

General Purpose Inverter E3

Cost-effective, user-friendly industrial inverters for rugged, reliable control



General Purpose Inverter E3

The E3 range is available with IP20 and IP66 enclosures to suit customer needs. Dust-tight and ready for washdown, the IP66-rated general purpose inverters can be mounted directly on your processing equipment. The IP20-rated inverters can be mounted in control cabinets or in machine parts providing the required protection. The E3 range also features the world's first fully digital drive for low power single phase motors. Designed for use with permanent split capacitor (PSC) or shaded pole, single phase induction motors.



The easy-to-use, cost competitive solution to motor control

The Beijer Electronics General Purpose Inverter E3 range is dedicated to low power applications, combining innovative technology, reliability, robustness and ease-of-use.

Intuitive keypad control

Precise digital control at the touch of a button.

Simple commissioning

14 parameter basic setup. Default settings suitable for most applications. Contactor style connection for simple wiring.

Integral RFI filter

- Built-in filter for full EMC compliance removable by a screw
- Vector control
- For applications requiring high starting torque and constant speed

Modbus RTU and CANopen

Easy integration with your control and monitoring systems.

Brake chopper (sizes 2, 3 and 4)

Dynamic and compact options with heatsink mounted resistor.

High overload capability

- 150% overload for 60 sec
- 175% overload for 2 sec

Industrial ambient ratings

- IP20 enclosure: 50°C
- IP66 enclosure: 50°C for outdoor mounting

OEM

Smartstick with RJ-45 connection to inverter for easy parameter up or download. The Smartstick can also communicate with the PC software tool BFI Tools or a smartphone with the BFI Mobile app installed.

Fire mode

For building automation safety systems.





IP20

- **IP20**
The IP20-rated inverters can be mounted in control cabinets or in machine parts providing the required protection.
- **IP20 explained:**
Protection against fingers or other object not greater than 80 mm in length and 12 mm in diameter. No moisture protection.



IP66

- **Dust-tight design**
Install in-situ and be sure of protection from dust and contaminants.
- **Ready for washdown**
With a sealed ABS enclosure and corrosion resistant heatsink, the General Purpose Inverter E3 is ideal for high pressure washdown applications.
- **On-drive control**
Switched IP66 models feature convenient controls for speed control, REV/OFF/FWD and Power ON/OFF, complete with safety lock.
- **Indoor or outdoor mounting**

Non-switched IP66 models available.



Ideal for:

- Bottling
- Pumping
- Waste water
- HVAC
- Conveyor
- Baggage handling
- Exercise
- Packaging
- Woodworking
- Ceramics
- Building automation

Recommended for:

- Paper
- Petroleum
- Food processing
- Aggregate/cement
- Mining
- Textile
- Horticultural
- Chemical
- Agricultural

Options

- Dynamic braking resistor
- Mains supply input chokes
- Motor output filter, recommended for long cable runs
- 2 Relay output option
- Remote mounting keypad
- RJ-45 cables and splitters
- Isolated RS485 USB adaptor
- Commissioning and storage software for PC
- PC-program for settings
- Parameter Optistick with RJ-45 connection and Bluetooth communication

