



## FI Variable frequency inverter, IP66

The FI frequency inverters provide reliable intelligent motor starting and control of low power single and three phase motors. They fulfil nearly any inverter requirement with only fourteen basic parameters to adjust. An extended parameter set gives the more advanced users access to additional powerful functionalities. The units are built with tough polycarbonate plastics specifically chosen to withstand degradation by ultra violet (UV), greases, oils and acids. Also robust enough not to be brittle at -20°C.

### Key features

- Outdoor rated enclosed drives for direct machine mounting, dust tight and ready for washdown duty
- Unrivalled simplicity of installation, connection and commissioning
- Easy to wire thanks to the large, accessible chamber and removable gland plate
- Intuitive keypad control
- Easily accessible EMC disconnect
- Fan mode features pre-configured applications for: air handling units, ventilation fans, circulating fans, air curtains, kitchen extract fans
- Conformal coating as standard
- Switched or non-switched versions
- 7-segment LED display
- Integrated PI control
- Modbus RTU and CANopen on-board as standard
- 2 x RJ45 ports data connection for easy copying data from one inverter to another at a touch of a button; eliminate the need for a splitter
- Motor current and rpm indication
- Locally customisable – flat front to terminal cover with mounting points for switches and an internal PCB
- 150 % overload during 60 s
- Variable or constant torque
- Internal EMC filter category C1
- 4 frame sizes
- Integrated brake chopper (not in frame size 1)
- IP66 with anticorrosion coated heatsinks, tight dust seals, high pressure washdown duty for indoor use, suitable for rugged industrial operations at  $T_a = 50\text{ }^\circ\text{C}$



### Area of use

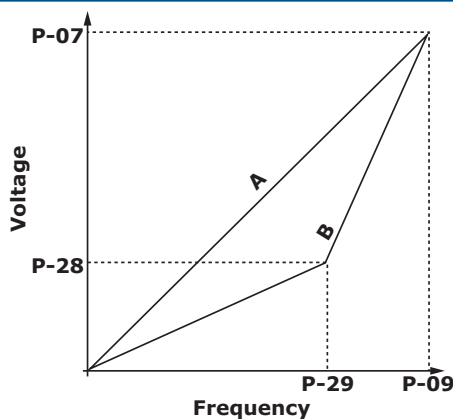
- General industrial applications
- HVAC fan control
- Pump control

### Standards

- Low Voltage Directive
- EMC Directive 2014/30/EU Cat C1 according to EN61800-3:2004
- WEEE Directive 2012/19/EC
- Machinery Directive 2006/42/EC
- Environmental Class 3C3/3S3 conformal coated PCBs
- Conformance CE, UL, RCM



### Operational diagram



<b>P-07</b>	Motor rated voltage
<b>P-09</b>	Motor rated frequency
<b>Line "A"</b>	Normal operation
<b>Line "B"</b>	V/F characteristic, altered by the user through setting parameters P-29 and P-28
<b>P-28</b>	V/F characteristic adjustment voltage
<b>P-29</b>	V/F characteristic adjustment frequency

### Wiring and connections

#### 1 phase supply

$\perp$ Pe	Earth connections
<b>L1/L</b>	Power supply, 230 VAC / 50–60 Hz, line
<b>L2/N</b>	Single phase power supply 230 VAC / 50–60 Hz, neutral
<b>L3</b>	Not used
<b>U</b>	Motor connection
<b>V</b>	Motor connection
<b>W</b>	Motor connection (not used for single phase motors)
<b>1–11</b>	Control terminals*

#### 3 phase supply

$\perp$ Pe	Earth connections
<b>L1</b>	Power supply
<b>L2</b>	
<b>L3</b>	
<b>U</b>	Motor connection
<b>V</b>	Motor connection
<b>W</b>	Motor connection (not used for single phase motors)
<b>1–11</b>	Control terminals*
<b>Connections</b>	Supply cable size: 1,5 / 2,5 mm <sup>2</sup> *
	Motor cable size: 1,5 mm <sup>2</sup>
	5 mm rising clamp terminals

\*Refer to the product Mounting and Operating Instructions, Section "Connection Diagram".



