About Beijer Electronics

Beijer Electronics is a high technology company active in industrial automation and data communication. The company develops and markets competitive products and solutions that focus on the user. Since its start-up in 1981, Beijer Electronics has evolved into a multinational group with sales of 1,375 MSEK 2015. The company is listed on the NASDAQ OMX Nordic Stockholm Small Cap list under the ticker BELE. www.beijerelectronics.com

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Order nr: BREN629

HVAC Inverter H3

Easy-to-use, robust inverters dedicated to fan and pump control

Beijer ELECTRONICS

Dedicated to fans and pumps

> Energy efficient flow control from reliable, compact drives, ideal for HVAC systems

Beijer Electronics offers IP20, IP55 and IP66 inverters for HVAC, maritime and other industrial applications and sets a new cost-effective standard for dedicated fan and pump control. Ease-of-use and innovative design combined with robust performance provides powerful flow control and reliability in a compact drive.

The HVAC Inverter H3 is available in the range of 0.75-250 kW with a variety of options, including for example single or three phase input, communication boards, power switch etc.

The HVAC inverter H3, provides 98% drive efficiency combined with low input harmonic current distortion compliant with EN61000-3-12. Otherwise, the H3 inverter is identical with H3 regarding functionality, enclosure types, etc.

Cumulative savings

Save energy
- Highly efficient operation.
- Automatic optimization when load decreases.
- Built-in sleep mode prevents lost energy when flow is low or zero.

Save money
- Advanced features as standard.
- Options for additional flexibility.
- Built-in-PLC.

Save time
- Simple parameter set allows fast installation and commissioning.
- PC programming and Optistick make programming a breeze.
- Customizable OLED display.
- Pluggable terminals.

Noise reduction

Quiet motor operation
- High switching frequency selection (up to 32 kHz) ensures motor noise is minimized.

Quiet system mechanics
- Simple skip frequency selection avoids stresses and nuisance noise caused by mechanical resonance.

Quiet drive operation
- Temperature-controlled cooling fans ensure quiet operation in periods of reduced load.

Noise reduction through speed control
- Optimizing motor speed gives significant energy savings and reduces motor noise.

PID control

- The HVAC Inverter H3 has a PID controller built-in that is fully integrated with both HVAC and energy efficient features and is packaged in a user friendly way to ensure ease-of-use and fast commissioning. Now in the majority of applications, it has become possible to eliminate the need for external controllers.

Manual/auto

- Allows manual control (of fan or pump) to easily be selected in the event of an automatic control system failure or for simplified commissioning/system checks, or when a fast temporary override of the control system is required. Built in auto control selection allows return to automatic system control just as easily.

HVAC Inverter H3:

› 98% drive efficiency

Low input harmonic current distortion, compliant with EN61000-3-12

Fire override mode

Fire override mode ignores signals and alarms, keeping the HVAC Inverter H3 operating for as long as possible.

- This feature is crucial for ensuring smoke extraction from buildings in the event of a fire.
- Selectable logic means that the HVAC Inverter H3 can be easily configured to the signal produced by your fire management system.
- With an independently set speed for fire mode operation, selectable as either forward or reverse direction, the HVAC Inverter H3 has the flexibility to match the needs of your fire control system.

Stairwell pressurization

In the event of a fire, stairwells are often essential escape routes.

- HVAC Inverter H3 can be used to control air flow and pressure to help keep stairwells clear of smoke to allow safe evacuation and give firefighters safe access to buildings.

Energy optimization and monitoring

- The advanced optimization function intelligently matches energy usage to the driven load to ensure your fan operates at maximum efficiency. The built-in energy consumption meters allow energy consumption to be clearly displayed and savings to be calculated.

Intelligent standby

- To reduce energy used by slow-running fans, HVAC Inverter H3 has an intelligent standby/sleep function to shut off output from the drive until demand for air flow increases.

Broken belt detection

- HVAC Inverter H3 intelligently monitors current/speed to provide immediate warning of broken belts between motors and ventilation fans.

Resonance avoidance

- HVAC Inverter H3 can be easily configured to avoid frequencies that cause resonance in ventilation systems, preventing unnecessary noise and mechanical damage to motors and fans.

