



BFI-P2-44-0240-3F4N-MN

Article number 60223

Output power 11 kW
Output 3x400 VAC, 24 A
Input voltage 3x380-480 VAC
IP55

Facts

General description

Article number	60223
Warranty	3 years

Mechanical

IP class	IP55
Physical size	Size 4
Measurements (H x W x D)	450 mm x 171 mm x 252 mm
Weight	12 kg
Typical power loss at rated power	2 % of rated power
Main switch	Yes, as option
Built in Main switch, control switch and potentiometer	No
Conformal coated PCBs	Yes, IEC 60721-3-3, 3S3/3C3

Output ratings

Output voltage	3 x 400 VAC
Rated motor current	24 A
Overload capacity	150% for 60 seconds, 200% for 4 seconds
Motor power	11 kW
Output frequency	0 – 500Hz, 0.1Hz resolution
Supported motor types	3 phase AC induction (IM), AC permanent magnet (PM), Brushless DC (BLDC), Synchronous reluctance (SynRM)
Built-in brake transistor	Yes
Regenerative capacity	100 % ED

Input ratings

Supply voltage	380 – 480VAC $\pm$ 10%
Voltage fluctuations	+/- 10%
Phase imbalance	3% maximum allowed
Displacement factor	> 0.98
Supply frequency	48 – 62Hz
Power cycles	120 per hour maximum, evenly spaced

Control specification

Control modes	V/F Voltage Vector, Energy Optimised V/F, Sensorless Vector Speed Control, Sensorless Vector Torque Control, Synchronous Reluctance Motor Control, Brushless DC Motor Control, Closed Loop (Encoder) Speed Control, Closed Loop (Encoder) Torque Control, Open Loop PM Vector Control
Current/torque limitation	Torque and current limitation
PWM frequency	4-32 kHz effective
Stopping mode	Ramp to Stop: User Adjustable 0.01 – 600 seconds, Fast stop, Coast to Stop
Braking	Motor Flux Braking, Built-in Braking Transistor
Skip frequency	Yes
Analog setpoint control	0 to 10V, 10 to 0V, -10 to 10V, 0 to 20mA, 20 to 0mA, 4 to 20mA, 20 to 4mA
Digital setpoint control	8 fixed speeds, Motorised Potentiometer, Internal PLC, Keypad, Modbus RTU, CANopen, Optional: PROFIBUS DP, DeviceNet, EtherNet/IP, EtherCat, PROFINET, Modbus TCP, CC-Link

Communication

Modbus RTU	Yes, 9.6 - 115.2 kbps (8N1, 8N2, 8E1, 8O1)
BACnet MS/TP	No
Modbus TCP	Yes, external option
Ethernet IP	Yes, external option
EtherCat	Yes, external option
Profinet IO	Yes, external option
Profibus DP(DPV1)	Yes, external option
Device Net	Yes, external option
CC-Link	Yes, external option
CAN open	Yes, 125-1000 kbps

Display

Programmable display	Yes
Multi language OLED display	TFT Display
External OLED display	Yes, TFT Display
LED display	No

HVAC

PID-control	Yes with sleep/wake up functionality
Spin start	Yes
Pump dry protection	No
Pump prime and burst protection	No
Stir function	No
Motor pre-heat	No
Broken impeller and broken belt detection	No
Automatic cleaning for pumps	No
Bypass control	Yes
Fire mode	No

Control terminals

Power supply	100 mA @ 24 VDC, 20 mA @ 10 VDC
Inputs	5 in total, 3 Digital, 2 Analog or Digital, selectable
Digital inputs	10-30 V DC, PNP, Response time: < 4 msec, Internal or external supply
Analog inputs	Resolution:12 bit, Response time: <4 msec; Accuracy: <± 2% of full scale, Adjustable scaling
Outputs	4 total, 2 relays, 2 analog or digital
Digital transistor outputs	24VDC/20 mA, Internal supply
Relay outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 5A AC, 5A DC
Analog outputs	0 to 10 Volt, 0 to 20mA, 4 to 20mA
Safety inputs	2
Extra IOs	Yes, internal option

Control features

Speed control Master/slave	Yes, Master and slave
Modbus master functionality	Yes, Master and slave
Advanced hoist control	Yes
Built-in PLC	Yes

Standard compliances

Low voltage directive	2014/35/EU
EMC directive	2014/30/EU
Conformance	CE, UL, cUL
Machine directive	98/37/EC
Marine approvals	DNV
Safe torque OFF	Cat 3/PL"d" According to ISO 13849-1, SIL CL 2 According to EN61800-5-2 / EN62061 / IEC61508
Restriction of hazardous substances	RoHS2
Registration evaluation and authorisation of chemicals	Reach
Earth leakage current	EN 61800-5-1: 2007. Test techniques EN 60990:2000. 1x230 VA < 2,5 mA, 3x400VAC < 4,65 during runing
DC Bus discharge time	EN 61800-5-1:2007
Electrostatic discharge	EN 61800-3:2004+A1-2012. Test techniques EN 61000-4-2:2009.
Dielectric strength	61800-5-1: 2007
Surge	EN 61800-3: 2004+A1-2012. Test techniques EN 61000-4-5:2006.
Electrical fast transient burst	EN 61800-3: 2004+A1-2012. Test techniques EN 61000-4-4:2004.

Ambient conditions

Temperature operation	-10 to 40 °C
Humidity	95% max, non-condensing

Maintenance

Fault memory	Last 4 Trips stored with time stamp
Data logging	Logging of data prior to trip, Current, Temperature, DC Bus Voltage
Maintenance indicator	Yes. Onboard service life monitoring
Monitoring	Hours Run Meter, kWh/MWh meter

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Visiting address HQ: Stora Varvsgatan 13a

SE - 211 75 Malmö, SWEDEN

+46 40 35 86 00 (tel:+46 40 35 86 00)

info@beijerelectronics.com (mailto:info@beijerelectronics.com)