

BLEMO<sup>®</sup> frequency converter ER41KS / ER41GS

# ER41S - the intelligent drive solution for the highest demands!

Frequency converters and process systems with a focus on maximum productivity with precise motor control and connectivity. For demanding applications from 0.75 kW to 2,600 kW, 400 - 690 V three-phase, for both asynchronous and synchronous and permanent magnet motors.



## MAXIMUM CONTROL, HIGHEST PERFORMANCE

The ER41S stands for the highest performance and precision in demanding industrial applications.

Designed for dynamic machine control, this frequency converter offers excellent control accuracy and maximum control – for asynchronous, synchronous and permanent magnet motors. Its advanced vector control ensures precise torque and speed control, even in complex processes.

With extended safety functions such as STO, SS1, SLS and PROFIsafe, the ER41S meets the highest industry standards and ensures safe and reliable operation.

Thanks to its powerful architecture, it covers a wide power range from 0.75 kW to 2,800 kW and is optimized for a wide range of industrial applications. Its versatility is also reflected in its comprehensive communication capabilities: Whether Modbus, Ethernet/IP, Profinet or CANopen - the ER41S can be seamlessly integrated into existing systems and offers a future-proof solution for automation.

### Geräteversionen:

The ER41S is available in two versions: ER41-... KS, protection class IP21/23 and ER41-... GS, protection class IP54/55 with (-V2) and without (-V1) load break switch. The devices are delivered from the factory with painted circuit boards. Devices from 90 kW are also equipped with tinned copper bars (optional for lower power ratings) for aggressive air.

**Version 1:** Basic device without built-in load switch IP55

**Version 2:** Basic device with built-in load switch IP54

**Version KS:** For the control cabinet IP21

### Application examples:

Lifting technology, conveyor systems, extruders, crushers, conveyor systems, factories, DC bus sharing/4 quadrant applications

## YOUR BENEFITS AT A GLANCE

- **Highest precision:** Advanced vector control for precise torque and speed control
- **Maximum performance:** Power range from 0.75 kW to 2,800 kW for demanding applications
- **Advanced Security:** Integrated functions such as STO (SIL3/Plc, two-channel), Optional: SS1, SLS, SMS, SBC, SDI, PROFIsafe
- **Versatile engine control:** Supports asynchronous, synchronous and permanent magnet motors
- **Seamless Integration:** Compatible with Modbus, Ethernet/IP, Profinet, CANopen and other protocols
- **Industry optimized:** Ideal for conveyor technology, heavy industry, mechanical engineering and complex control systems
- **Reliable and efficient:** Designed for long-lasting, safe and energy-efficient operation

### Standard features:

- Multilingual operating terminal with real-time clock and USB connection
- Built-in PID controller
- integrated Modbus/TCP, serial Modbus interface, Embedded dual-port Ethernet
- Integrated EMC filter, mains choke
- Control of asynchronous motors, synchronous motors, PM motors, reluctance motors
- Output filter up to 300m motor cable length, shielded
- Thermistor input PTC, PT100, PT1000, KTY84
- Integrated STO function, SIL3/Plc, two-channel
- **Optional:**
  - SLS: Safely Limited Speed
  - SS1: "Safe Stopp"1 SMS: Safe maximum speed
  - SBC: Safe Brake Control GDL: safety door lock
- RoHs, WEEE conform (recycling rate 88%)
- **Options:** Ethernet IP, Modbus TCP, CANopen (RJ45 Daisy Chain, Sub-D, screw terminals), PROFINET, Profibus DP V1, EtherCAT, DeviceNet, PowerLink, PROFIsafe
- Advanced vector control ensures the most precise torque and speed control – with or without encoder

