General

The 3G3FV is a frequency inverter of the top class. It is equipped with real flux vector control of the latest generation. This allows a holding torque (standstill) of 100% long-term and up to 150% short-term. This is an important point in particular for elevators and lifts.
In addition flux vector control permits precise torque control. This is of great advantage for coil winders or axis driven at both ends.

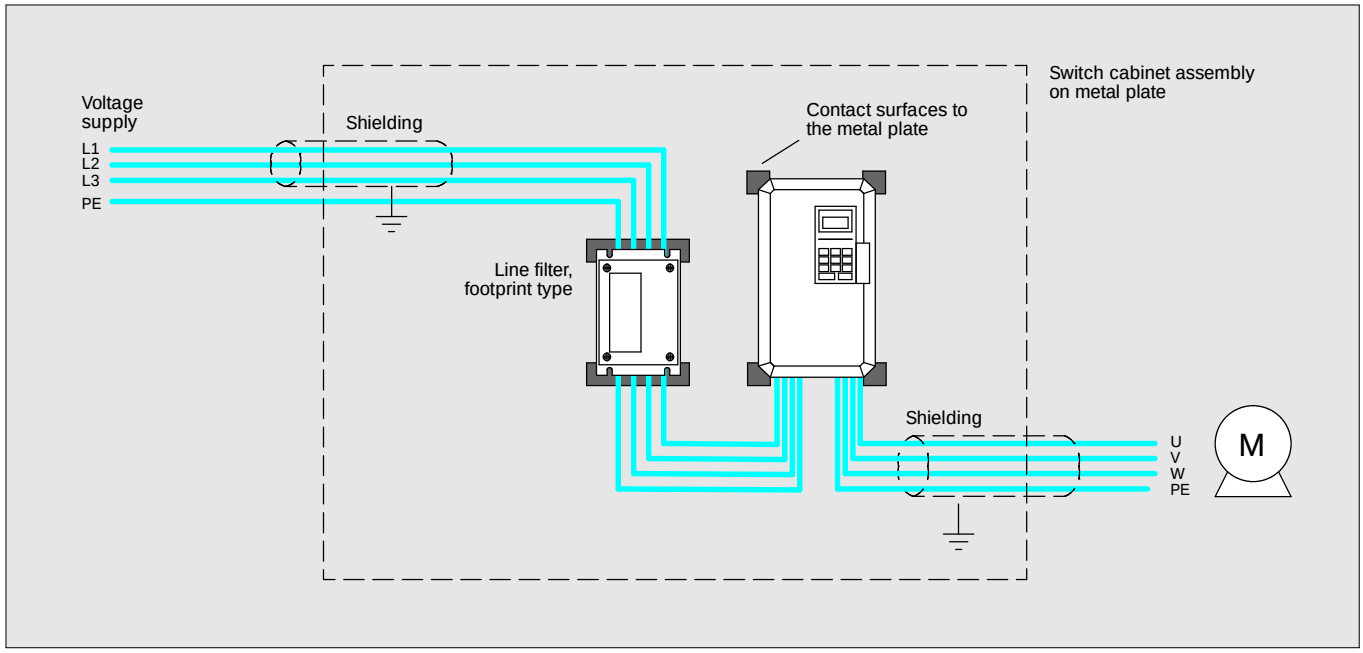
Starting-up is facilitated by an LCD display with indications in 7 languages. If the inverter should ever fail, it shows all the data at the moment of failure (current, voltage etc.). In this way trouble location is made much easier and the standstill time is minimised. Many protective functions (protection against short-circuit, excess voltage and overload) ensure that the inverter and your plant are not damaged in the event of a failure.

Features:

- high torque
- high speed stability during load variations
- torque control (winder, load sharing)
- built-in PID controller
- fast analog input (< 2 ms)
- high dynamics thanks to 32 bit DSP
- neuro-fuzzy allows short start and stop times
- self-adjustment to the motor (auto-tuning)
- slip compensation for motor and generator operation
- built-in timing element (e.g. for delayed response of mechanical brakes)
- position lock at "0" speed
- protection against short-circuit, excess / insufficient voltage and overload
- saving of electrical operating circumstances at moment of failure
- 8 switchable digital NPN or PNP inputs
- analog frequency default: 0-10 VDC or 4-20 mA
- high continuous output current
- low noise thanks to 15 kHz carrier frequency
- built-in programming unit, also may be mounted on front panel
- built-in RS-232C/-422/-485
- Windows software for programming

System architecture

To comply with relevant EMC guidelines it is imperative for frequency inverters always to operate with appropriate line filters and according to the relevant installation instructions.