Taking energy savings to a new level

The third generation HVAC drive, HVAC Inverter H3, takes energy savings one step further. It reduces harmonic current distortion, associated with electronic equipment and traditional variable speed drives, to below 30% iTHD (total harmonic distortion). It also increase drive efficiency to ›98% leading to energy efficiency and reduced life time costs.

The proven energy saving benefits helps consumers to realize significant savings year upon year.

HVAC Inverter H3 delivers:

- Lower mains supply current - reduced cable size, reduced fuse size, reduced transformer size
- Improved power factor - no additional charges from the electricity supply company due to low power factor
- Improved efficiency - reduced lifetime costs. E.g. 37kW, operating 10 hours per day, 5 days per week, 50 weeks per years - power consumption is 92500kWh - 1.1% reduction is ›100kWh saving
- 0.75 kW – 250 kW power range; 3 phase 380-480 VAC input.

Ready for advanced motor control

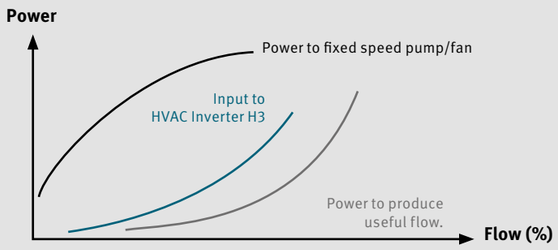
The HVAC Inverter H3 controls the latest generation of induction motors, as well as permanent magnet AC motors, brushless DC motors and synchronous reluctance motors.

Low harmonic technology

- Reduces supply total harmonic current distortion (iTHD)
- Reduces total supply current
- Reduces cable and busbar rating requirements
- Reduces fuse sizes
- Reduces required supply transformer load or rating

Energy savings

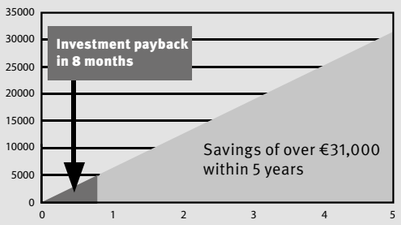
HVAC Inverter H3 power savings.
With variable speed control, HVAC Inverter H3 provides instant savings.



Using HVAC Inverter H3 compared to direct on line control, an estimated 20% reduction in speed results in potential energy savings of 50%.

Calculation based on a typical estimated factory working week and energy costs, including estimated component and installation costs.

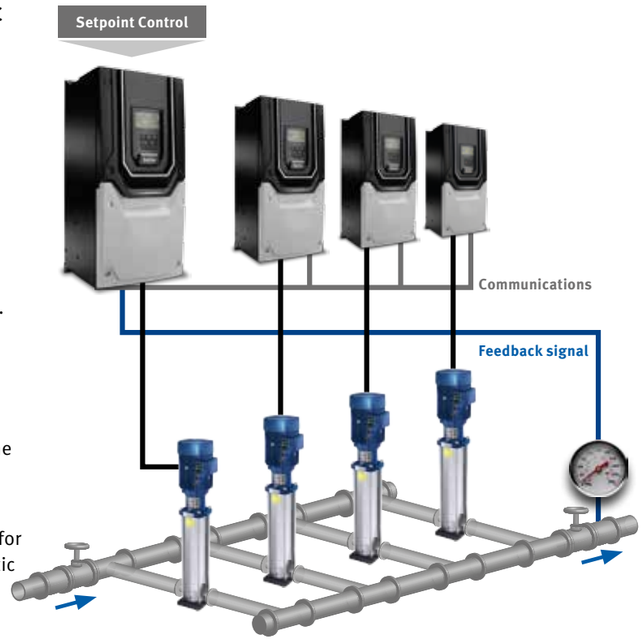
Example savings based on a 45kW load



“ Reducing energy and maintenance costs

Coordinated pump station control, built into each HVAC Inverter H3 as standard, allows independent control of multiple pump applications.

- All drives operate at variable speed for maximum energy saving.
- Equal runtime sharing across every pump.
- Automatic system reconfiguration in the event of a pump fault (including the master pump).
- Continued system operation when drives are individually powered off (including the master drive).
- Communication and +24V control voltage shared between drives via a standard RJ45 patch lead.
- Independent maintenance indicators for each pump.
- Any pump can be switched to manual operation at the touch of a button, and will automatically rejoin the network when switched back to auto.
- For waste water applications, each pump can be set for blockage/ragging detection and activate an automatic de-ragging/pump cleaning cycle.
- Optional mains isolator with lock-off for safe pump maintenance.
- Function configured through simple parameter set-up and intelligent-drive self-configuration.