## DEVICE OVERVIEW ER41S

| mains voltage<br>(2)3~380 bis<br>415/440/480 V<br>50/60 Hz | version     | Engine power<br>HD/ND<br>recommended<br>(kW) | Rated current<br>In(1)<br>HD<br>(A) | Rated current<br>In(1)<br>ND<br>(A) | series ER41-...KS<br>protection class<br>IP21/IP23(3)<br>dimension (HxBxT)<br>(mm) | Weight<br>(kg) | series ER41-...GS<br>protection class<br>IP54/IP55(3)<br>dimension (HxBxT)<br>(mm) | Weight<br>(kg) |
|--|-------------|--|-------------------------------------|-------------------------------------|--|----------------|--|----------------|
|  | ER41-0.75/4 | 0,55/0,75                                    | 1,5                                 | 2,2                                 | 350 x 144 x 203  | 4,5            | 678 x 264 x 272  | 10,5           |
|  | ER41-1.5/4  | 1,1/1,5                                      | 2,2                                 | 4,0                                 | 350 x 144 x 203  | 4,5            | 678 x 264 x 272  | 10,5           |
|  | ER41-2.2/4  | 1,5/2,2                                      | 4,0                                 | 5,6                                 | 350 x 144 x 203  | 4,5            | 678 x 264 x 272  | 10,5           |
|  | ER41-3.0/4  | 2,2/3,0                                      | 5,6                                 | 7,2                                 | 350 x 144 x 203  | 4,6            | 678 x 264 x 272  | 10,6           |
|  | ER41-4.0/4  | 3,0/4,0                                      | 7,2                                 | 9,3                                 | 350 x 144 x 203  | 4,6            | 678 x 264 x 272  | 10,6           |
|  | ER41-5.5/4  | 4,0/5,5                                      | 9,3                                 | 12,7                                | 350 x 144 x 203  | 4,7            | 678 x 264 x 272  | 10,7           |
|  | ER41-7.5/4  | 5,5/7,5                                      | 12,7                                | 16,5                                | 409 x 171 x 233  | 7,7            | 678 x 264 x 299  | 13,7           |
|  | ER41-11.0/4 | 7,5/11,0                                     | 16,5                                | 23,5                                | 409 x 171 x 233  | 7,7            | 678 x 264 x 299  | 13,7           |
|  | ER41-15.0/4 | 11,0/15,0                                    | 23,5                                | 31,7                                | 546 x 211 x 233  | 13,6           | 678 x 264 x 299  | 19,6           |
|  | ER41-18.5/4 | 15,0/18,5                                    | 31,7                                | 39,2                                | 546 x 211 x 233  | 14,2           | 678 x 264 x 299  | 20,6           |
|  | ER41-22.0/4 | 18,5/22,0                                    | 39,2                                | 46,3                                | 546 x 211 x 233  | 14,3           | 678 x 264 x 299  | 20,6           |
|  | ER41-30.0/4 | 22,0/30,0                                    | 46,3                                | 61,5                                | 673 x 226 x 271  | 28,0           | 910 x 290 x 340  | 50,0           |
|  | ER41-37.0/4 | 30,0/37,0                                    | 61,5                                | 74,5                                | 673 x 226 x 271  | 28,2           | 910 x 290 x 340  | 50,0           |
|  | ER41-45.0/4 | 37,0/45,0                                    | 74,5                                | 88,0                                | 673 x 226 x 271  | 28,7           | 910 x 290 x 340  | 50,0           |