Product overview

Inverter: 3G3FV-A4_-CUE

	3G3FV-A	4004-CUE	4007-CUE	4015-CUE	4022-CUE	4037-CUE
Maximum allowed motor output	kW	0,55	1,1	1,5	2,2	3,7
Output data Inverter performance	kVA	1,4	2,6	3,7	4,7	6,1
Output rated current	A	1,8 A	3,4	4,.8	6,2	8

	3G3FV-A	4040-CUE	4055-CUE	4075-CUE	4110-CUE	4150-CUE
Maximum allowed motor output	kW	4,0	5,5	7,5	11	15
Output data Inverter performance	kVA	8,6	11	14	21	26
Output rated current	A	11	14	18	27	34

Inverter: 3G3FV-B4_-CUE

	3G3FV-B	4185-CUE	4220-CUE	4300-CUE	4370-CUE	4450-CUE	4550-CUE
Maximum allowed motor output	kW	18,5	22	30	37	45	55
Output data Inverter performance	kVA	31	40	50	61	73	98
Output rated current	A	41	52	65	80	96	128

	3G3FV-B	4750-CUE	411K-CUE	416K-CUE	418K-CUE	422K-CUE	430K-CUE
Maximum allowed motor output	kW	75	110	160	185	220	300
Output data Inverter performance	kVA	130	170	230	260	340	460
Output rated current	A	165	224	302	340	450	605

Accessories

Line filter

Inverter	Rated voltage	Line filter	Current
3G3FV-A4004-CUE 3G3FV-A4007-CUE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3FV-A4015-CUE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3FV-A4022-CUE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3FV-A4037-CUE 3G3FV-A4040-CUE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3FV-A4055-CUE	3 x 400 VAC	3G3FV-PFI4025-E*	25 A
3G3FV-A4075-CUE	3 x 400 VAC	3G3FV-PFI4025-E*	25 A
3G3FV-A4110-CUE	3 x 400 VAC	3G3FV-PFI4040-E*	40 A
3G3FV-A4150-CUE	3 x 400 VAC	3G3FV-PFI4040-E*	40 A
3G3FV-B4185-CUE	3 x 400 VAC	3G3FV-PFI4060-E	60 A
3G3FV-B4220-CUE	3 x 400 VAC	3G3FV-PFI4060-E	60 A
3G3FV-B4300-CUE	3 x 400 VAC	3G3FV-PFI4100-E	100 A
3G3FV-B4370-CUE	3 x 400 VAC	3G3FV-PFI4100-E	100 A
3G3FV-B4450-CUE	3 x 400 VAC	3G3FV-PFI4120-E	120 A
3G3FV-B4550-CUE	3 x 400 VAC	3G3FV-PFI4150-E	150 A
3G3FV-B4750-CUE	3 x 400 VAC	3G3FV-PFI4180-E	180 A
3G3FV-B411K-CUE	3 x 400 VAC	3G3FV-PFI4280-E	280 A
3G3FV-B416K-CUE 3G3FV-B418K-CUE	3 x 400 VAC	3G3FV-PFI4450-E	450 A
3G3FV-B422K-CUE	3 x 400 VAC	3G3FV-PFI4600-E	600 A
3G3FV-B430K-CUE	3 x 400 VAC	3G3FV-PFI4900-E	900 A

* footprint design

Accessories (continued)

