </u>				
SP10						<u>97</u>	120				182				
SP11						97					182				
SP12						97					182				
SP13						98					182				
SP14						98					<u>182</u>				
SP15						<u>98</u>					<u>182</u>				
SP1						<u>98</u>					<u>182</u>				
SP2						<u>97</u>					<u>181</u>				
SP3						<u>97</u>					<u>181</u>				
SP4						<u>97</u>					<u>181</u>				
SP5						<u>97</u>					<u>181</u>				
SP 🚆						<u>97</u>					<u>181</u>				
SP7						<u>97</u>					<u>181</u>				
SP8						<u>97</u>					<u>182</u>				
SP9 SPb						<u>97</u>	110				<u>182</u>				
SPd1		<u>63</u>					<u>116</u>								
SPd2		<u>63</u>					1			-			-		
SPd3		<u>63</u>	1				1		+	1	+	-	1		
SPF		<u> </u>	1				<u>116</u>			1			1		
SPG						90	118		1		1	<u> </u>			
SPGU						90	118								
SPM											<u>188</u>				
Sr11	†	<u>64</u>													
Sr12		<u>67</u>													
to Sr18															
Sr21		<u>64</u>													
Sr22		<u>67</u>							1		1	 			
to Sr28															
SrA1		<u>64</u>													
SrA2		<u>67</u>							1		1				
to SrA8															

dSS	SISS	SrP	Srb	SrL8	SrL1	SrK2 to SrK8	Sr 1	to SrJ8	SrJ1	Sr12 to	SrI1	SrH2 to SrH8	SrH1	to SrG8	SrG2	SrG1	SrF2 to SrF8	SrF1	SrE2	SrE1	Srd2 to Srd8	Srd1	SrC2 to SrC8	070	Srb2	Srb1		Code
																											[1.1 SPEED REFERENCE] (rEF-)	
	54			S	64	<u>67</u>	64	l _v	64	<u>67</u>	64	<u>67</u>	64		67	64	<u>67</u>	64	<u>67</u>	64	<u>67</u>	64	<u>67</u>	104	2 [67	64	[1.2 MONITORING] (MOn-)	
																											[FACTORY SETTINGS] (FCS-)	
																											[Macro configuration] (CFG)	
																											[SIMPLYSTART] (SIM-)	
		86	103																								[SETTINGS] (SEt-)	
																											[MOTOR CONTROL] (drC-)	
																											[INPUTS / OUTPUTS CFG] (I_O-)	
																											[COMMAND] (CtL-)	
																											[FUNCTION BLOCKS] (FbM-)	
		187																									[APPLICATION FUNCT.] (FUn-)	
264			270 272																								[FAULT MANAGEMENT] (FLt-)	
																											[COMMUNICATION] (COM-)	
																											[3INTERFACE] (It FF-)	
																												CUSTOMER SETTING

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r = F-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS] (SEt-)	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND] (CtL-)	[FUNCTION BLOCKS] (FDM-)	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (1t F−)	
Std											<u>228</u>				
StFr		<u>50</u>													
StM												<u>260</u>			
StO												<u>264</u>			
StOS		<u>54</u>													
StP												<u>259</u>			
Str											<u>185</u>	000			
Strt											170	<u>260</u>			
Stt					07		100				<u>173</u>				
StUn					<u>87</u>		108 114								
SUL							120								
tA1						89					<u>170</u>				
tA2						89					171				
tA3						89					171				
tA4						89					171				
tAA											216				
tAC		<u>74</u>													
tAC2		<u>74</u>													
tAnF								<u>136</u>				<u>263</u>			
tAr												<u>252</u>			
tbE						<u>101</u>					<u>195</u>				
tbO											<u>242</u>				
tbr													<u>276</u>		
tbS												<u>260</u>			
tCC					<u>85</u>			<u>125</u>							
tCt								<u>125</u>							
tdC						<u>93</u>					<u>175</u>	<u>274</u>			
tdC1						<u>93</u>					<u>176</u>				
tdC2						94					<u>177</u>	675			
tdl				<u> </u>		<u>93</u>					<u>174</u>	<u>273</u>			
tdn					1		-		-	1	<u>242</u>	000			
tdS		64										<u>266</u>			
tEC1		<u>61</u>	<u> </u>		-					1	<u> </u>		076		
tFO					<u>87</u>		1	<u>105</u>	-	-	1	-	<u>276</u>		
tHA					<u>01</u>			100				257 258			
tHd		<u>50</u>	1								1		1		
tHr		<u>50</u>	 								 		 		
tHt												<u>255</u>			
tLA											<u>216</u>				
tLC											217				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r∈F-)	[1.2 MONITORING] (MOn-)	[FACTORY SETTINGS] (FCS-)	[Macro configuration] (CFG)	[SIMPLY START] (SIM-)	[SETTINGS]	[MOTOR CONTROL] (drC-)	[INPUTS / OUTPUTS CFG]	[COMMAND]	[FUNCTION BLOCKS]	[APPLICATION FUNCT.] (FUn-)	[FAULT MANAGEMENT] (FLt-)	[COMMUNICATION]	[3 INTERFACE] (ItF-)	
tLd												<u>267</u>			
tLIG						<u>101</u>					<u>216</u>				
tLIM						<u>101</u>					<u>216</u>				
tLS						<u>95</u>					<u>213</u>				
tnL												<u>268</u>			
tOL												<u>272</u>			
tOS											<u>205</u>				
tP11		<u>59</u>													
tP12		<u>60</u>													
tP13		<u>60</u>													
tP21 tP22		<u>60</u>													
tP23		<u>60</u>													
tP24		<u>60</u>													
tP31		<u>61</u>													
tP32		<u>61</u>													
tP33		61													
tP34		61													
tqb												<u>266</u>			
tqS							<u>113</u>								
trA							<u>111</u>								
trC											<u>242</u>				
trH						<u>102</u>					<u>242</u>				
trL						<u>102</u>					<u>242</u>				
tSM												<u>259</u>			
tSY											<u>243</u>				
tt d						<u>102</u>						255 258			
ttd2												255 258			
ttd3												255 258			
ttH						<u>102</u>						<u>253</u>			
ttL						<u>102</u>						<u>253</u>			
tto												<u>276</u>			
ttr						<u>101</u>				<u>196</u>					
tUL										<u>236</u>					
tUn					<u>87</u>		108 113								
tUnU							108 114								
tUP										<u>242</u>					