|  | ER41-55.0/4 | 45,0/55,0                                    | 88,0                                | 106,0                               | 922 x 290 x 323  | 56,5           | 1250 x 345 x 375   | 87,0           |
|  | ER41-75.0/4 | 55,0/75,0                                    | 106,0                               | 145,0                               | 922 x 290 x 323  | 58,0           | 1250 x 345 x 375   | 87,0           |
|  | ER41-90.0/4 | 75,0/90,0                                    | 145,0                               | 173,0                               | 922 x 290 x 323  | 58,5           | 1250 x 345 x 375   | 87,0           |
|  | ER41-110/4  | 90,0/110,0                                   | 173,0                               | 211,0                               | 1160 x 320 x 390   | 85,0           | 2350 x 400 x 664   | 310,0          |
|  | ER41-132/4  | 110,0/132,0                                  | 211,0                               | 250,0                               | 1160 x 320 x 390   | 85,0           | 2350 x 400 x 664   | 310,0          |
|  | ER41-160/4  | 132,0/160,0                                  | 250,0                               | 302,0                               | 1160 x 320 x 390   | 85,0           | 2350 x 400 x 664   | 310,0          |
|  | ER41-200/4  | 160,0/200,0                                  | 302,0                               | 370,0                               | 1190 x 440 x 377   | 140,0          | 2350 x 600 x 664   | 420,0          |
|  | ER41-250/4  | 200,0/250,0                                  | 370,0                               | 477,0                               | 1190 x 595 x 377   | 170,0          | 2350 x 600 x 664   | 420,0          |
|  | ER41-315/4  | 250,0/315,0                                  | 477,0                               | 590,0                               | 1190 x 595 x 377   | 215,0          | 2350 x 600 x 664   | 420,0          |
|  | ER41-355/4  | 280,0/355,0                                  | 520,0                               | 660,0                               | 2150 x 800 x 664   | 650,0          | 2350 x 800 x 664   | 682,0          |
|  | ER41-400/4  | 315,0/400,0                                  | 590,0                               | 730,0                               | 2150 x 800 x 664   | 650,0          | 2350 x 800 x 664   | 682,0          |
|  | ER41-450/4  | 355,0/450,0                                  | 660,0                               | 830,0                               | 2150 x 800 x 664   | 650,0          | 2350 x 800 x 664   | 682,0          |
|  | ER41-500/4  | 400,0/500,0                                  | 730,0                               | 900,0                               | 2150 x 800 x 664   | 650,0          | 2350 x 800 x 664   | 682,0          |
|  | ER41-560/4  | 450,0/560,0                                  | 830,0                               | 1020,0                              | 2150 x 1200 x 664  | 850,0          | 2350 x 1200 x 664  | 904,0          |
|  | ER41-630/4  | 500,0/630,0                                  | 900,0                               | 1140,0                              | 2150 x 1200 x 664  | 850,0          | 2350 x 1200 x 664  | 904,0          |
|  | ER41-710/4  | 560,0/710,0                                  | 1020,0                              | 1260,0                              | 2150 x 1200 x 664  | 1100,0         | 2350 x 1400 x 664  | 1159,0         |
|  | ER41-800/4  | 630,0/800,0                                  | 1140,0                              | 1420,0                              | 2150 x 1200 x 664  | 1100,0         | 2350 x 1400 x 664  | 1159,0         |