Brake choppers, braking resistors for frequency inverters, 3-phase 400 V

Inverter	Rated voltage	Braking chopper	Number	Braking resistors	Number	Specification for each unit
3G3FV-A4004-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF150W-J101	1	100 W, 150 W
3G3FV-A4007-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF150W-J101	1	100 W, 150 W
3G3FV-A4015-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF150W-J101	1	100 W, 150 W
3G3FV-A4022-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF250W-J680T	1	68 W, 250 W
3G3FV-A4037-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF500W-J360T	1	36 W, 500 W
3G3FV-A4040-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF500W-J360T	1	36 W, 500 W
3G3FV-A4055-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF500W-J360T	1	36 W, 1000 W
3G3FV-A4075-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF101W-J360T	1	36 W, 1000 W
3G3FV-A4110-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF151W-J200T	1	20 W, 1500 W
3G3FV-A4150-CUE	3 x 400 VAC	built-in	-	3G3IV-PERF151W-J200T	1	20 W, 1500 W
3G3FV-B4185-CUE	3 x 400 VAC	3G3IV-PCDBR 4030B	1	3G3IV-PERF601W-J200T	1	20 W, 6000 W
3G3FV-B4220-CUE	3 x 400 VAC	3G3IV-PCDBR 4030B	1	3G3IV-PERF601W-J200T	1	20 W, 6000 W
3G3FV-B4300-CUE	3 x 400 VAC	3G3IV-PCDBR 4030B	1	3G3IV-PERF601W-J200T	1	20 W, 6000 W
3G3FV-B4370-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	1	3G3IV-PERF961W-J100T	1	10 W, 9600 W
3G3FV-B4450-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	1	3G3IV-PERF961W-J100T	1	10 W, 9600 W
3G3FV-B4550-CUE	3 x 400 VAC	3G3IV-PCDBR 4030B	2	3G3IV-PERF601W-J200T	2	20 W, 6000 W
3G3FV-B4750-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	2	3G3IV-PERF961W-J100T	2	10 W, 9600 W
3G3FV-B411K-CUE	3 x 400 VAC	3G3IV-PCDBR 4030B	3	3G3IV-PERF601W-J200T	3	20 W, 6000 W
3G3FV-B416K-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	4	3G3IV-PERF961W-J100T	4	10 W, 9600 W
3G3FV-B418K-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	4	3G3IV-PERF961W-J100T	4	10 W, 9600 W
3G3FV-B422K-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	5	3G3IV-PERF961W-J100T	5	10 W, 9600 W
3G3FV-B430K-CUE	3 x 400 VAC	3G3IV-PCDBR 4045B	6	3G3IV-PERF961W-J100T	6	10 W, 9600 W

Other accessories

	Description	Product number
Encoder cards	for speed control in U/f operation, 30 kHz, 12 VDC	3G3FV-PPGA2
	for vector control, 30 kHz, 12 VDC	3G3FV-PPGB2
	for speed control in U/f operation, 300 kHz, RS-422-line driver	3G3FV-PPGD2
	for vector control, 300 kHz, RS-422-line driver	3G3FV-PPGX2
Analog input/output cards	analog input card, ±10 V, 14 bit resolution	3G3IV-PAI14B
	analog input card, 0...10 V, 14 bit resolution	3G3IV-PAI14U
	aanalog input card, 2 channel, 0...10 V, 8 bit	3G3IV-PAO08
	analog input card, 2 channel, ±10 V, 12 bit	3G3IV-PAO12
Digital input/output cards	pulse output card, pulse frequency proportional to motor frequency	3G3IV-PPO36F
	relay output card, 2 change-over contacts, 250 VAC, 30 VDC, 1 A	3G3IV-PDO02C
	digital input card, 8 bit, BCD or binary	3G3IV-PDI08
	digital input card, 8 bit, BCD or binary	3G3IV-PDI16H2
Consoles and cables	copy unit	3G3FV-PJVOP135
	programming console	3G3FV-PJVOP130E
	extension cable for copy unit	3G3FV-PW5101
	extension cable for programming console	3G3FV-PCN125
	extension cable for programming console	3G3FV-PCN325
	programming cable to PC	3G3FV-PCNDW225N
Adapters	adapter for front panel assembly of programming console, fixed assembly	3G3FV-PDACT-AD
	adapter for front panel assembly of programming console, removable	3G3FV-PDACT-BD

Accessories (continued)

Other accessories

Field bus cards	device net	**3G3FV-PDRT1-SIN**
Special applications	master slave speed control of 2 axes, 300 kHz, RS-422-line driver	**3G3FV-PGW2 (VSG10012 required)**
	brake management dependent on current and three-phase current speed control dependent on load	**Crane software VSG10514**
	software for high-speed drives	**1000 Hz software VSG10511**

