

# Performance Inverter P2

Excellent usability, high performance  
inverters for advanced motor control



“ High performance, excellent usability and flexible to meet the needs of your application

▶ IP55

▶ Keyhole mounts for fast installation

▶ Modbus RTU and CANopen on board as standard

▶ Integrated brake transistor

▶ High-quality long-life fans

▶ Integrated EMC filter

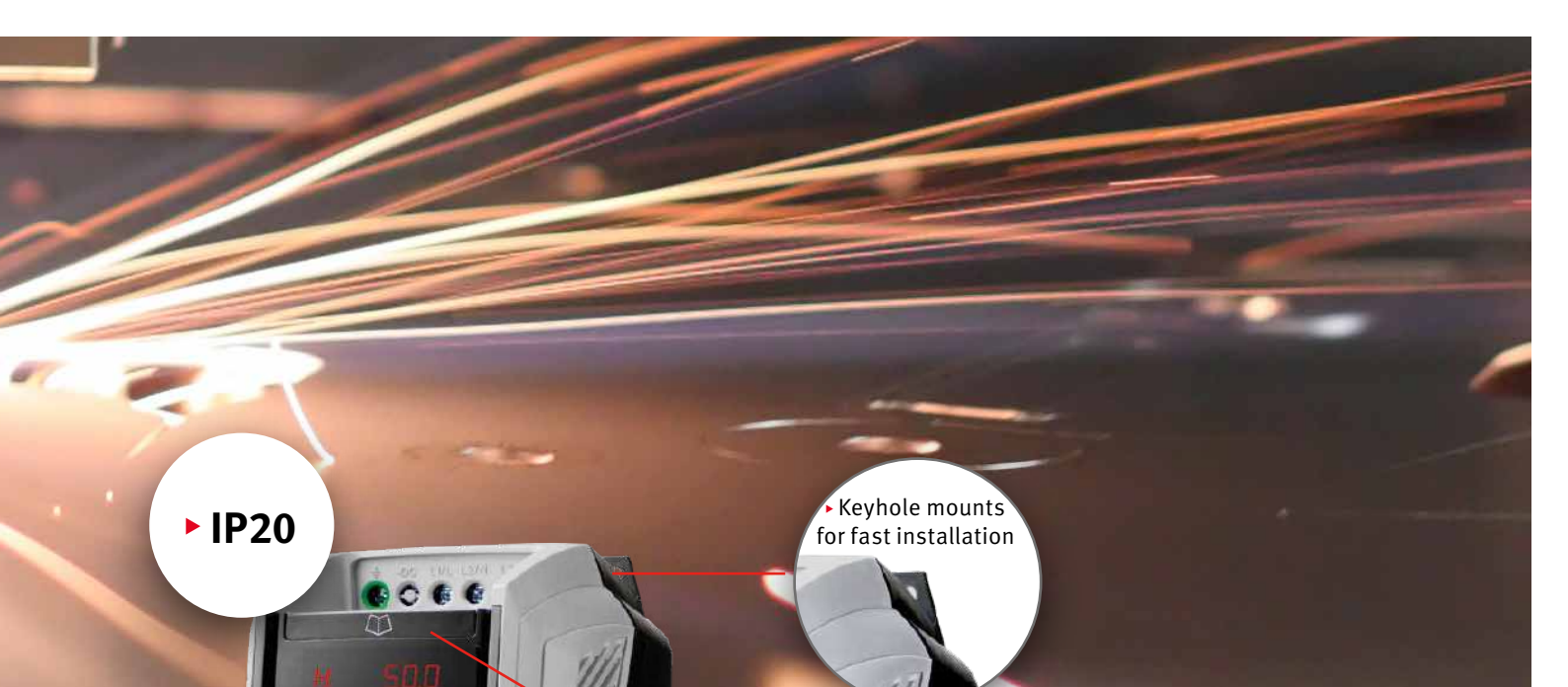
▶ Integrated cable management

▶ Multi language OLED display for instance Swedish

▶ Pluggable control terminals

▶ Plug-in modules





► IP20



► Keyhole mounts for fast installation

► Convenient reference card

► DIN rail mount

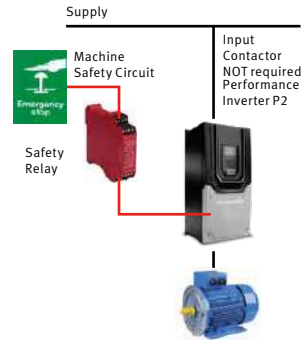
► Contactor-style power wiring arrangement

**Safe torque off (provided as standard)**

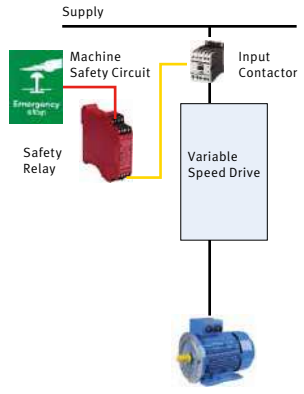
Performance Inverter P2 features a safe torque off function to allow simple integration into machine critical safety circuits.

