Inverters

Selection Guide

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Frequency inverters

In the field of drives OMRON offers five series of frequency inverters for standard three-phase motors: 3G3EV, 3G3JV, 3G3MV, 3G3HV and 3G3FV. These inverters can be run on all European and non-European single-phase and three-phase power supplies. The power spectrum ranges from 0.1...300 kW at supply voltages from 200 ... 575 V (50/60 Hz).

OMRON frequency inverters are heavy-duty, application-oriented, user-friendly and communicative:

heavy-duty:
- high rated current
- built-in brake chopper up to 15 kW inverter power
- high range of nominal voltage, i.e. 380 V (–10%) to 460 V (+ 15%)
- high starting torque
- short-circuit and earth-fault proof
- error-free operation at short-time voltage breakdown

application-oriented:
- integrated PID control
- energy-saving algorithm
- flux vector control
- low-noise operation
- brake management
- numerous multifunctional inputs and outputs

communicative and user-friendly:
- built-in serial interfaces
- diverse bus couplings
- standard built-in operating console
- parameterising software under WINDOWS

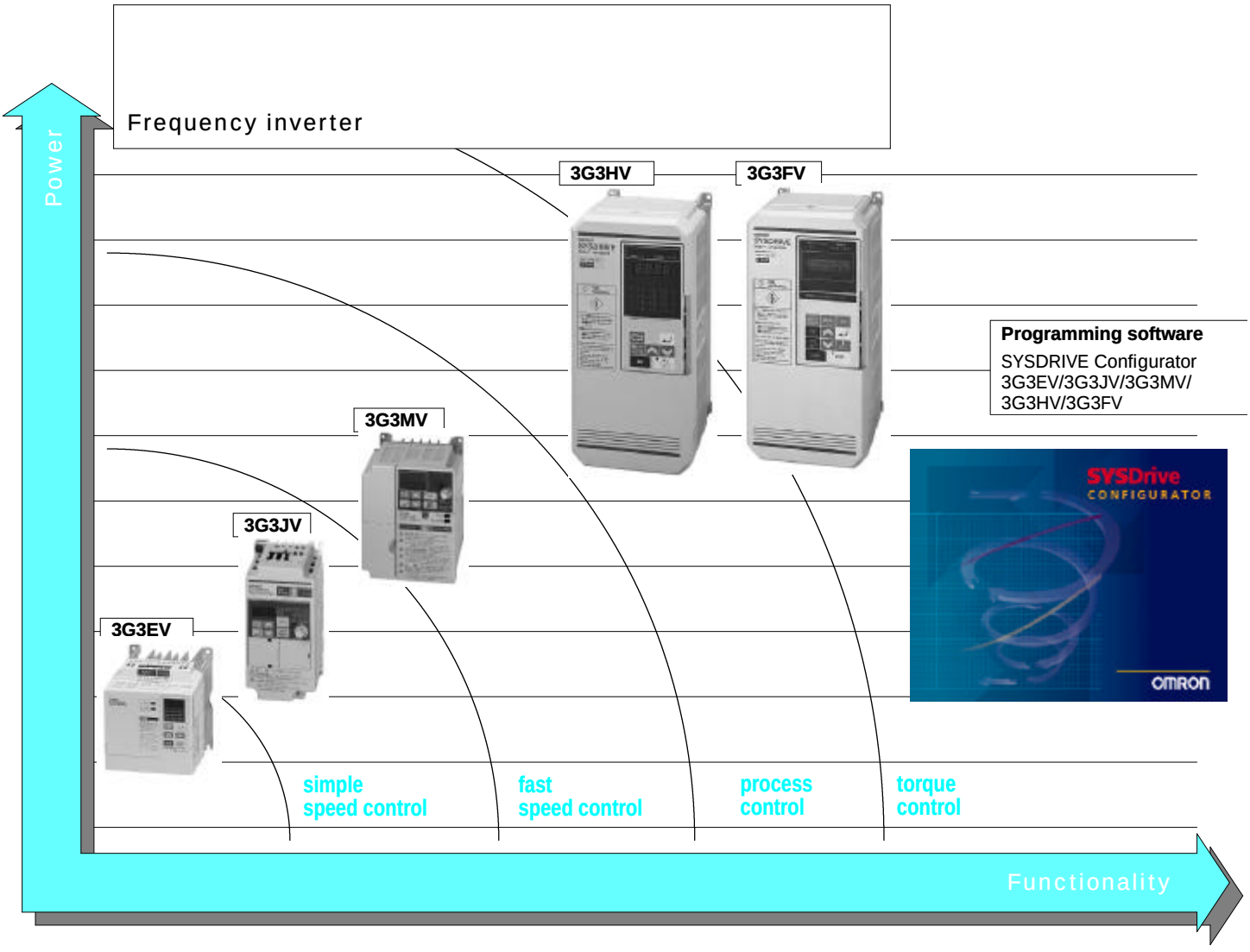


Table of options according to application

		Variable-frequency inverter					
	Power (kW)	**0.1–1.5**	**0.1–4.0**	**0.1–7.5**	**0.4–4.0**	**4.0–15**	**18.5–300**