US.	ASU	JSU	SU	dSU	UrES	UPL	UOP	UOL1	UOH1	UnS	ULT	ULr	ULn	UIL2	ULL	UIH2	UIH1	UFr	UdL	Jan	SU	U4	En	U2	LN	SOT		Code
																											[1.1 SPEED REFERENCE] (rEF-)	
							50	53	53			<u>75</u>	<u>50</u>	52	52	52	52										[1.2 MONITORING] (MOn-)	
																											[FACTORY SETTINGS] (FCS-)	
																											[Macro configuration] (CFG)	
										<u>86</u>																87	[SIMPLYSTART] (SIM-)	
																		90									[SETTINGS] (SEt-)	
										107								118			119	119	119	118	118	108 113	[MOTOR CONTROL] (drC-)	
								144	144					133	133	134	133										[INPUTS / OUTPUTS CFG] (I_O-)	
																											[COMMAND] (CtL-)	
																											[FUNCTION BLOCKS] (FbM-)	
	185	247	<u>187</u>		246															247							[APPLICATION FUNCT.] (FUn-)	
<u>259</u>		<u>259</u>		259	<u>259</u>	<u>260</u>					270								271								[FAULT MANAGEMENT] (FLt-)	
																				122							[COMMUNICATION] (COM-)	
																											[3INTERFACE] (It F-)	
																												CUSTOMER SETTING

Glossary

14

D

Display terminal

The display terminal menus are shown in square brackets.

For example: [Communication]

The codes are shown in round brackets.

For example: COM-

Parameter names are displayed on the display terminal in square brackets.

For example: [Fallback Speed]

Parameter codes are displayed in round brackets.

For example: LFF

Ε

Error

Discrepancy between a detected (computed, measured, or signaled) value or condition and the specified or theoretically correct value or condition.

F

Factory setting

Factory settings when the product is shipped

Fault

Fault is an operating state. If the monitoring functions detect an error, a transition to this operating state is triggered, depending on the error class. A "Fault reset" is required to exit this operating state after the cause of the detected error has been removed. Further information can be found in the pertinent standards such as IEC 61800-7, ODVA Common Industrial Protocol (CIP).

Fault Reset

A function used to restore the drive to an operational state after a detected error is cleared by removing the cause of the error so that the error is no longer active.

M

Monitoring function

Monitoring functions acquire a value continuously or cyclically (for example, by measuring) in order to check whether it is within permissible limits. Monitoring functions are used for error detection. Glossary

P

Parameter

Device data and values that can be read and set (to a certain extent) by the user.

PELV

Protective Extra Low Voltage, low voltage with isolation. For more information: IEC 60364-4-41

PLC

Program mable logic controller

Power stage

The power stage controls the motor. The power stage generates current for controlling the motor.

W

Warning

If the term is used outside the context of safety instructions, a warning alerts to a potential problem that was detected by a monitoring function. A warning does not cause a transition of the operating state.

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