Order number	Description	Part number
BFI-E3 Input 1-phase 200-240 VAC, Output 3-phase, IP20, EMC-filter		
BFI-E3-12-0023-1F12	0,37kW, 2, 3A, Size 1, No Bracketransistor	61500
BFI-E3-12-0043-1F12	0,75kW, 4, 3A, Size 1, No Bracketransistor	61501
BFI-E3-12-0070-1F12	1,5kW, 7A, Size 1, No Bracketransistor	61502
BFI-E3-22-0070-1F42	1,5kW, 7A, Size 2, Bracketransistor	61503
BFI-E3-22-0105-1F42	2,2kW, 10,5A, Size 2, Bracketransistor	61504
BFI-E3-32-0153-1042	4,0kW, 15,3A, Size 3, Bracketransistor, No EMC-filter	61505
BFI-E3 Input 1-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter		
BFI-E3-12-0023-1F1A	0,37kW, 2, 3A, Size 1, No Bracketransistor	63510
BFI-E3-12-0043-1F1A	0,75kW, 4, 3A, Size 1, No Bracketransistor	63511
BFI-E3-12-0070-1F1A	1,5kW, 7A, Size 1, No Bracketransistor	63512
BFI-E3-22-0070-1F4A	1,5kW, 7A, Size 2, Bracketransistor	63513
BFI-E3-22-0105-1F4A	2,2kW, 10,5A, Size 2, Bracketransistor	63514
BFI-E3-32-0153-1F4A	4,0kW, 15,3A, Size 3, Bracketransistor	63515
BFI-E3 Input 1-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter, Mainswitch, Handcontrol		
BFI-E3-12-0023-1F1B	0,37kW, 2, 3A, Size 1, No Bracketransistor	63520
BFI-E3-12-0043-1F1B	0,75kW, 4, 3A, Size 1, No Bracketransistor	63521
BFI-E3-12-0070-1F1B	1,5kW, 7A, Size 1, No Bracketransistor	63522
BFI-E3-22-0070-1F4B	1,5kW, 7A, Size 2, Bracketransistor	63523
BFI-E3-22-0105-1F4B	2,2kW, 10,5A, Size 2, Bracketransistor	63524
BFI-E3-32-0153-1F4B	4,0kW, 15,3A, Size 3, Bracketransistor	63525
BFI-E3 Input/Output 3-phase 200-240 VAC, IP20, EMC-filter, Bracketransistor		
1,5 to 11kW, Contact Beijer Electronics for more information.		
BFI-E3 Input/Output 3-phase 200-240 VAC, IP66, EMC-filter, Bracketransistor		
1,5 to 11kW, Contact Beijer Electronics for more information.		
BFI-E3 Input/Output 3-phase 200-240 VAC, IP66, EMC-filter, Mainswitch, Handcontrol		
1,5 to 11kW, Contact Beijer Electronics for more information.		
BFI-E3, Input/Output 3-phase 380-480 VAC, IP20, EMC-filter		
BFI-E3-14-0022-3F12	0,75kW, 2,2A, Size 1, No Bracketransistor	61560
BFI-E3-14-0041-3F12	1,5kW, 4,1A, Size 1, No Bracketransistor	61561
BFI-E3-24-0041-3F42	1,5kW, 4,1A, Size 2, Bracketransistor	61562
BFI-E3-24-0058-3F42	2,2kW, 5,8A, Size 2, Bracketransistor	61563
BFI-E3-24-0095-3F42	4kW, 9,5A, Size 2, Bracketransistor	61564
BFI-E3-34-0140-3F42	5,5kW, 14A, Size 3, Bracketransistor	61565
BFI-E3-34-0180-3F42	7,5kW, 18A, Size 3, Bracketransistor	61566
BFI-E3-34-0240-3F42	11kW, 24A, Size 3, Bracketransistor	61567
BFI-E3-44-0300-3F42	15kW, 30A, Size 4, Bracketransistor	61568
BFI-E3-44-0390-3F42	18kW, 39A, Size 4, Bracketransistor	61569
BFI-E3-44-0460-3F42	22kW, 46A, Size 4, Bracketransistor	61570
BFI-E3-54-0610-3F42	30kW, 61A, Size 5, Bracketransistor	61571
BFI-E3-54-0720-3F42	37kW, 72A, Size 5, Bracketransistor	61572
BFI-E3, Input/Output 3-phase 380-480 VAC, Output 3-phase, IP66, EMC-filter		
BFI-E3-14-0022-3F1A	0,75kW, 2,2A, Size 1, No Bracketransistor	63580
BFI-E3-14-0041-3F1A	1,5kW, 4,1A, Size 1, No Bracketransistor	63581
BFI-E3-24-0041-3F4A	1,5kW, 4,1A, Size 2, Bracketransistor	63582
BFI-E3-24-0058-3F4A	2,2kW, 5,8A, Size 2, Bracketransistor	63583
BFI-E3-24-0095-3F4A	4kW, 9,5A, Size 2, Bracketransistor	63584
BFI-E3-34-0140-3F4A	5,5kW, 14A, Size 3, Bracketransistor	63585