Programming accessories

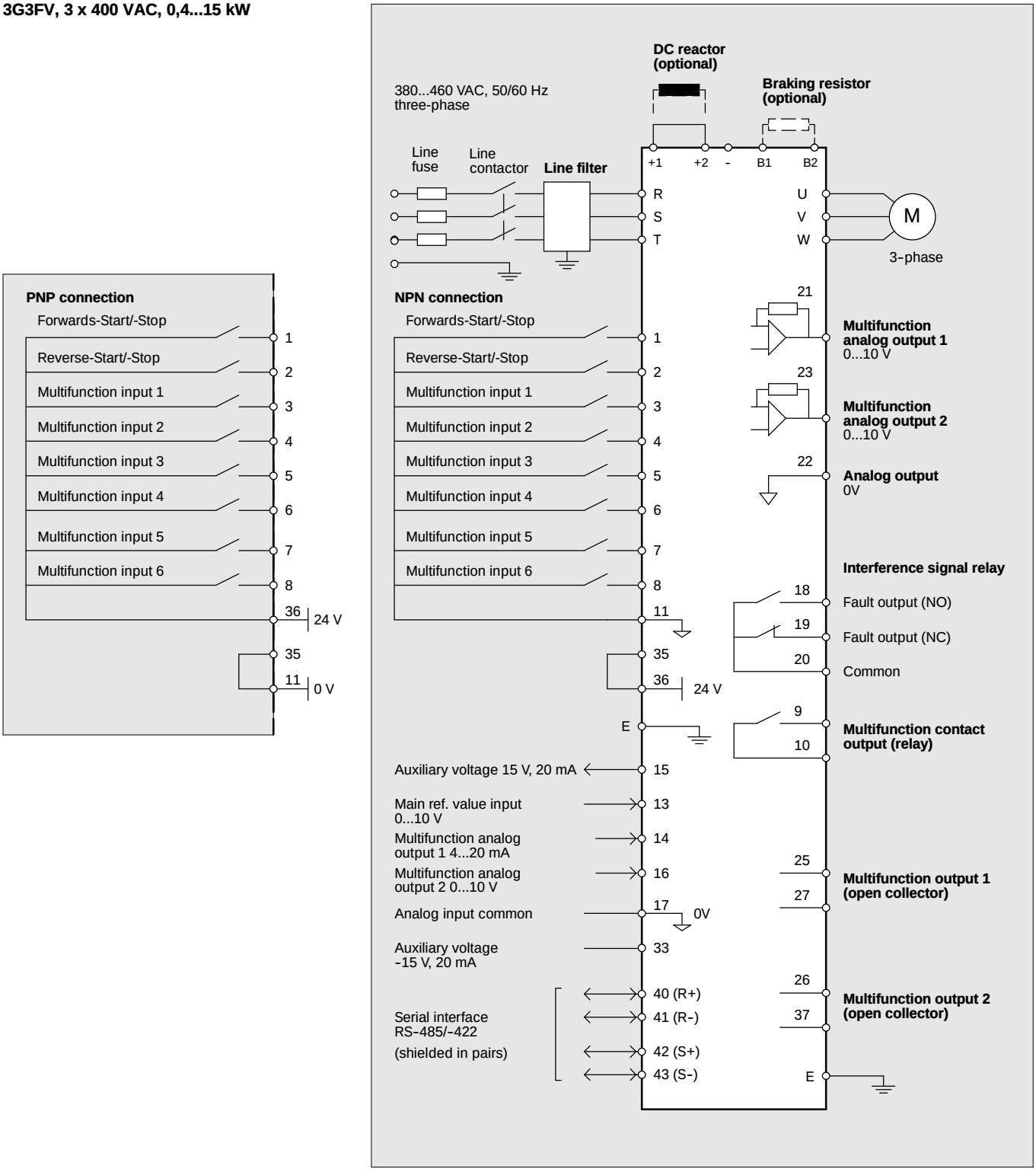
	Description	Cable length	Product number
PC programming	Programming software under WINDOWS	-	**SYSDRIVE Configurator**
	Connecting cable	2 m	**3G3FV-PCNDW225N**

