



**BFI-E3-12-0023-1F12**

Article number 61500

Output power 0.37 kW  
Output 3x230 VAC, 2.3 A  
Input voltage 1x200-240 VAC  
IP20

**Facts**

General description

|                |         |
|----------------|---------|
| Article number | 61500   |
| Warranty       | 3 years |

Mechanical

|                                                        |                                    |
|--------------------------------------------------------|------------------------------------|
| IP class                                               | IP20                               |
| Physical size                                          | Size 1                             |
| Measurements (H x W x D)                               | 173 mm x 83 mm x 123 mm            |
| Weight                                                 | 1.0 kg                             |
| Typical power loss at rated power                      | 0,02                               |
| Main switch                                            | No                                 |
| Built in Main switch, control switch and potentiometer | No                                 |
| Conformal coated PCBs                                  | Yes, 3C2/3S2 conformal coated PCBs |

Output ratings

|                           |                                           |
|---------------------------|-------------------------------------------|
| Output voltage            | 3 x 230 VAC                               |
| Rated motor current       | 2.3 A                                     |
| Overload capacity         | 150% for 60 seconds, 175% for 2,5 seconds |
| Motor power               | 0.37 kW                                   |
| Output frequency          | 0 – 500Hz, 0.1Hz resolution               |
| Built-in brake transistor | No                                        |
| Regenerative capacity     | No brake transistor                       |

## Input ratings

|                      |                                     |
|----------------------|-------------------------------------|
| Supply voltage       | 200 – 240VAC ± 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, Synchronous Reluctance Motor Control, Brushless DC Motor Control, Open Loop PM Vector Control |
| Current/torque limitation | Current limitation                                                                                                                                                       |
| PWM frequency             | 4-32 kHz effective                                                                                                                                                       |
| Stopping mode             | Ramp to Stop: User Adjustable 0.1 – 600 seconds,Coast to Stop                                                                                                            |
| Braking                   | Motor Flux Braking                                                                                                                                                       |
| Skip frequency            | No                                                                                                                                                                       |
| Analog setpoint control   | 0 to 10V, 10 to 0V, 0 to 20mA, 20 to 0mA, 4 to 20mA, 20 to 4mA                                                                                                           |
| Digital setpoint control  | 4 fixed speeds, Motorised Potentiometer, Keypad, Modbus RTU, CANopen                                                                                                     |

## Communication

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

## Display

|                             |     |
|-----------------------------|-----|
| Programmable display        | No  |
| Multi language OLED display | No  |
| External OLED display       | Yes |
| LED display                 | Yes |

## HVAC

|                                           |                               |
|-------------------------------------------|-------------------------------|
| PID-control                               | PI-control with sleep/wake up |
| 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                            | No                            |
| Fire mode                                 | Yes                           |

## Control terminals

|                            |                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------|
| Power supply               | 100 mA @ 24 VDC, 20 mA @ 10 VDC                                                              |
| Inputs                     | 4 in total, 2 Digital, 2 Analog or Digital, selectable                                       |
| Digital inputs             | 8-30 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                    | 2 total, 1 relay, 1 analog or digital                                                        |
| Digital transistor outputs | 24VDC/20 mA, Internal supply                                                                 |
| Relay outputs              | Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC                    |
| Analog outputs             | 0 to 10 V, 10 to 0 V, 0 to 20mA, 20 to 0mA, 4 to 20mA, 20 to 4mA                             |
| Safety inputs              | No                                                                                           |
| Extra IOs                  | No                                                                                           |

## Control features

|                             |       |
|-----------------------------|-------|
| Speed control Master/slave  | Slave |
| Modbus master functionality | No    |
| Advanced hoist control      | No    |
| Built-in PLC                | No    |

## Standard compliances

|                                                        |                                                                                                     |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Low voltage directive                                  | 2014/35/EU                                                                                          |
| EMC directive                                          | 2014/30/EU Cat C1 according to EN61800-3:2004                                                       |
| Conformance                                            | CE, UL                                                                                              |
| Machine directive                                      | 2006/42/EC                                                                                          |
| Marine approvals                                       | No                                                                                                  |
| Safe torque OFF                                        | No                                                                                                  |
| 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 | -20 to 50 °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 | No                                                                  |
| Monitoring            | Hours Run Meter, kWh/MWh meter                                      |

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