- Simple machine design reduces component costs, saves panel space and minimizes installation time
- Faster shut down and reset procedures reduce system maintenance time
- Better safety standard compared to mechanical solution
- Better motor connection
- Single cable with no interruption

**With**



**Without**





“ World leading control for the latest generation of permanent magnet and standard induction motors

## World leading motor control

The Performance Inverter P2 offers the perfect combination of high performance together with ease of use to allow even the most demanding applications to be tackled easily.

- Designed for fast installation and commissioning, Performance Inverter P2 provides the most cost effective solution for industry.
- All Performance Inverter P2 units provide 150% overload for 60 seconds as standard, 200% overload for 2 seconds, ensuring each drive is suitable for heavy duty applications, whilst the IP55/IP66 enclosed versions ensure the drive is tough enough to survive in industrial environments.
- Extensive I/O and communications interface capabilities ensure the drive can be integrated quickly and efficiently into a wide variety of control systems with the minimum commissioning time, ensuring rapid start-up. The simple parameter structure and carefully selected factory parameter settings ensure that commissioning time is kept to a minimum.



Compliant with international standards.

### Drive system efficiency

The **blue line** represents what will be considered a “high efficiency” solution using an efficient IM motor, a modern AC drive and efficient gearbox.

The **purple line** represents efficiency of a typical PM motor and drive solution. Efficiency is improved at high speeds and loads, however it is actually reduced at very low loads, and output torque cannot be maintained at low speeds.

The **green line** represents the Performance Inverter P2 controlling the same PM motor. Efficiency is improved at all speeds and loads.

In simple terms, Performance Inverter P2 PM motor control produces the maximum amount of output shaft torque per electrical kW consumed across all speed and torque ranges.

### Advanced motor control

- Beijer Electronics provides developed advanced mathematical algorithms and uses the very latest hardware technology to ensure Performance Inverter P2 provides exceptional motor control with a simple interface to help users easily apply the benefits to their applications.



#### ▶ IP55

Wall mount units available up to 160 kW



#### ▶ IP66

Wall mount units available up to 7.5 kW



#### ▶ IP20

Din-rail units available up to 11 kW

## Drive system efficiency

With today's ever increasing energy costs, efficiency is a key factor in relation to drive system component selection. In many cases, an efficiency figure can be arrived at by simply multiplying the efficiencies of the various components together to find a combined efficiency figure, however this may not tell the whole story. The efficiency of components such as drives, motors and gearboxes can vary considerably with speed and load, hence simply combining the 'headline' efficiency figures can often be very misleading. In reality, the efficiency curves for the whole system should be overlaid, to provide a true efficiency figure for the system across the desired speed and load range.

Modern AC inverters will typically have an electrical efficiency of around 98%, which represents the difference between the electrical output power compared to electrical input power only. A further factor that is often overlooked is the efficiency of the motor control strategy employed by the drive. This can have a significant effect on the overall system efficiency and is often not considered when energy saving calculations are made.

## Future-proof energy efficiency

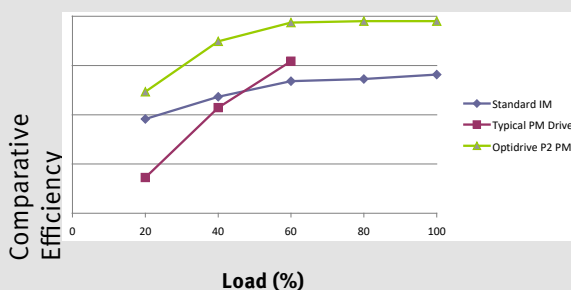
Performance Inverter P2 has been designed and developed to work with both standard induction motors, which typically meet the IE2 efficiency standards currently in place in Europe, and the latest generation of high efficiency PM motors designed to meet the future IE4 requirements. This means that an efficient drive can now be purchased, allowing for a future update of the motor without requiring a change to the installed drive.