	Mains voltage (VAC)	**1 x 230 3 x 230 3 x 400**	**1 x 230 (up to 1.5) 3 x 230 3 x 400**	**1 x 230 3 x 230 3 x 400**	**1 x 230 (up to 3.7) 3 x 400**	**3 x 400**	**3 x 400**
Quadratic moment	Fan, Pumps	3G3EV	3G3JV	3G3MV	3G3HV	3G3HV	-
Constant moment steady load	Lifts, Cranes	-	-	3G3MV	-	3G3FV	3G3FV
	Conveyors	3G3EV	3G3JV	3G3MV	3G3HV	3G3HV/FV	3G3FV
	Extruders	-	-	-	-	3G3FV	3G3FV
	Heavy industry	-	-	-	-	3G3FV	3G3FV
Cyclical load	Palletising	3G3EV	-	3G3MV	-	3G3HV/FV	3G3FV
	Tooling machines	-	-	-	-	3G3FV	3G3FV
	Presses	-	-	-	-	3G3FV	3G3FV
	Robots	-	-	-	-	-	-
Controlled moment	Coil winders (thick material)	-	-	-	-	3G3HV/FV	3G3FV
	Coil winders (sensitive material)	-	-	-	-	3G3FV	3G3FV
	Spindles	-	-	-	-	3G3FV	3G3FV

General

The 3G3EV is a miniature variable-frequency inverter of great reliability due to a very high current-carrying capacity. The continuous output current of the 3G3EV is about 20% above the rated current of a four-pole standard motor.

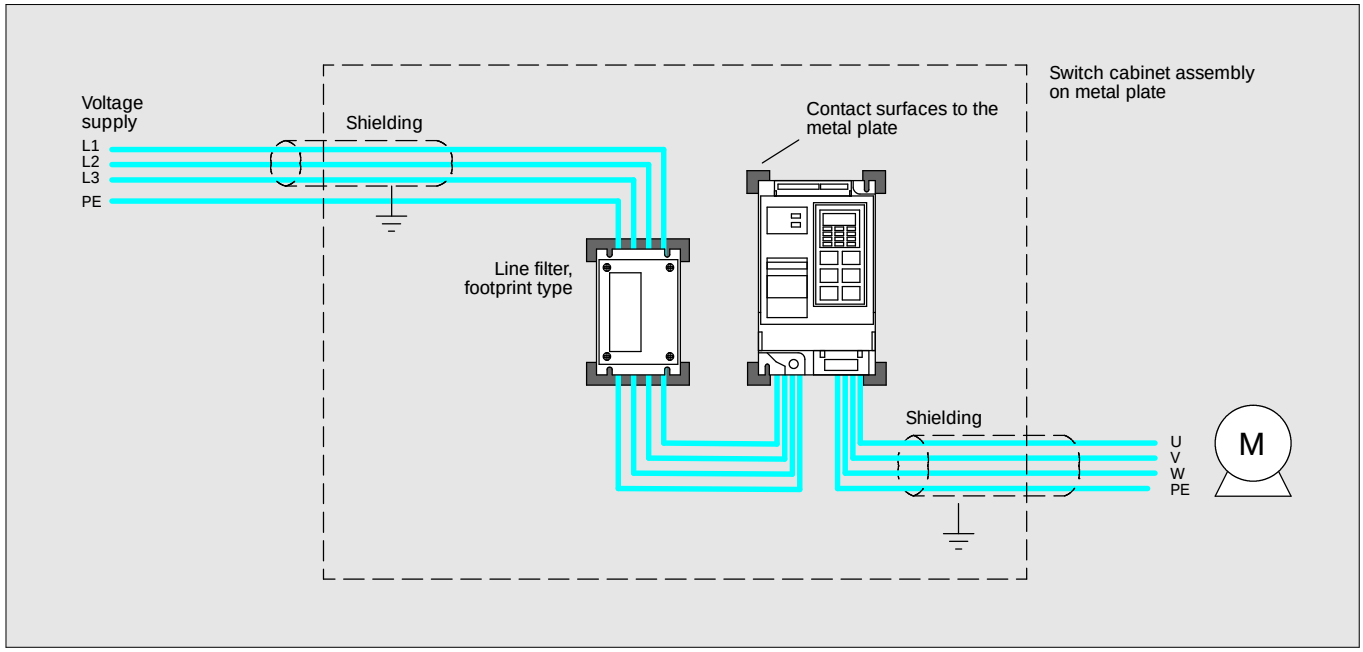
Advantages are a high starting torque even when fully loaded and not being susceptible to overload or shock loads. This increases the operating time of your machine. Inputs and outputs are very flexible. The analogue frequency default takes place via 4...20mA or 0...10V. The digital inputs can be NPN or PNP.