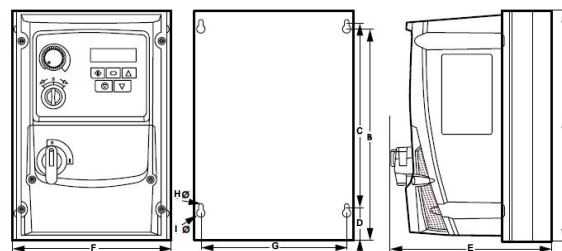
							Features		
Article code	Input rating	Output rating	Power rating [kW]	Inom [A]	Frame size	Integrated control switches	Reference code		
FI-E11043E6-19	1 phase 200–240 VAC	1 phase 230 VAC	0,37	4,3	1	No	ODE-3-120043-1F1A-01		
FI-E11070E6-19			0,75	7	1	No	ODE-3-120070-1F1A-01		
FI-E11105E6-19			1,1	10,5	2	No	ODE-3-220105-1F4A-01		
FISE11043E6-19			0,37	4,3	1	Yes	ODE-3-120043-1F1B-01		
FISE11070E6-19			0,75	7	1	Yes	ODE-3-120070-1F1B-01		
FISE11105E6-19			1,1	10,5	2	Yes	ODE-3-220105-1F4B-01		
FI-E13023E6-19		1 phase 200–240 VAC	3 phase 230 VAC	0,37	2,3	1	No	ODE-3-120023-1F1A	
FI-E13043E6-19				0,75	4,3	1	No	ODE-3-120043-1F1A	
FI-E13070E6-19				1,5	7	2	No	ODE-3-220070-1F4A	
FI-E13105E6-19				2,2	10,5	2	No	ODE-3-220105-1F4A	
FI-E13153E6-19				4	15,3	3	No	ODE-3-320153-1F4A	
FISE13023E6-19				0,37	2,3	1	Yes	ODE-3-120023-1F1B	
FISE13043E6-19			0,75	4,3	1	Yes	ODE-3-120043-1F1B		
FISE13070E6-19			1,5	7	2	Yes	ODE-3-220070-1F4B		
FISE13105E6-19			2,2	10,5	2	Yes	ODE-3-220105-1F4B		
FISE13153E6-19			4	15,3	3	Yes	ODE-3-320153-1F4B		
FI-E33070E6-19			3 phase 200–240 VAC	3 phase 230 VAC	1,5	7	2	No	ODE-3-220070-3F4A
FI-E33105E6-19					2,2	10,5	2	No	ODE-3-220105-3F4A
FI-E33180E6-19	4	18			3	No	ODE-3-320180-3F4A		
FI-E33240E6-19	5,5	24			3	No	ODE-3-320240-3F4A		
FI-E33300E6-19	7,5	30			4	No	ODE-3-420300-3F4A		
FI-E33460E6-19	11	46			4	No	ODE-3-420460-3F4A		
FISE33070E6-19	1,5	7			2	Yes	ODE-3-220070-3F4B		
FISE33105E6-19	2,2	10,5			2	Yes	ODE-3-220105-3F4B		
FISE33180E6-19	4	18			3	Yes	ODE-3-320180-3F4B		
FISE33240E6-19	5,5	24			3	Yes	ODE-3-320240-3F4B		
FISE33300E6-19	7,5	30			4	Yes	ODE-3-420300-3F4B		
FISE33460E6-19	11	46			4	Yes	ODE-3-420460-3F4B		
FI-E44012E6-19	3 phase 380–480 VAC	3 phase 380–480 VAC			0,37	1,2	1	No	ODE-3-140012-3F1A
FI-E44022E6-19					0,75	2,2	1	No	ODE-3-140022-3F1A
FI-E44041E6-19					1,5	4,1	1	No	ODE-3-140041-3F1A
FI-E44058E6-19					2,2	5,8	2	No	ODE-3-240058-3F4A
FI-E44095E6-19					4	9,5	2	No	ODE-3-240095-3F4A
FI-E44140E6-19					5,5	14	3	No	ODE-3-340140-3F4A
FI-E44180E6-19			7,5	18	3	No	ODE-3-340180-3F4A		
FI-E44240E6-19			11	24	3	No	ODE-3-340240-3F4A		
FI-E44300E6-19			15	30	4	No	ODE-3-440300-3F4A		
FI-E44390E6-19			18,5	39	4	No	ODE-3-440390-3F4A		
FI-E44460E6-19			22	46	4	No	ODE-3-440460-3F4A		
FISE44012E6-19			0,37	1,2	1	Yes	ODE-3-140012-3F1B		
FISE44022E6-19			0,75	2,2	1	Yes	ODE-3-140022-3F1B		
FISE44041E6-19			1,5	4,1	1	Yes	ODE-3-140041-3F1B		
FISE44058E6-19			2,2	5,8	2	Yes	ODE-3-240058-3F4B		
FISE44095E6-19			4	9,5	2	Yes	ODE-3-240095-3F4B		
FISE44140E6-19			5,5	14	3	Yes	ODE-3-340140-3F4B		
FISE44180E6-19			7,5	18	3	Yes	ODE-3-340180-3F4B		
FISE44240E6-19			11	24	3	Yes	ODE-3-340240-3F4B		
FISE44300E6-19			15	30	4	Yes	ODE-3-440300-3F4B		
FISE44390E6-19			18,5	39	4	Yes	ODE-3-440390-3F4B		
FISE44460E6-19			22	46	4	Yes	ODE-3-440460-3F4B		