Higher power on request / Low Harmonics on request / 690V on request

(1) See next page: Overload capacity, (2) See next page: Voltage and power range, (3) See next page: Protection classes

## TECHNICAL SPECIFICATIONS

### Power connection

#### (2) Voltage and power range:

- 3~380 bs 480 V, +10/-15%, ER41-...K: 0,75 – 160 kW
- 3~380 bs 480 V, +10/-15%, ER41-...G: 0,75 – 90 kW
- 3~380 bs 440 V, +10/-15%, ER41-...G: 110 – 315 kW
- 3~380 bs 415 V, +10/-15%, ER41-...K/G: 355 – 800 kW
- frequency: 50/60 Hz +/-5%

### Motor connection

- Voltage: 3-phase, from 0 to  $U_{Net}$
- frequency: 0,0018 to 500 Hz

### (1) Overload capacity

- ND:  $I_n$  = Continuous output current with 1.2x overload for 60 sec.
- HD:  $I_n$  = Continuous output current with 1.5x overload for 60 sec

### Switching frequency

- Adjustable: 0,75 – 45 kW 1...16 kHz  
55 – 800 kW 1...8 kHz

### Ramp time

- 0,01 to 6000 sec.

### Limits for environmental conditions

#### Ambient temperature:

- IP21:
  - -15 to 50°C, without power reduction, without ice formation
  - 50 to 60°C,  $f_{schalt}$  max. 4 kHz, with power reduction
- IP23/54/55:
  - -15 to 40°C, without power reduction, without ice formation
  - 40 to 50°C,  $f_{schalt}$  max. 4 kHz, with power reduction

#### Installation height:

- 1000 m above NN without power reduction
- Reduction of 1%/100 m over 1000 to 4800 m

#### Relative humidity:

- 5...95% (no condensation, no dew, IEC 60068-2-3)

### (3) Protection classes

- IP21: ER41-...KS: 0,75 – 315 kW
- IP23: ER41-...KS: 355 – 800 kW
- IP55: ER41-...GS: 0,75 – 90 kW
- IP54: ER41-...GS: 110 – 800 kW

#### Resistance to harsh environmental conditions:

- Chemical class 3C3, Mechanical class 3S3, according to IEC/EN 69721

#### Certificates:

- CE, UL, CSA, DNV, C-Tick, NOM117, EAC and ATEX

#### Environmental class:

- Class 3C3 according to IEC 60721-3-3

## Do you have any questions about the ER41S?

Contact us! We'll be happy to help you!

The operating instructions and further information about the ER41 KS/GS and all BLEMO® products can be found at [www.blemo.com](http://www.blemo.com)

### Programmable inputs and outputs:

#### Three configurable analog inputs:

- AI1, AI2, AI3: 0...10 VDC, 0(4)...20 mA, 12 Bit  
Sampling time 5ms +/- 1ms, accuracy +/-0,6%, linearity +/- 0,15%  
AI1, AI2, AI3 configurable fo: PT100, PT1000, KTY84, PTC, water level sensor

#### Two analog outputs:

- AQ1, AQ2: 0(4) to 20 mA or 0 to 10 VDC

#### Eight digital inputs:

- DI1...DI8: 8 programmable logic inputs  
24 V DC; input impedance 3.5 kΩ, sampling time: 2ms± 0.5ms; DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC

#### security entrance:

- STOA, STOB: safely switched off torque;  
SIL3/PlE

#### Three relay outputs:

- R1A, R1B, R1C: potential-free relay output, 1Ö/1S
- R2A, R2C: potential-free relay output, 1S
- R3A, R3C: potential-free relay output, 1S  
Ohmic load 3A at 250 VAC/30VDC, ind. load 2A at 250 VWS/30VDC, max. response time 7ms +/-0,5 ms

#### One digital input:

- DQ+/DQ- (open collector): 0...1 kHz <math>\leq 30 V DC</math>, 100mA  
programmable as pulse output DQ+ 0...30 kHz <math>\leq 30 V DC</math>, 20 mA

#### Additional inputs and outputs:

- 24V: supply voltage +24 VDC, 200 mA
- 10V: supply voltage +10 VDC, 10 mA
- P24: external power supply input  
24 VDC, max. 800 mA
- COM: 0 V, mass

#### Communication protocols:

- RJ45 serial Modbus and Ethernet-Modbus-TCP

#### Produkt-Konformität:

- CE marking: Low Voltage Directive 73/23/CEE with amendments, Machinery Directive 98/37/EC, EMV-Directive 89/336/CEE with amendments

#### Standards and approvals:

- EMC Directive 2014/30/EU: IEC/EN 61800-3: 2004 +A1:2011
- LV Directive 2014/35/EU: IEC/EN 61800-5-1: 2007

#### Optional modules:

- CANopen-module
- PROFIBUS DP-V1-module
- EtherCAT-module
- E/A-module
- Digital-encoder-module
- Resolver-encoder-module
- PROFIsafe
- PROFINET-module
- POWERLINK-module
- Device-net-module
- Relais-module
- Analog-encoder-module
- Security module