BFI-E3-34-0180-3F4A	7,5kW, 18A, Size 3, Bracketransistor	63586
BFI-E3-34-0240-3F4A	11kW, 24A, Size 3, Bracketransistor	63587
BFI-E3-44-0300-3F4A	15kW, 30A, Size 4, Bracketransistor	63588
BFI-E3-44-0390-3F4A	18,5kW, 39A, Size 4, Bracketransistor	63589
BFI-E3-44-0460-3F4A	22kW, 46A, Size 4, Bracketransistor	63579
BFI-E3, Input/Output 3-phase 380-480 VAC, IP66, EMC-filter, Mainswitch, Handcontrol		
BFI-E3-14-0022-3F1B	0,75kW, 2,2A, Size 1, No Bracketransistor	63590
BFI-E3-14-0041-3F1B	1,5kW, 4,1A, Size 1, No Bracketransistor	63591
BFI-E3-24-0041-3F4B	1,5kW, 4,1A, Size 2, Bracketransistor	63592
BFI-E3-24-0058-3F4B	2,2kW, 5,8A, Size 2, Bracketransistor	63593
BFI-E3-24-0095-3F4B	4kW, 9,5A, Size 2, Bracketransistor	63594
BFI-E3-34-0140-3F4B	5,5kW, 14A, Size 3, Bracketransistor	63595
BFI-E3-34-0180-3F4B	7,5kW, 18A, Size 3, Bracketransistor	63596
BFI-E3-34-0240-3F4B	11kW, 24A, Size 3, Bracketransistor	63597
BFI-E3-44-0300-3F4B	15kW, 30A, Size 4, Bracketransistor	63598
BFI-E3-44-0390-3F4B	18,5kW, 39A, Size 4, Bracketransistor	63599
BFI-E3-44-0460-3F4B	22kW, 46A, Size 4, Bracketransistor	63600
BFI-E3 Input 1-phase 110 VAC, Output 3-phase 200-240 VAC, IP20		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
BFI-E3 Input 1-phase 110 VAC, Output 3-phase 200-240 VAC, IP66		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
BFI-E3 Input 1-phase 110 VAC, Output 3-phase 200-240 VAC, IP66, Mainswitch, Handcontrol		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
BFI-E3 Input/Output 1-phase 200-240 VAC, EMC-filter, IP20		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
BFI-E3 Input/Output 1-phase 200-240 VAC, EMC-filter, IP66		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
BFI-E3 Input/Output 1-phase 200-240 VAC, EMC-filter, IP66, Mainswitch, Handcontrol		
0,37 to 1,1 kW, Contact Beijer Electronics for more information.		
Internal Options		
ODP-2ROUT-BFI	Second relay output card	63112
OD-BR100-BFI	Internal brakeresistor for IP20, 100ohm, 200W	63101
External Options		
OPT-2-OPPAD-BFI	OLED Remote External Keypad	63201
OPT-3-STICK-BFI	BFI SmartStick Bluetooth, Copy/Paste Parameters, Supports Smartphones and BFI-Tools on Windows 10	63489
OPT-3-WLKIT-BFI	BFI SmartStick Bluetooth, Copy/Paste Parameters, Supports Smartphones and BFI-Tools on Windows 7, 8, 10	63490
OPT-3-PCKIT-BFI	BFI SmartStick Bluetooth, Copy/Paste Parameters, Supports Smartphones and BFI-Tools on Windows 7, 8, 10 and supports NFC	63491
OPT-J4505-BFI	RS-485 Data Cable 0,5m	63144
OPT-J4510-BFI	RS-485 Data Cable 1,0m	63145
OPT-J4530-BFI	RS-485 Data Cable 3,0m	63146
OPT-2-J455P	RS-485 Serial communication Data Cable 2-port RJ45 Splitter for BFI-H3/P2/E3 for Modbus RTU and CANopen	63148
OPT-2-RJTRM-BFI	RJ-45 End termination plug for CANopen and Modbus RTU communication with BFI	63202
CAB113	3m cable with 9-pole D-sub and RJ-45 between X2-series and BFI-H3/P2/E3 for Modbus RTU	660000290
CAB114	3m cable for screwterminals and RJ-45 between PLC and BFI-H3/P2/E3 for Modbus RTU	660000291
CAB115	3m cable with USB B and RJ45 (RS485) between PC and BFI-H3/P2/E3	660000292
CAB154	3m cable with 9-pole D-sub and RJ-45 between XC2 control, BFI-P2/E3 for CANopen communication	100-1179
CAB155	3m cable for screwterminals and RJ-45 between PLC and BFI-P2/E3 for CANopen communication	100-1180