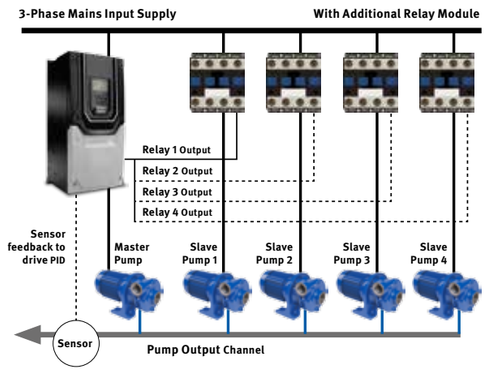


Pump efficiency

Built-in sleep mode with auto-boost. Sleep mode saves energy by detecting when a pump is running inefficiently and producing little useful work. The HVAC Inverter H3 can be programmed to enter into a sleep/disabled mode until the demand increases. To help prevent sleep mode oscillation, the inverter can automatically initiate a boost cycle to increase pressure on starting or stopping.

Drive controlled bypass

Intelligent features within the HVAC Inverter H3 allow a bypass circuit to be implemented. Activation of bypass mode can be determined intelligently by the HVAC Inverter H3 drive based on a command from the building management system. The drive can be set to automatically select bypass mode when entering into a trip condition ensuring minimal disruption to service.



Avoid pump downtime

Blockage detect/clear
HVAC Inverter H3 can detect pump blockages and trigger a programmed cleaning cycle to automatically clear them, preventing downtime.

Pump clean/stir cycle
Triggered by a settable period of inactivity, a configurable cleaning cycle can be run to clear sediment, ensuring the pump is ready to run when needed.

Dry run protection
HVAC Inverter H3 can evaluate a pump’s speed/power and shut it off or warn when the pump starts to run dry, protecting it from heat/friction damage.

Motor preheat function
HVAC Inverter H3 features a motor preheat function to help ensure moisture is not permitted to collect on the motor during periods of inactivity and prior to motor start-up. In addition, the motor preheat function can be used to keep condensation from developing on the motor as the motor cools down immediately following a stop. The feature is fully configurable, meaning the pump can be always available the instant it is required.

Burst pipe protection
After enabling the drive, the PID-feeback needs to exceed a programmed value within a programmed so as to avoid burst pipes.

Relay cascade control (requires optional cascade module)
Variable speed duty pump with up to 4 assist pumps, the HVAC Inverter H3 can provide automatic operating time monitoring and balancing for assist pumps to share duty cycle. Runtime clocks for all fixed speed assist pumps are maintained and visible within the HVAC Inverter H3 for integration into the pump system maintenance schedules.

Options and accessories

BACnet & Modbus RTU compatibility built-in as standard

Powerful PC software, BFI Tools

- Drive commissioning and parameter backup
- Real-time parameter editing
- Drive network communication
- Parameter upload, download and storage
- Simple PLC function programming
- Compatible with Windows XP, Windows Vista and Windows 7

Enclosure options

IP66/NEMA 4

- Sizes 2 and 3
- Dust-tight and protected against high-pressure water jets
- Available with or without isolator switch

IP20

- Sizes 2-5 and 8

IP55/NEMA 12

- Sizes 4–7
- Protected against dust and jets of water
- Isolator switch as an option for size 4 and 5

OLED display

Installed as standard on all IP55 and IP66 models

- Clear graphical display
- Operates to –10°C
- Wide viewing angle, effective in dark and light conditions
- Customizable display
- Multi-language selection

Plug-in modules

Extend functionality and communication options

Expansion modules:

- Extended I/O
- (3 × digital in, 1 × relay out)
- Cascade control (extended relay)
- (3 × relay outputs

Fieldbus interfaces

BACnet/IP, Profibus DP, DeviceNet, Ethernet/IP, EtherCAT, Modbus TCP. Profinet, CC-Link

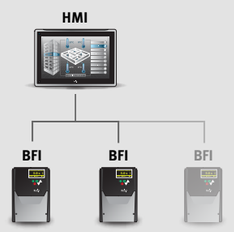
Remote keypad

- Remote keypad and OLED display
- IP55 panel mount touch-sensitive operator interface