Performance Inverter P2 works with all PM motors, controlling them with optimum efficiency for the most efficient PM motor control available.

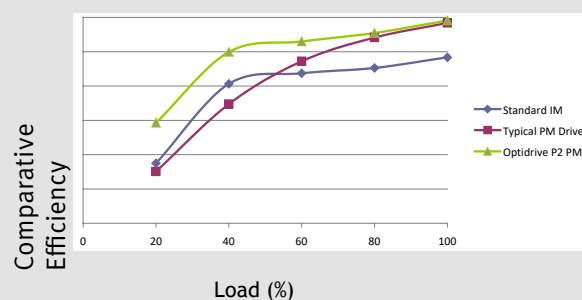
### The graphs below clearly demonstrate these factors:

- The overall efficiency of the system varies with speed and load and is not a constant.
- Motor control efficiency significantly affects overall system efficiency.
- The graphs are generated by measuring the electrical power drawn from the mains supply compared to the torque generated at the output shaft. These are based on a system requirement of 2.2kW motor power generated at the output shaft. These are based on a system requirement of 2.2kW motor power.

### Improvement in efficiency at 10% rated speed output



### Improvement in efficiency at 100% rated speed output





“ High performance, accurate motor control for even the most demanding of applications



**Mining & quarrying**

- Feed conveyers
- Crushers
- Cranes



**Metals & processing**

- Grinding
- Cutting
- Polishing
- Drilling
- Rolling



**Rubber & plastics**

- Extruders
- Moulding
- Mixers
- Winding



**Food & beverage**

- Conveyers
- Pumps
- Mixers
- Palletizers



## Cranes

### Requirements:

- High starting torque
- Smooth motor operation throughout starting and stopping phases
- Motor holding brake control
- Avoidance of load droop and sag
- Regeneration and braking capability during load lowering

### Performance Inverter P2 provides:

- Dedicated hoist mode operation with motor holding brake control algorithm
- Up to 200% torque from zero speed in vector operation without encoder feedback
- Multiple preset speed or variable speed operation
- Built-in dynamic braking transistor, requires only an external resistor

## Compressors

### Requirements:

- Precise regulation of speed to ensure a consistent end product
- High starting torque demand in many applications
- Maximum efficiency under all conditions
- Safe operation to prevent accidents and injuries

### Performance Inverter P2 provides:

- PM motor control mode to allow open loop operation with permanent magnet motors for maximum efficiency
- Maximum starting torque with standard AC motors
- Better than 0.5% speed holding accuracy in open loop vector operation
- Dedicated safe torque off input complies with EN62061 SIL level 2 for safe operation

## Winding

### Requirements:

- Precise control of motor torque over a broad speed range
- Accurate control of material tension under all conditions
- Open or closed loop control capability, based on tension feedback or winding diameter
- Web break protection in case of material breakage

### Performance Inverter P2 provides:

- PID closed loop tension control with feedback from a load cell or dancer arm
- Open loop vector control provides optimum control of the output torque level
- Encoder feedback option allows for a very wide speed range, even down to zero speed
- Safe torque off input immediately disables the drive in emergency conditions



“ Modbus RTU and CANopen on board as standard

Plug-in option modules



Expansion modules

Extended functionality

Encoder feedback

- Closed loop encoder feedback, compatible with a wide range of incremental encoders

Extended I/O

- Additional 3 digital inputs and 1 digital output
- Additional 3 relay output

Fieldbus interfaces - Communication options

Profibus DP



DeviceNet



Ethernet IP



Profinet



Modbus TCP



Ethercat



CC-link





“ A range of external EMC filters, brake resistors, input chokes and output filters are available, to suit all installation requirements

#### BFI Tools



### Powerful PC software

Drive commissioning and parameter backup

- Real-time parameter editing
- Drive network communication
- Parameter upload, download and storage
- Simple PLC function programming
- Parameter upload, download and storage
- Real time scope function and data logging
- Real time data monitoring

*Compatible with Windows XP, Windows Vista & Windows 7, Windows 8, Windows 8.1, Windows 10.*