Drive specifications

	Feature	Technical data
Input ratings	Supply voltage	110-115V ± 10% 200-240V ± 10% 380-480V ± 10%
	Supply frequency	48-62Hz
	Displacement power factor	> 0,98
	Phase imbalance	3% maximum allowed
	Inrush current	< rated current
	Power cycles	120 per hour maximum, evenly spaced
	Output ratings	Output power
Overload capacity		150% for 60 seconds, 175% for 2.5 seconds
Output frequency		0-500Hz, 0.1Hz resolution
Typical efficiency		> 98%
Temperature		Storage: -40 to 60°C Operating: -10 to 50°C (IP20)
Altitude		Up to 1000m ASL without/ Up to 2000m maximum UL approved derating/Up to 4000m maximum (non UL)
Ambient conditions	Humidity	95% max, non condensing
	Vibration	Conforms to IEC 61800-5-1
	Ingress protection	IP20, IP66
Enclosure	Keypad	Built-in keypad as standard Optional remote mountable keypad
	Display	7 segment LED
Programming	PC-software	BFI Tools
	App for Adroid and IOS	BFI-Tools Mobile
Control specification	Control method	V/F voltage vector / Energy optimized V/F/ Sensorless vector speed control/ PM vector control/ BLDC control/ Synchronous reluctance
	PWM frequency	4-32kHz effective
Control specification	Stopping mode	Ramp to stop: User adjustable 0.1-600 seconds Coast to stop
	Braking	Motor flux braking, built in brake transistor (not frame size 1)
Control specification	Skip frequency	Single point, user adjustable 0 to 10 V, 10-0
	Setpoint control	0 to 20mA, 20 to 0mA, 4 to 20mA, 20 to 4 mA Motorised potentiometer (keypad) Modbus RTU, CANopen
Fieldbus	Built-in	CANopen: 125-1000 kbps Modbus RTU: 9.6-115.2 kbps selectable
	I/O specification	Power supply
I/O specification	Programmable inputs	2 digital 2 analog/digital selectable
	Digital inputs	8-30 V DC, internal or external supply Response time < 4ms Resolution: 12 bits
I/O specification	Analog inputs	Response time: < 4ms Accuracy: < 2% full scale Parameter adjustable scaling and offset
	Programmable outputs	1 analog/digital, 1 relay
I/O specification	Relay outputs	Maximum voltage: 250 V AC, 30 VDC Switching current capacity: 6A AC, 5A DC
	Analog outputs	0 to 10 V
Control features	PI control	Internal PI controller Standby/sleep function
	Fire mode	Bidirectional Selectable speed setpoint (fixed, PI, analog, fieldbus)
Maintenance & diagnostics	Fault memory	Last 4 trips stored with time stamp
	Data logging	Logging of data prior to trip for diagnostic purposes: Output current, drive temperature, DC bus voltage
	Monitoring	Hours run meter
Standards compliance	Low voltage directive	2014/35/EU
	EMC directive	2014/30/EU Cat C1 according to EN61800-3:2004/A1 2012
Standards compliance	Environmental class	IP20 Drives: 3S2/3C2 IP55 & 66 Drives: 3S3/3C3
	Additional conformance	UL, cUL, CE

E3 IP66	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Fixings
Size 1	232	161	162	2.5	4 × M4
Size 2	257	188	182	3.5	4 × M4
Size 3	310	210.5	238	7	4 × M4
Size 4	360	240	275	9.5	4 × M4

E3 IP20	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)	Fixings
Size 1	173	83	123	1.0	4 × M5
Size 2	221	110	150	1.7	4 × M5
Size 3	261	131	175	3,2	4 × M5
Size 4	420	171	212	9,1	4 × M8
Size 5	486	222	226	18	4 × M8

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