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				Features		
<b>Input Ratings</b>	Supply Voltage	200–240 V ±10% 380–480 V ±10%	<b>Control Specification</b>	Control Method	Sensorless Vector Speed Control PM Vector Control BLDC Control Synchronous Reluctance V/F voltage	
	Supply Frequency	48–62 Hz		Compatible motor types	IE2, IE3, IE4, IM, PM, BLDC and SynRM	
	Displacement Power Factor	> 0,98		PWM Frequency	4–32 kHz Effective	
	Phase imbalance	3% Maximum allowed		Stopping Mode	Ramp to stop: User Adjustable 0,1–600 secs Coast to stop	
	Inrush Current	< rated current		Braking	Motor Flux Braking Built-in braking transistor (not frame size 1)	
	Power Cycles	120 per hour maximum, evenly spaced		Skip Frequency	Single point, user adjustable	
<b>Output Ratings</b>	Output Power	230 V 1 Ph Input: 0,37–4 kW 230 V 3 Ph Input: 1,5–11 kW 400 V 3 Ph Input: 0,37–22 kW	<b>Fieldbus</b>	Setpoint Control	Analogue control	0–10 Volts 10–0 Volts 0–20 mA 20–0 mA 4–20 mA 20–4 mA
	Overload Capacity	150% for 60 seconds 175% for 4 seconds			Digital	Motorised Potentiometer (Keypad) Modbus RTU CANopen EtherNet/IP
	Output Frequency	0–500 Hz, 0,1 Hz resolution		Built-in	CANopen	125–1000 kbps
	Acceleration Time	0,01–600 seconds		Modbus RTU	9,6–115,2 kbps selectable	
	Deceleration Time	0,01–600 seconds		Power Supply	24 VDC, 100 mA, Short Circuit Protected 10 VDC, 5 mA for Potentiometer	
	Typical Efficiency	> 98%		Programmable Inputs	4 Total: 2 Digital 2 Analogue / Digital selectable	
<b>Ambient Conditions</b>	Temperature	Storage: -40 to 60°C Operating: -10 to 50°C	<b>I/O Specification</b>	Digital Inputs	8–30 VDC, internal or external supply Response time < 4 ms	
	Altitude	Up to 1000 m ASL without derating Up to 2000 m maximum UL approved Up to 4000 m maximum (non UL)		Analogue Inputs	Resolution: 12 bits Response time: < 4 ms Accuracy: ±2% full scale Parameter adjustable scaling and offset	
	Humidity	95 % Max, non-condensing		Programmable Outputs	2 Total: 1 Analogue / Digital 1 Relay	
	Vibration	Conforms to EN61800-5-1		Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 6A AC, 5A DC	
<b>Enclosure</b>	Ingress Protection	IP66	<b>Application Features</b>	Analogue Outputs	0–10 Volt, max. 20 mA	
<b>Programming</b>	Keypad	Built-in keypad as standard Optional remote mountable keypad		Digital Outputs	0–24 Volt, max. 20 mA	
	Display	7-segment LED	PI Control	Internal PI Controller; Standby / Sleep Function		
	PC	OptiTools Studio	Fire Mode	Bidirectional Selectable Speed Setpoint (Fixed / PI / Analogue / Fieldbus)		
			<b>Maintenance &amp; Diagnostics</b>	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		

### Dimensions



Frame size	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Weight [kg]
1	232	207	189	25	162	161	148,5	4	8	2,5
2	257	220	200	28,5	182	188	176	4,2	8,5	3,5
3	310	276	251,5	33,4	238	211	197,5	4,2	8,5	7
4	360	322	300	33,4	275	240	226	4,2	8,5	9,5



**Global trade item numbers (GTIN)**

Article code	Packaging (Unit)
FI-E11043E6-19	05401003006306
FI-E11070E6-19	05401003006320
FI-E11105E6-19	05401003006344
FISE11043E6-19	05401003006788
FISE11070E6-19	05401003006795
FISE11105E6-19	05401003006801
FI-E13023E6-19	05401003006368
FI-E13043E6-19	05401003006399
FI-E13070E6-19	05401003006412
FI-E13105E6-19	05401003006436
FI-E13153E6-19	05401003006443
FISE13023E6-19	05401003006818
FISE13043E6-19	05401003006825
FISE13070E6-19	05401003006832
FISE13105E6-19	05401003006849
FISE13153E6-19	05401003006856
FI-E33070E6-19	05401003006467
FI-E33105E6-19	05401003006481
FI-E33180E6-19	05401003006504
FI-E33240E6-19	05401003006528
FI-E33300E6-19	05401003006542
FI-E33460E6-19	05401003006566
FISE33070E6-19	05401003006863
FISE33105E6-19	05401003006870
FISE33180E6-19	05401003006887
FISE33240E6-19	05401003006894
FISE33300E6-19	05401003006900
FISE33460E6-19	05401003006917
FI-E44012E6-19	05401003018279
FI-E44022E6-19	05401003006580
FI-E44041E6-19	05401003006603
FI-E44058E6-19	05401003006627
FI-E44095E6-19	05401003006641
FI-E44140E6-19	05401003006665
FI-E44180E6-19	05401003006689
FI-E44240E6-19	05401003006702
FI-E44300E6-19	05401003006726
FI-E44390E6-19	05401003006726
FI-E44460E6-19	05401003006764
FISE44012E6-19	05401003018286
FISE44022E6-19	05401003006924
FISE44041E6-19	05401003006931
FISE44058E6-19	05401003006948
FISE44095E6-19	05401003006955
FISE44140E6-19	05401003006962
FISE44180E6-19	05401003006979
FISE44240E6-19	05401003006986
FISE44300E6-19	05401003006993
FISE44390E6-19	05401003007006
FISE44460E6-19	05401003007013