#### Smartstick



### Rapid commissioning

- Allows rapid copying of parameters between multiple drives
- Provides Bluetooth wireless interface to a PC running BFI Tools or the BFI-Tools Mobile app on a smartphone
- Onboard NFC (Near Field Communication) for rapid data transfer

| Order number   | Description               | Part Number |
|--|---------------------------|-------------|
| <b>BFI-P2 Input 1-phase 200-240 VAC, Output 3-phase, IP20, EMC-filter, LED, Braketransistor</b>                            |                           |             |
| BFI-P2-22-0043-1F42-SN   | 0,75kW, 4, 3A, Size 2     | 60101       |
| BFI-P2-22-0070-1F42-SN   | 1,5kW, 7A, Size 2         | 60102       |
| BFI-P2-22-0105-1F42-SN   | 2,2kW, 10,5A, Size 2      | 60103       |
| <b>BFI-P2 Input 1-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor</b>                           |                           |             |
| BFI-P2-22-0043-1F4X-TN   | 0,75kW, 4, 3A, Size 2     | 60111       |
| BFI-P2-22-0070-1F4X-TN   | 1,5kW, 7A, Size 2         | 60113       |
| BFI-P2-22-0105-1F4X-TN   | 2,2kW, 10,5A, Size 2      | 60115       |
| <b>BFI-P2 Input 1-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor, Main switch, Handcontrol</b> |                           |             |
| BFI-P2-22-0043-1F4Y-TN   | 0,75kW, 4, 3A, Size 2     | 60121       |
| BFI-P2-22-0070-1F4Y-TN   | 1,5kW, 7A, Size 2         | 60123       |
| BFI-P2-22-0105-1F4Y-TN   | 2,2kW, 10,5A, Size 2      | 60125       |
| <b>BFI-P2 Input 3-phase 200-240 VAC, Output 3-phase, IP20, EMC-filter, Braketransistor</b>                                 |                           |             |
| 0,75 to 45 kW. Contact Beijer for more information.  |                           |             |
| <b>BFI-P2 Input 3-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor</b>                           |                           |             |
| 0,75 to 4 kW. Contact Beijer for more information.   |                           |             |
| <b>BFI-P2 Input 3-phase 200-240 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor, Main switch, Handcontrol</b> |                           |             |
| 0,75 to 4 kW. Contact Beijer for more information.   |                           |             |
| <b>BFI-P2 Input 3-phase 200-240 VAC, Output 3-phase, IP55, EMC-filter, OLED, Braketransistor</b>                           |                           |             |
| 5,5-75 kW. Contact Beijer for more information.  |                           |             |
| <b>BFI-P2 Input 3-phase 380-480 VAC, Output 3-phase, IP20, EMC-filter, Braketransistor</b>                                 |                           |             |
| BFI-P2-24-0022-3F42-SN   | 0,75kW, 2,2A, Size 2, LED | 60200       |
| BFI-P2-24-0041-3F42-SN   | 1,5kW, 4,1A, Size 2, LED  | 60201       |
| BFI-P2-24-0058-3F42-SN   | 2,2kW, 5,8A, Size 2, LED  | 60202       |
| BFI-P2-24-0095-3F42-SN   | 4kW, 9,5A, Size 2, LED    | 60203       |
| BFI-P2-34-0140-3F42-SN   | 5,5kW, 14A, Size 3, LED   | 60204       |
| BFI-P2-34-0180-3F42-SN   | 7,5kW, 18A, Size 3, LED   | 60205       |