Technical data

Output data	Max. output voltage	three-phase: 380/400/415/440/460 V (proportional to input voltage)
	Output frequency	0,1 Hz to 400 Hz programmable
Supply	Rated input voltage and frequency	three-phase 380/400/415/440/460 V, 50/60 Hz
	Allowed voltage variation	+10%, -15%
	Allowed frequency variation	±5%
Control functions	Type of control	sinusoidal pulse width modulation (PWM)
	Starting torque	150% at 0 rpm (with incremental encoder)
	Speed adjustment range	1:1000 (with incremental encoder)
	Speed constant	±0,2% (±0.02% with incremental encoder)
	Speed response	5 Hz (30 Hz with incremental encoder)
	Torque limit	adjustable (with parameter, 4 values can be set)
	Torque precision	±5%
	Torque response	40 Hz (with incremental encoder)
	Output frequency range	0,0-400 Hz
	Frequency precision	digital default: 0,01% analog default: 0,1%
	Frequency resolution	digital operator reference: (0,01 Hz (under 100 Hz) 0,1 Hz (over 100 Hz) analog reference: (0,03 Hz / 60 Hz (11 Bit + Code)
	Output frequency resolution	0.001 Hz
	Overload capacity	150% of the output rated current for 1 minute 200% for 1 s
	Frequency reference	-10 to 10 V, 0 to 10 V, 4 to 20 mA
	Acceleration/deceleration	0,0 to 6000 s (can be programmed independently, 4 values can be set)
	Braking torque	approx. 20% (150% with braking resistor)
Protective functions	Undervoltage	stops when main circuit DC voltage is approx. 380 V
	Momentary power interruption ridethru	immediate stop after failure of longer than 15 ms (standard adjustment) continuous operation for 2 s on voltage failure (standard)
	Cooling fin overheating	protection by thermistor
	Stall prevention	Stall prevention during the acceleration/deceleration phase, and also during constant frequency operation possible
	Earth fault	protection by electronic circuit
	Charge indicator	the charge indicator lights up until the intermediate circuit voltage falls under 50 V
	Protection against motor overload	thermo-electronic protection against overload
	Short-time excess current	for the duration of 1 s at 200% of the rated current the motor runs down freely
	Fuse short	the motor runs down to a halt
	Overload	after 1 minute at 150% of the rated current the motor runs down to a halt
	Overvoltage	stops when maincircuit DC voltage is approx. 820 V
Ambient conditions	Ambient temperature	-10 °C to +45 °C (open chassis type)
	Air humidity	90% RH (without condensation)
	Storage temperature	-20 °C to +60 °C
	Place of assembly	inside (protected against corrosive gases and dust)
	Vibrations	1 G for oscillations of less than 20 Hz, up to 0.2 G for oscillations from 20 to 50 Hz