Features:

- compact design
- NPN or PNP digital inputs
- analogue frequency default: 0-10VDC or 4-20mA
- high continuous output current
- low noise thanks to 15 kHz carrier frequency
- built-in operating console, also may be mounted on front panel
- built-in brake chopper
- UL/CSA and CE in one device
- modbus
- optional RS-232C interface and programming software

System architecture

To comply with relevant EMC guidelines it is imperative for variable-frequency inverters to be operated with line filters.



Product overview

Max. motor output	Output current	Rated voltage	Product number		
			Standard type*	Multifunction type*	Multifunction type with optional modbus
Inverter for high starting torque, single phase 230 V					
0,12 kW	0,8 A	1 x 230 VAC	3G3EV-AB001-CE	3G3EV-AB001M-CE	3G3EV-AB001MA-CUE (S1)**
0,25 kW	1,5 A	1 x 230 VAC	3G3EV-AB002-CE	3G3EV-AB002M-CE	3G3EV-AB002MA-CUE (S1)**
0,55 kW	3,0 A	1 x 230 VAC	3G3EV-AB004-CE	3G3EV-AB004M-CE	3G3EV-AB004MA-CUE (S1)**
1,1 kW	5,0 A	1 x 230 VAC	3G3EV-AB007-CE	3G3EV-AB007M-CE	3G3EV-AB007MA-CUE (S1)**
1,5 kW	7,0 A	1 x 230 VAC	3G3EV-AB015-CE	3G3EV-AB015M-CE	3G3EV-AB015MA-CUE (S1)**
Inverter for low starting torque, single phase 230 V					
0,1 kW	0,8 A	3 x 230 VAC	3G3EV-A2001-CE	3G3EV-A2001M-CE	3G3EV-A2001MA-CUE (S1)**
0,2 kW	1,5 A	3 x 230 VAC	3G3EV-A2002-CE	3G3EV-A2002M-CE	3G3EV-A2002MA-CUE (S1)**
0,4 kW	3,0 A	3 x 230 VAC	3G3EV-A2004-CE	3G3EV-A2004M-CE	3G3EV-A2004MA-CUE (S1)**
0,75 kW	5,0 A	3 x 230 VAC	3G3EV-A2007-CE	3G3EV-A2007M-CE	3G3EV-A2007MA-CUE (S1)**
1,5 kW	7,0 A	3 x 230 VAC	3G3EV-A2015-CE	3G3EV-A2015M-CE	3G3EV-A2015MA-CUE (S1)**
Inverter for high starting torque, 3 phase 400 V					
0,37 kW	1,2 A	3 x 400 VAC	3G3EV-A4002-CE	3G3EV-A4002M-CE	3G3EV-A4002MA-CUE (S1)**
0,55 kW	1,8 A	3 x 400 VAC	3G3EV-A4004-CE	3G3EV-A4004M-CE	3G3EV-A4004MA-CUE (S1)**
1,1 kW	3,4 A	3 x 400 VAC	3G3EV-A4007-CE	3G3EV-A4007M-CE	3G3EV-A4007MA-CUE (S1)**
1,5 kW	4,8 A	3 x 400 VAC	3G3EV-A4015-CE	3G3EV-A4015M-CE	3G3EV-A4015MA-CUE (S1)**