Optistick

- Rapid commissioning tool
- Plug-in or wirelessly copy parameter sets between drives

Beijer Electronics concept



- Cabling for plug-in connection for inverter in a Modbus RTU network
- HMI and soft control projects for control of inverter by serial or Ethernet bus

Description		Item
H3 versions		
BFI-H3, 1-phase 230 V AC, IP20, EMC-filter, LED, Conformal coating		
BFI-H3-22-0043-1F12-SN	0,75kW, 4,3A, Size 2	61401
BFI-H3-22-0070-1F12-SN	1.5kW, 7A, Size 2	61402
BFI-H3-22-0105-1F12-SN	2,2kW, 10,5A, Size 2	61403
BFI-H3, 1-phase 230 V AC, IP66, EMC-filter, OLED, Conformal coating		
BFI-H3-22-0043-1F1X-TN	0,75kW, 4,3A, Size 2	61404
BFI-H3-22-0070-1F1X-TN	1,5kW, 7A, Size 2	61405
BFI-H3-22-0105-1F1X-TN	2,2kW, 10,5A, Size 2	61406
BFI-H3, 1-phase 230 V AC, IP66, EMC-filter, OLED, Mainswitch, Conformal coating		
BFI-H3-22-0043-1F1D-TN	0,75kW, 4,3A, Size 2	61407
BFI-H3-22-0070-1F1D-TN	1,5kW, 7A, Size 2	61408
BFI-H3-22-0105-1F1D-TN	2,2kW, 10,5A, Size 2	61409
BFI-H3, 3-phase 230 V AC, IP20, EMC-filter, LED, Conformal coating		
BFI-H3-22-0043-3F12-SN	0,75kW, 4,3A, Size 2	61410
BFI-H3-22-0070-3F12-SN	1.5kW, 7A, Size 2	61411
BFI-H3-22-0105-3F12-SN	2,2kW, 10,5A, Size 2	61412
BFI-H3-32-0180-3F12-SN	4,0kW, 18A, Size 3	61413
BFI-H3-32-0240-3F12-SN	5,5kW, 24A, Size 3	61414
BFI-H3, 3-phase 230 V AC, IP20, EMC-filter, OLED, Conformal coating		
BFI-H3-42-0300-3F12-TN	7,5kW, 30A, Size 4	62450
BFI-H3-42-0460-3F12-TN	11kW, 46A, Size 4	62451
BFI-H3-52-0610-3F12-TN	15kW, 61A, Size 5	62452
BFI-H3-52-0720-3F12-TN	18,5kW, 72A, Size 5	62453
BFI-H3-52-0900-3F12-TN	22kW, 90A, Size 5	62454
BFI-H3, 3-phase 230 V AC, IP66, EMC-filter, OLED, Conformal coating		
BFI-H3-22-0043-3F1X-TN	0,75kW, 4,3A, Size 2	61415
BFI-H3-22-0070-3F1X-TN	1.5kW, 7A, Size 2	61416
BFI-H3-22-0105-3F1X-TN	2,2kW, 10,5A, Size 2	61417
BFI-H3-32-0180-3F1X-TN	4,0kW, 18A, Size 3	61418
BFI-H3-32-0240-3F1X-TN	5,5kW, 24A, Size 3	62419
BFI-H3, 3-phase 230 V AC, IP66, EMC-filter, OLED, Mainswitch, Conformal coating		
BFI-H3-22-0043-3F1D-TN	0,75kW, 4,3A, Size 2	62420
BFI-H3-22-0070-3F1D-TN	1,5kW, 7A, Size 2	62421
BFI-H3-22-0105-3F1D-TN	2,2kW, 10,5A, Size 2	62422
BFI-H3-32-0180-3F1D-TN	4,0kW, 18A, Size 3	62423
BFI-H3-32-0240-3F1D-TN	5,5 kW, 24A, Size 3	62424