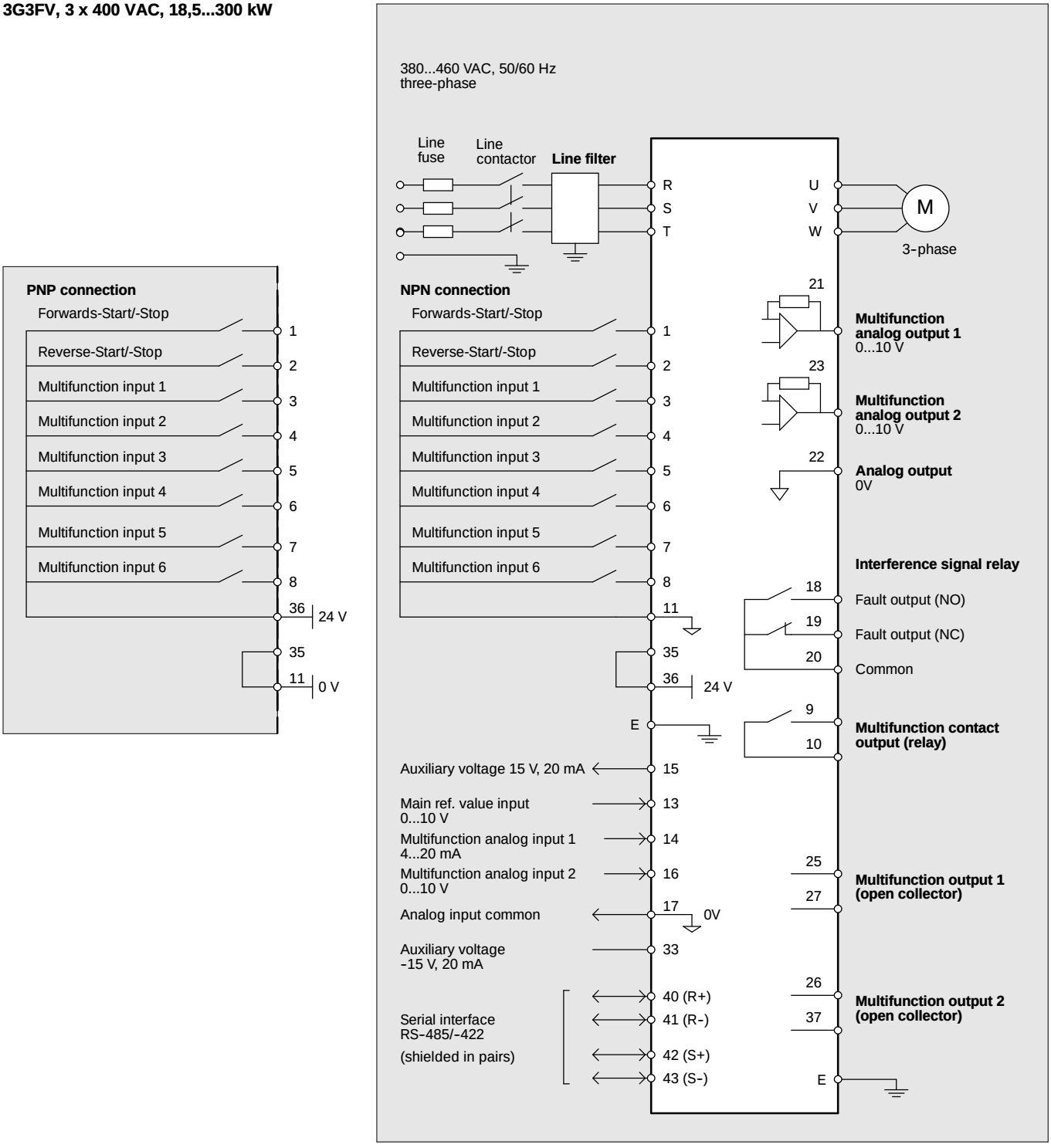
Connections diagram

3G3FV, 3 x 400 VAC, 0,4...15 kW

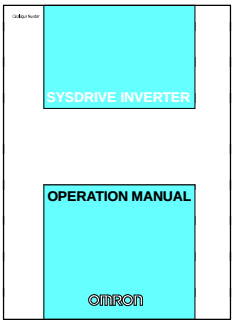


Connections diagram (continued)

3G3FV, 3 x 400 VAC, 18,5...300 kW



Technical documentation



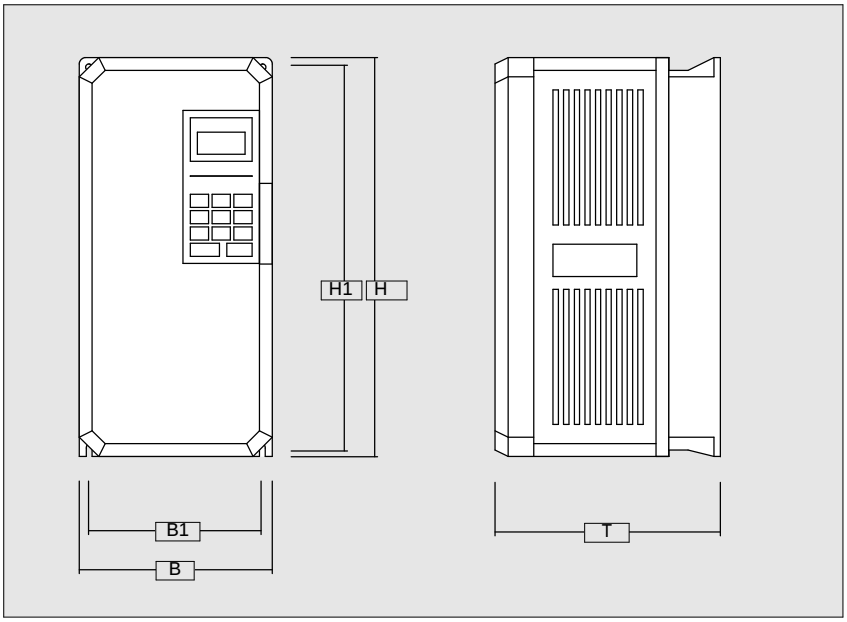
English documentation

Product	Title	Product number
3G3FV	User Manual	**I516-E1-1**
3G3FV/3G3HV	Installation Manual	**I520-E1-1**
3G3FV-PRT1-S/W	Devicenet User Manual	**I525-E1-1**