| BFI-P2-34-0240-3F42-SN   | 11kW, 24A, Size 3, LED    | 60206       |
| BFI-P2-44-0300-3F42-MN   | 15kW, 30A, Size 4, TFT    | 60207       |
| BFI-P2-44-0390-3F42-MN   | 18kW, 39A, Size 4, TFT    | 60208       |
| BFI-P2-44-0460-3F42-MN   | 22kW, 46A, Size 4, TFT    | 60209       |
| BFI-P2-54-0610-3F42-MN   | 30kW, 61A, Size 5, TFT    | 60290       |
| BFI-P2-54-0720-3F42-MN   | 37kW, 72A, Size 5, TFT    | 60291       |
| BFI-P2-64-0900-3F4N-MN   | 45kW, 90A, Size 6A, TFT   | 60292       |
| BFI-P2-64-1100-3F4N-MN   | 55kW, 110A, Size 6A, TFT  | 60293       |
| BFI-P2-64-1500-3F4N-MN   | 75kW, 150A, Size 6B, TFT  | 60294       |
| BFI-P2-64-1800-3F4N-MN   | 90kW, 180A, Size 6B, TFT  | 60295       |
| BFI-P2-84-3700-3F42-TN   | 200kW, 370A, Size 8, OLED | 60265       |
| BFI-P2-84-4500-3F42-TN   | 250kW, 450A, Size 8, OLED | 60268       |
| <b>BFI-P2 Input 3-phase 380-480 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor</b>                           |                           |             |
| BFI-P2-24-0022-3F4X-TN   | 0,75kW, 2,2A, Size 2      | 60211       |
| BFI-P2-24-0041-3F4X-TN   | 1,5kW, 4,1A, Size 2       | 60213       |
| BFI-P2-24-0058-3F4X-TN   | 2,2kW, 5,8A, Size 2       | 60215       |
| BFI-P2-24-0095-3F4X-TN   | 4kW, 9,5A, Size 2         | 60217       |
| BFI-P2-34-0140-3F4X-TN   | 5,5kW, 14A, Size 3        | 60219       |
| BFI-P2-34-0180-3F4X-TN   | 7,5kW, 18A, Size 3        | 60221       |
| <b>BFI-P2 Input 3-phase 380-480 VAC, Output 3-phase, IP66, EMC-filter, OLED, Braketransistor, Main switch, Handcontrol</b> |                           |             |
| BFI-P2-24-0022-3F4Y-TN   | 0,75kW, 2,2A, Size 2      | 60271       |
| BFI-P2-24-0041-3F4Y-TN   | 1,5kW, 4,1A, Size 2       | 60273       |
| BFI-P2-24-0058-3F4Y-TN   | 2,2kW, 5,8A, Size 2       | 60275       |
| BFI-P2-24-0095-3F4Y-TN   | 4kW, 9,5A, Size 2         | 60277       |
| BFI-P2-34-0140-3F4Y-TN   | 5,5kW, 14A, Size 3        | 60279       |
| BFI-P2-34-0180-3F4Y-TN   | 7,5kW, 18A, Size 3        | 60281       |
| <b>BFI-P2 Input 3-phase 380-480 VAC, Output 3-phase, IP55, EMC-filter, OLED, Braketransistor</b>                           |                           |             |
| BFI-P2-44-0240-3F4N-TN   | 11kW, 24A, Size 4         | 60223       |
| BFI-P2-44-0300-3F4N-TN   | 15kW, 30A, Size 4         | 60225       |
| BFI-P2-44-0390-3F4N-TN   | 18kW, 39A, Size 4         | 60227       |
| BFI-P2-44-0460-3F4N-TN   | 22kW, 46A, Size 4         | 60229       |
| BFI-P2-54-0610-3F4N-TN   | 30kW, 61A, Size 5         | 60231       |
| BFI-P2-54-0720-3F4N-TN   | 37kW, 72A, Size 5         | 60233       |
| BFI-P2-64-0900-3F4N-TN   | 45kW, 90A, Size 6         | 60237       |
| BFI-P2-64-1100-3F4N-TN   | 55kW, 110A, Size 6        | 60241       |
| BFI-P2-64-1500-3F4N-TN   | 75kW, 150A, Size 6        | 60245       |
| BFI-P2-64-1800-3F4N-TN   | 90kW, 180A, Size 6        | 60249       |
| BFI-P2-74-2020-3F4N-TN   | 110kW, 202A, Size 7       | 60253       |
| BFI-P2-74-2400-3F4N-TN   | 132kW, 240A, Size 7       | 60257       |
| BFI-P2-74-3020-3F4N-TN   | 160kW, 302A, Size 7       | 60261       |