BFI-H3, 3-phase 230 V AC, IP55, EMC-filter, OLED, Conformal coating		
BFI-H3-42-0300-3F1N-TN	7,5kW, 30A, Size 4	62430
BFI-H3-42-0460-3F1N-TN	11kW, 46A, Size 4	62431
BFI-H3-52-0610-3F1N-TN	15kW, 61A, Size 5	62432
BFI-H3-52-0720-3F1N-TN	18,5kW, 72A, Size 5	62433
BFI-H3-52-0900-3F1N-TN	22kW, 90A, Size 5	62434
BFI-H3-62-1100-3F1N-TN	30kW, 110A, Size 6	62435
BFI-H3-62-1500-3F1N-TN	37kW, 150A, Size 6	62436
BFI-H3-62-1800-3F1N-TN	45kW, 180A, Size 6	62437
BFI-H3-72-2020-3F1N-TN	55kW, 202A, Size 7	62438
BFI-H3-72-2480-3F1N-TN	75kW, 248A, Size 7	62439
BFI-H3, 3-phase 400 V AC, IP20, EMC-filter, LED, Conformal coating		
BFI-H3-24-0022-3F12-SN	0,75kW, 2,2A, Size 2	62500
BFI-H3-24-0041-3F12-SN	1,5kW, 4,1A, Size 2	62501
BFI-H3-24-0058-3F12-SN	2,2kW, 5,8A, Size 2	62502
BFI-H3-24-0095-3F12-SN	4kW, 9,5A, Size 2	62503
BFI-H3-34-0140-3F12-SN	5,5kW, 14A, Size 3	62504
BFI-H3-34-0180-3F12-SN	7,5kW, 18A, Size 3	62505
BFI-H3-34-0240-3F12-SN	11kW, 24A, Size3	62506
BFI-H3, IP20, EMC-filter, OLED, Conformal coating		
BFI-H3-44-0300-3F12-TN	15kW, 30A, Size 4	62560
BFI-H3-44-0390-3F12-TN	18kW, 39A, Size 4	62561
BFI-H3-44-0460-3F12-TN	22kW, 46A, Size 4	62562
BFI-H3-54-0610-3F12-TN	30kW, 61A, Size 5	62563
BFI-H3-54-0720-3F12-TN	37kW, 72A, Size 5	62564
BFI-H3-54-0900-3F12-TN	45kW, 90A, Size 5	62565
BFI-H3-84-3700-3F12-TN	200kW, 370A, Size8	62269
BFI-H3-84-4500-3F12-TN	250kW, 450A, Size8	62271
BFI-H3, 3-phase 400 V AC, IP66, EMC-filter, OLED, Conformal coating		
BFI-H3-24-0022-3F1X-TN	0,75kW, 2,2A, Size 2	62510
BFI-H3-24-0041-3F1X-TN	1,5kW, 4,1A, Size 2	62511
BFI-H3-24-0058-3F1X-TN	2,2kW, 5,8A, Size 2	62512
BFI-H3-24-0095-3F1X-TN	4kW, 9,5A, Size 2	62514
BFI-H3-34-0140-3F1X-TN	5,5kW, 14A, Size 3	62515
BFI-H3-34-0180-3F1X-TN	7,5kW, 18A, Size 3	62516
BFI-H3-34-0240-3F1X-TN	11kW, 24A, Size 3	62517
BFI-H3, 3-phase 400 V AC, IP66, EMC-filter, OLED, Mainswitch, Conformal coating		
BFI-H3-24-0022-3F1D-TN	0,75kW, 2,2A, Size 2	62550
BFI-H3-24-0041-3F1D-TN	1,5kW, 4,1A, Size 2	62551
BFI-H3-24-0058-3F1D-TN	2,2kW, 5,8A, Size 2	62552
BFI-H3-24-0095-3F1D-TN	4kW, 9,5A, Size 2	62554
BFI-H3-34-0140-3F1D-TN	5,5kW, 14A, Size 3	62555
BFI-H3-34-0180-3F1D-TN	7,5kW, 18A, Size 3	62556
BFI-H3-34-0240-3F1D-TN	11kW, 24A, Size 3	62557