Dimensions (mm)

Inverter
3G3FV-A4_, 400 V, three-phase, up to 15 kW

B	B1	H	H1	T	Weight kg	Product number
140	126	280	266	180	3	004-CUE 007-CUE
140	126	280	266	180	4,5	015-CUE 022-CUE 037-CUE 040-CUE
200	186	300	285	205	6	055-CUE 075-CUE
250	236	380	365	225	11	110-CUE 150-CUE

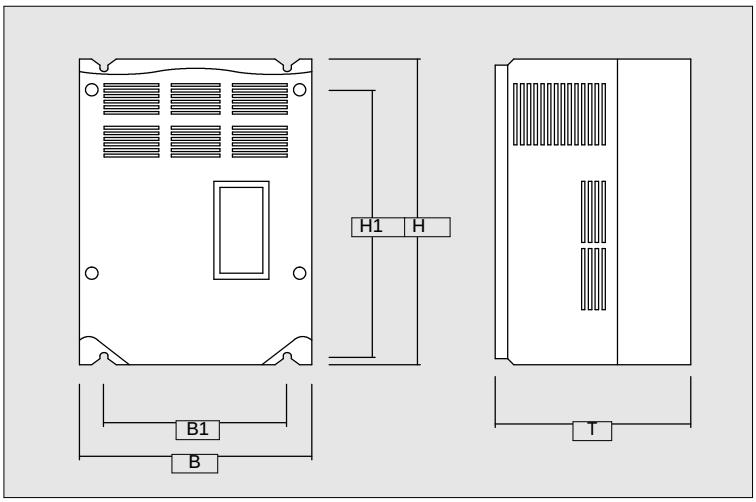


Dimensions (mm) (continued)

Inverter
3G3FV-B4_, 400 V three-phase, >15 kW

B	B1	H	H1	T	Weight kg	Product number
325	275	450	435	285	27	185-CUE
325	275	450	435	285	27	220-CUE
325	275	625	610	285	44	300-CUE
325	275	625	610	285	44	370-CUE
325	275	625	610	285	44	450-CUE
455	350	820	795	350	79	550-CUE
455	350	820	795	350	80	750-CUE
575	445	925	895	375	135	11K-CUE
575	445	925	895	400	145	16K-CUE
950	*	1450	1400	435	*	18K-CUE
950	*	1450	1400	435	*	22K-CUE
960	*	1600	1550	455	*	30K-CUE

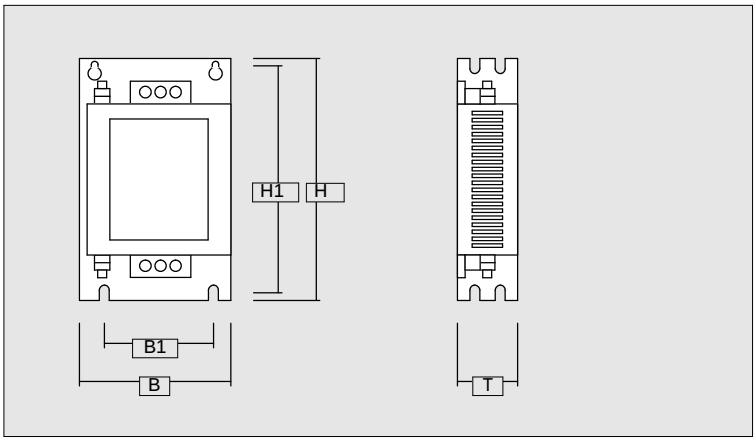
* on demand



Line filter
3G3FV-PFI_, 400 V, single phase, footprint type

up to 15 kW

B	B1	H	H1	T	Product number
143	90	320	310	40	4012E
213	150	350	330	40	4025E
266	200	435	415	55	4040E



3G3FV-PFI_, 400 V, three-phase

from 15 kW

B	B1	H	H1	T	Product number
140	106	270	258	90	4060-E
180	146	350	338	90	4100-E
200	166	420	408	130	4120-E
200	166	420	408	130	4150-E
200	166	480	468	160	4180-E
200	166	480	468	160	4280-E
250	170	567	560	205	4450-E