| Order number            | Description  | Part Number |
|-------------------------|--|-------------|
| <b>Internal Options</b> |  |             |
| ABCC-ECT                | EtherCat 2-port Module   | 63163       |
| ABCC-EIT_2P             | Modbus TCP 2 port Module   | 63165       |
| ABCC-PRT_2P             | ProfiNet 2 port Module   | 63164       |
| ABCC-EIPT_2P            | Ethernet IP 2 port Module  | 63122       |
| ABCC-DPVI-2             | Profibus DP D-sub Module   | 63142       |
| ABCC-DEV-2              | Devicenet Module   | 63120       |
| ABCC-CCL                | CC-Link Module   | 63250       |
| OPT-2-EXTIO-BFI         | Extended I/O, 3 digital inputs, 1 relay output   | 63123       |
| OPT-2-CASCD-BFI         | Extended Relay, 3 relay outputs  | 63119       |
| OPT-2-ENCOD-BFI         | TTL Encoder Module, 5 VDC  | 63121       |
| OPT-2-ENCHT-BFI         | TTL Encoder Module, 12-30 VDC  | 63170       |
| OD-BR100-BFI            | Internal Brakeresistor for IP20, 100ohm, 200W  | 63101       |
| OD-BRES4-BFI            | Internal brake resistor, 33 ohm, 500W, IP55, Size 4 and 5  | 63230       |
| <b>External Options</b> |  |             |
| OPT-BR050-IN-I55-BFI    | External Brake resistor, IP55, 50 ohm, 200 W   | 63231       |
| OPT-2-ISOL4-BFI         | Isolator Switch Box, Size 4  | 63150       |
| OPT-2-ISOL5-BFI         | Isolator Switch Box, Size 5  | 63151       |
| OPT-2-OPPAD-BFI         | OLED Remote External Keypad  | 63201       |
| OPT-2-OPORT-BFI         | Basic External Keypad, 5 digits  | 63141       |
| OPT-3-STICK-BFI         | BFI SmartStick Bluetooth, Copy/Paste Parameters/PLC-program, Supports Smartphones and BFI-Tools on Windows 10            | 63489       |
| OPT-3-WLKIT-BFI         | BFI SmartStick Bluetooth, Copy/Paste Parameters/PLC-program, Supports Smartphones and BFI-Tools on Windows 7, 8, 10      | 63490       |
| OPT-3-PCKIT-BFI         | BFI SmartStick Bluetooth, Copy/Paste Parameters/PLC-program, Supports Smartphones and BFI-Tools on Windows 7, 8, 10, NFC | 63491       |
| OPT-I4505-BFI           | RS-485 Data Cable 0,5m   | 63144       |
| OPT-I4510-BFI           | RS-485 Data Cable 1,0m   | 63145       |
| OPT-I4530-BFI           | RS-485 Data Cable 3,0m   | 63146       |
| OPT-2-I455P-BFI         | RS485 Serial communication Data Cable 2-port Splitter for BFI-P2, BFI-H3, BFI-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 HMI and BFI-H3/P2/E3 for Modbus RTU communication*                       | 660000290   |
| CAB114                  | 3m cable for screwterminals and RJ-45 between PLC and BFI-H3/P2/E3 for Modbus RTU communication                          | 660000291   |
| CAB115                  | 3m cable with USB and RJ45 (RS485) between PC and BFI-H3/P2/E3 for BFI-Tools   | 660000292   |
| CAB154                  | 3m cable with 9-pole D-sub and RJ-45 between X2 control, BFI-H3/P2/E3 for CANopen communication                          | 100-1179    |
| CAB 155                 | 3m cable for screwterminals and RJ-45 between PLC and BFI-H3/P2/E3 for CANopen communication                             | 100-1180    |
| BFI-Tools PLC-licence   | BFI-Tools PLC-licence  | 63300       |