BFI-H3, 3-phase 400 V AC, IP55, EMC-filter, OLED, Conformal coating		
BFI-H3-44-0300-3F1N-TN	15kW, 30A, Size 4	62521
BFI-H3-44-0390-3F1N-TN	18kW, 39A, Size 4	62522
BFI-H3-44-0460-3F1N-TN	22kW, 46A, Size 4	62523
BFI-H3-54-0610-3F1N-TN	30kW, 61A, Size 5	62524
BFI-H3-54-0720-3F1N-TN	37kW, 72A, Size 5	62525
BFI-H3-54-0900-3F1N-TN	45kW, 90A, Size 5	62526
BFI-H3-64-1100-3F1N-TN	55kW, 110A, Size 6	62527
BFI-H3-64-1500-3F1N-TN	75kW, 150A, Size 6	62528
BFI-H3-64-1800-3F1N-TN	90kW, 180A, Size 6	62529
BFI-H3-74-2020-3F1N-TN	110kW, 202A, Size 7	62530
BFI-H3-74-2400-3F1N-TN	132kW, 240A, Size 7	62531
BFI-H3-74-3020-3F1N-TN	160kW, 302A, Size 7	62532
Description		**Item**
Internal Options		
ABCC-DEV-2	Devicenet Module	63120
ABCC-ECT	EtherCat 2-port Module	63163
ABCC-DPV1-2	Profibus DP D-sub Module	63142
ABCC-PRT_2P	ProfiNet 2 port Module	63164
ABCC-EIT_2P	Modbus TCP 2 port Module	63165
ABCC-CCL	CC-Link Module	63250
ABCC-EIPT_2P	Ethernet IP 2 port Module	63122
OPT-2-EXTIO-BFI	Extended I/O , 3 digital input, 1 relay output	63123
OPT-2-CASCD-BFI	Extended Relay, 3 relay output	63119
External Options		
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-STICK2-BFI	Optistick Bluetooth communication, loading parameters	63166
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-J45SP	RS-485 2-port Data Cable Splitter	63148
OPT-2-RJTRM-BFI	RJ45 Termination Plug	63202
CAB113	3m cable with 9-pole D-sub and RJ-45 between TxA/B/C and BFI-H3/P2/E2	660000290
CAB115	3m cable with USB and RJ45 between PC and BFI-H3/P2/E2 for use of BFI-Tools	660000292
BFI-Tools PLC-licence	BFI-Tools PLC-licence	63300

Options

- RFI line filter, IP20 and IP54
- Mains supply input chokes
- Motor output filter, recommended for long cable runs
- 2 relay output option
- 3 extra relay output for HVAC operation
- Remote mounting keypad
- RJ45 cables and splitters
- Isolated RS485 USB adaptor
- Main switch option
- Commissioning and storage software for PC

NOT TO SCALE

Size	2	2	3	3	4	5	6	7
Enclosure	IP20	IP66	IP20	IP66	IP55	IP55	IP55	IP55
Height (mm)	221	257	261	310	440	540	865	1280
Width (mm)	112	188	131	211	171	235	330	330
Depth (mm)	185	238	205	256	240	270	330	360
Weight (kg)	1.8	4.8	3.5	7.3	11.5	22.5	50	80

Drive specification

Input ratings	**Supply voltage**	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**	230V 1 phase input: 0.75–2.2kW 230V 3 phase input: 0.75–75kW 400V 3 phase input: 0.75–250kW
	Overload capacity	110% for 60 seconds, 125% for 3 seconds
	Output frequency	0 – 120Hz, 0.1Hz resolution
	Typical efficiency	98%
Ambient conditions	**Temperature**	Storage : –40 to 60°C Operating : –10 to 50°C (IP20 versions) Operating : –10 to 40°C (IP55/66 versions)
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL) Above 1000m : derate by 1% per 100m
	Humidity	95% max, non-condensing
Enclosure	**Ingress Protection**	IP20, IP55, IP66 (H3 versions) IP55, IP66 (H3 versions)
Programming	**Keypad**	Built-in keypad as standard Optional remote mountable keypad
	Display	Built-in multi language OLED display (except IP20) LED display (IP20 only)
	PC	BFI-Tools