NOT TO SCALE

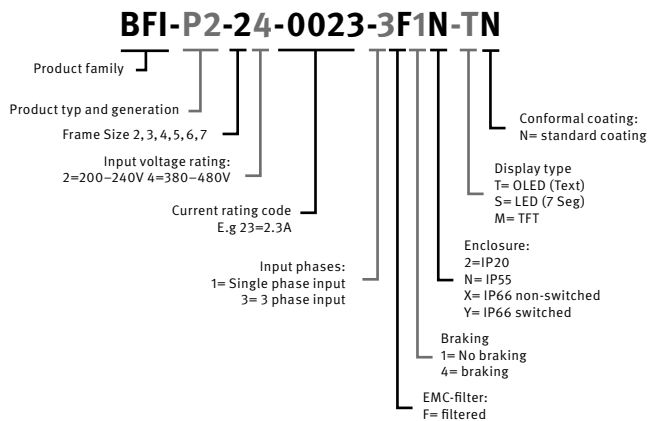


| Size                | 2    | 2    | 3    | 3    | 4    | 4    | 5    | 5    | 6A   | 6B    | 6     | 7     | 8    |
|---------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|------|
| Enclosure           | IP20 | IP66 | IP20 | IP66 | IP20 | IP55 | IP20 | IP55 | IP20 | IP20  | IP55  | IP55  | IP20 |
| Height (mm)         | 221  | 257  | 261  | 310  | 418  | 440  | 486  | 540  | 614  | 726   | 865   | 1280  | 995  |
| Width (mm)          | 112  | 188  | 131  | 211  | 160  | 171  | 222  | 235  | 286  | 330   | 330   | 330   | 482  |
| Depth (mm)          | 185  | 238  | 205  | 256  | 240  | 240  | 260  | 270  | 320  | 320   | 330   | 360   | 480  |
| Weight (kg)         | 1.8  | 4.8  | 3.5  | 7.7  | 9.2  | 11.5 | 18.2 | 23   | 32   | 43    | 55    | 89    | 128  |
| Package weight (kg) | 1.9  | 4.8  | 3.5  | 8.4  | 11   | 13.2 | 20   | 24   | -    | -     | 57    | 97    | 128  |
| Fixings             | 4xM4 | 4xM4 | 4xM4 | 4xM4 | 4xM8 | 4xM8 | 4xM8 | 4xM8 | 4xM8 | 4xM10 | 4xM10 | 4xM10 | -    |