Control specification	**Control method**		Variable torque V/F Variable torque energy optimised V/F Constant torque U/F Vector control PM motor control Brushless DC motor Synchronous reluctance motor
	PWM frequency		4 – 32kHz effective
	Stopping mode		Ramp to stop : user adjustable 1–600 seconds coast to stop
	Braking		Motor flux braking
	Skip frequency		Single point, user adjustable
	Setpoint control	Analog signal	0 to 10 Volts, 10 to 0 Volts 0 to 20mA, 4 to 20mA, 20 to 4 mA
		Digital	Motorised potentiometer (Keypad) Modbus RTU BACnet Master/slave
Communication	**Supported protocols**		Modbus RTU - standard BACnet - standard Profibus DP - option Ethernet IP - option Modbus TCP - option EtherCAT - option DeviceNet - option Profinet - option CC-Link - option
I/O specification	**Power supply**		24 volt DC, 100mA, short circuit protected 10 volt DC, 5mA for potentiometer
	Programmable inputs		5 total as standard (optional additional 3) 3 digital (optional additional 3) 2 analog / digital selectable PTC-input
	Digital inputs		10 – 30 volt DC, internal or external supply, NPN response time : ‹ 4ms
	Analog inputs		Resolution : 12 bits Response time : ‹ 4ms Accuracy : ‹ 1% full scale Parameter adjustable scaling and offset
	Programmable outputs		4 total (optional additional 3) 2 analog / digital 2 relays (optional additional 3)
	Relay outputs		Maximum voltage : 250 VAC, 30 VDC Switching current capacity : 6A AC, 5A DC
	Analog outputs		0 to 10 volt 0 to 20mA 4 to 20mA
	Safety		Safe Torque Off SIL2/pld

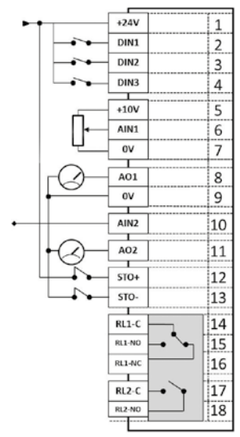
Control features	**Fire mode**	Selectable direction Selectable speed reference
	Broken belt detection	Under load monitoring with autotune configuration
	PID Control	Internal PID control with feedback display and sleep function
	PLC	Internal PLC
Pump control features	**Pump blockage detection**	Pump load monitoring with autotune function, user configurable
	Pump cleaning	Adjustable pump cleaning cycle operation
	Multi-pump control	Control of fixed speed assist pumps via optional cascade control module Control of duty, assist and standby variable speed pumps via internal Master – slave network
	Pump stir	Automatic pump stir function
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
	Maintenance indicator	Maintenance indicator with user adjustable maintenance interval Onboard service life monitoring
	Monitoring	Hours run meter Resettable & non resettable kWh meters
Standards compliance	**EN 61800-3:2004**	Adjustable speed electrical power drive systems. EMC requirements.
	IEC 61508 SIL2 IEC 61800-5-2 Type2 IEC 62061 SIL2 ISO 13849 PL"d"	Safe torque off, SIL2, PL "d"
Other standards	**Standards**	CE, UL, cUL, RoHS, Carbon rust,
	EN61800-5-1	Safety requirements - electrical, thermal and energy
	EN55011	Limits and methods of measurement of radio interference characteristics of industrial equipment (EMC)
	UL / cUL	America (UL 508C) and Canada C22.2 NO 14
	RoHS	Restrictions on hazardous substances
	DNV	Norwegian Veritas marine classification (3×400v AC BFI-H3)
	61500-5-12	Harmonic supression

Model code guide

BFI-H3-24-0023-3F1N-TN

- Product family
- Product type and generation; H3
- Frame size 2, 3, 4, 5, 6, 7, 8
- Input voltage rating 2:200-240V 4:380-480V
- Current rating code E.g 23=2,3A
- Input phases: 1: Single phase Input, 3: 3 phase input
- EMC-Filter: F= filtered
- Braking 1= no braking
- IP20 = 2, IP55 = N, IP66 Non-switched = X, IP66 switched = D — enclosure
- OLED Text display = T, LED display = S — display
- Full Conformal coating = N — coating

Connection diagram



Function	Default setting
12 Volt DC output, 100mA max / 24 Volt DC input	
Digital input 1	Drive enable and start
Digital input 2	Analog/preset speed 1 select
Digital input 3	Local/remote reference select
+10 Volt power supply 5mA	
Analog input 1	Local speed reference
0 Volt	
Analog output 1	Motor speed
0 Volt	
Analog input 2	Remote speed reference
Analog output 2	Motor current
Safe torque off input	
Safe torque off input	
Output relay 1	Drive healthy / fault
Output relay 2	Drive running