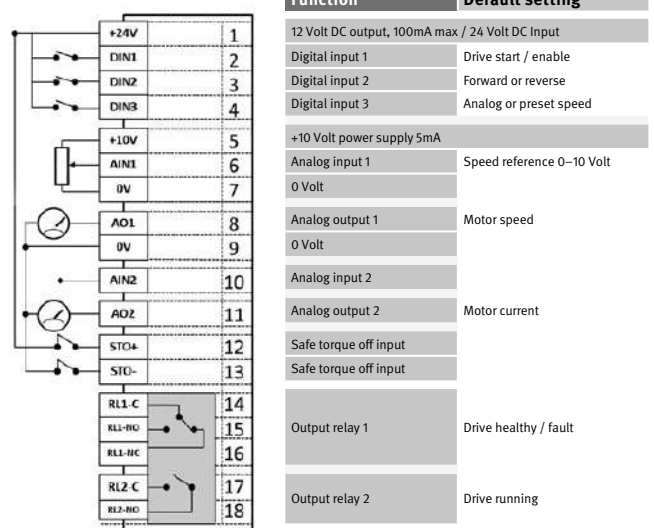
# Drive specification

|                                |                                  |  |   |  |   |                         |   |   |  |
|--------------------------------|----------------------------------|--|---|--|---|-------------------------|---|---|--|
| <b>Input ratings</b>           | <b>Supply voltage</b>            | 200 – 240V ± 10%<br>380 – 480V ± 10%   | <b>Control specification</b>                                    | <b>Control method</b>  | V/F voltage vector<br>Energy optimised V/F<br>Sensorless vector speed control<br>Sensorless vector torque control<br>Closed loop (encoder) speed control<br><br>Closed loop (encoder) torque control<br><br>Open loop PM vector control | <b>Control features</b> | <b>Hoist operation</b>  | Dedicated hoist operation mode  |  |
|                                | <b>Supply frequency</b>          | 48 – 62Hz  |   | <b>PWM frequency</b>   | 4 – 32kHz effective   |                         | <b>PID control</b>  | Internal PID control with feedback display, sleep mode  |  |
|                                | <b>Displacement power factor</b> | > 0.98   |   | <b>Stopping mode</b>   | Ramp to stop : user adjustable<br>0.1–600 seconds<br>Coast to stop  |                         | <b>PLC</b>  | Internal PLC  |  |
|                                | <b>Phase imbalance</b>           | 3% maximum allowed   |   | <b>Braking</b>   | Motor flux braking<br>Built-in braking transistor (optional for frame sizes 6 & 7)  |                         | <b>Master/slave</b>   | Master/slave control of 63 BFI  |  |
|                                | <b>Inrush current</b>            | < rated current  |   | <b>Skip frequency</b>  | Single point, user adjustable   |                         | <b>Modbus master</b>  | BFI can be configured as Modbus RTU master  |  |
|                                | <b>Power cycles</b>              | 120 per hour maximum, evenly spaced  |   | <b>Setpoint control</b>  | 0 to 10 volts<br>10 to 0 volts<br>-10 to 10 volts<br>0 to 20mA<br>20 to 0mA<br>4 to 20mA<br>20 to 4 mA  |                         | <b>Maintenance &amp; diagnostics</b>  | <b>Fault memory</b><br>Last 4 trips stored with time stamp<br><b>Data logging</b><br>Logging of data prior to trip for diagnostic purposes :<br>Output current, drive temperature, DC bus voltage<br><b>Maintenance indicator</b><br>Maintenance indicator with user adjustable maintenance interval<br>Onboard service life monitoring<br><b>Monitoring</b><br>Hours run meter<br>Resettable & non resettable kWh meters |  |
| <b>Output ratings</b>          | <b>Output power</b>              | 230V 1 phase input: 0.75–2.2kW<br>230V 3 phase input: 0.75–75kW<br>400V 3 phase input: 0.75–250kW  | <b>Communication</b>  | <b>Supported protocols</b>   | Fieldbus or ethernet  | <b>Standards</b>        | <b>Low Voltage Directive</b>  | 2014/35/EU  |  |
|                                | <b>Overload capacity</b>         | 150% for 60 seconds<br>200% for 2 seconds  |   | <b>Power supply</b>  | 24 Volt DC, 100mA, short circuit protected<br>10 Volt DC, 5mA for potentiometer   |                         | <b>EMC Directive</b>  | 2014/30/EU  |  |
|                                | <b>Output frequency</b>          | 0 – 500Hz, 0.1Hz resolution  |   | <b>Programmable inputs</b>   | 5 total as standard (optional additional 3)<br>3 digital (optional additional 3)<br>2 analog / digital selectable   |                         | <b>Digital inputs</b>   | 10 – 30 Volt DC, internal or external supply, NPN<br>Response time : < 4ms  | <b>Additional Conformance</b>  |
| <b>Typical efficiency</b>      | 98%                              | <b>Analog inputs</b>   |   | Resolution : 12 bits<br>Response time : < 4ms<br>Accuracy : < 1% full scale<br>Parameter adjustable scaling and offset | <b>Analog outputs</b>   |                         | 0 to 10 Volt<br>0 to 20mA<br>4 to 20mA  | <b>Marine Certification</b>   | DNV/GL Type Approval   |
| <b>Ambient Conditions</b>      | <b>Temperature</b>               | Storage : -40 to 60°C<br>Operating : -10 to 40°C, IP55/66<br>-10 to 50°C, IP20   |   | <b>I/O specification</b>   | <b>Safety</b>   |                         | Safe torque off SIL2/pld  | <b>Environmental Conditions</b>   | Designed to meet IEC 60721-3-3, in operation:<br>IP20 Drives: 3S2/3C2<br>IP55 & 66 Drives: 3S3/3C3 |
|                                | <b>Altitude</b>                  | Up to 1000m ASL without derating<br>Up to 2000m maximum UL approved<br>Up to 4000m maximum (non UL)<br>Above 1000m : derate by 1% per 100m |   |  | <b>Programmable outputs</b>   |                         | 4 total (optional additional 3)<br>2 analog / digital<br>2 relays (optional additional 3) | <b>Safety</b>   | EN 61800-5-2:2007: SIL2<br>EN ISO 13489-1: PL d<br>IEC 60204-1: Stop Category 0                    |
|                                | <b>Humidity</b>                  | 95% max, non-condensing  | <b>Relay outputs</b>  |  | Maximum voltage : 250 VAC, 30 VDC<br>Switching current capacity : 6A AC, 5A DC  |                         |   |   |  |
| <b>Enclosure</b>               | <b>Ingress Protection</b>        | IP20 (size 2, 3, 4, 5, 6A, 6B)<br>IP40 (size 8)<br>IP55 (size 4, 5, 6, 7)<br>IP66 (size 2, 3)  |   |  |   |                         |   |   |  |
|                                | <b>Programming</b>               | <b>Keypad</b>  | Built-in keypad as standard<br>Optional remote mountable keypad |  |   |                         |   |   |  |
| <b>Display</b>                 |                                  | Built-in multi language OLED display (except IP20) LED display (IP20 only)   |   |  |   |                         |   |   |  |
| <b>PC</b>                      |                                  | BFI-Tools  |   |  |   |                         |   |   |  |
| <b>App for Android and IOS</b> |                                  | BFI-Tools Mobile   |   |  |   |                         |   |   |  |

## Model code guide



## Connection diagram



## About Beijer Electronics

Beijer Electronics is a multinational, cross-industry innovator that connects people and technologies to optimize processes for business-critical applications. Our offer includes operator communication, automation solutions, digitalization, display solutions and support. As experts in user-friendly software, hardware and services for the Industrial Internet of Things, we empower you to meet your challenges through leading-edge solutions.

Beijer Electronics is a Beijer Group company. Beijer Group has a sale over 1.4 billion SEK in 2018 and is listed on the NASDAQ OMX Nordic Stockholm Small Cap list under the ticker BELE. [www.beijergroup.com](http://www.beijergroup.com)

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