* Differences in the connections (page 36) and in the set of parameters
On demand:
- Input: 1 x 110 VAC
** - Modbus in combination with 3G3EV-PJVOP485
- CE and UL/CSA model with blind panel (without S1)
- CE and UL/CSA model with digital operator (with S1)

Accessories

Input noise filter, braking resistors, ferrite rings

Rated output of inverter	Rated voltage	Product number		
		Input noise filter (footprint type)	Braking resistors	Ferrite rings
0,1 kW 0,2 kW	1 x 230 VAC	3G3EV-PFI 1010-E(N)	3G3IV-PERF 150WJ401	3G3IV-PFO OC/1
0,4 kW 0,75 kW	1 x 230 VAC	3G3EV-PFI 1015-E(N)	3G3IV-PERF 150WJ201	
1,5 kW	1 x 230 VAC	3G3EV-PFI 1020-E(N)	3G3IV-PERF 150WJ101	3G3IV-PFO OC/2
0,2 kW 0,4 kW 0,75 kW	3 x 400 VAC	3G3EV-PFI 3006-E(N)	3G3EV-PERF 150WJ751	3G3IV-PFO OC/1
1,5 kW	3 x 400 VAC	3G3EV-PFI 3008-E(N)	3G3EV-PERF 150WJ401	3G3IV-PFO OC/2

Other

Description	Product number
DIN bar adapter for assembly without line filter	3G3EV-PSPAT3 (0,1 - 0,2 kW)
	3G3EV-PSPAT4 (0,4 - 0, 75 kW)
Blank cover for operating console	3G3EV-CVST
RS-232C interface instead of the programming console	3G3EV-PJVOP122A
RS-485 (modbus) adapter instead of the programming console	3G3EV-PJVOP485
Copy unit (save up to 3 sets of parameters in unit) Accessory: 3G3EV-PJVOP122A 3G3EV-PCN123	3G3EV-PJVOP125

Programming accessories

PC programming	Description	Cable length	Product number
	Programming software under WINDOWS	-	**SYSDRIVE Configurator**
	RS-232C interface	-	**3G3EV-PJVOP122A**
	Connecting cable	1 m 3 m	**3G3EV-PCN122** **3G3EV-PCN323**

Technical data

230 V Class

Single-phase: 3G3EV-AB_MA-CUE			**AB001**	**AB002**	**AB004**	**AB007**	**AB015**
Three-phase: 3G3EV-A2_M-E			**A2001**	**A2002**	**A2004**	**A2007**	**A2015**
Maximum allowed motor output		kW	0,1	0,25	0,55 (0,4)*	1,1 (0,75)*	1,5 (1,1*)
Output data	Inverter output	kVA	0,3	0,6	1,1	1,9	2,6
	Output rated current	A	0,8	1,5	3,0	5,0	7,0
	Max. output voltage		three-phase proportional to the input voltage: 200 to 240 V				
	Output frequency		0,5...400 Hz				
Supply	Rated input voltage and frequency		single-phase: 200...240 V, 50/60 Hz three-phase: 200...230 V, 50/60 Hz				
	Max. voltage variation		-15 % to +10 %				
	Max. frequency variation		± 5 %				
Weight		kg	0,6	0,9	1,3	1,3	2,0

* with single phase connection for EV-A2 type

400 V Class

3G3EV-A4_MA-CUE, input: three-phase			**A4002**	**A4004**	**A4007**	**A4015**
Maximum allowed motor output		kW	0,37	0,55	1,1	1,5
Output data	Inverter output	kVA	0,9	1,4	2,6	3,7
	Output rated current	A	1,2	1,8	3,4	4,8
	Max. output voltage		three-phase proportional to the input voltage: 380 to 460 V			
	Output frequency		0,5...400 Hz			
Supply	Rated input voltage and frequency		three-phase: 380...460 V, 50/60 Hz			
	Max. voltage variation		-15 % to +10 %			
	Max. frequency variation		± 5 %			
Weight		kg	0,8	1,0	1,5	2,0

Technical data (continued)

General details

Control functions	Output frequency range	0,5...400 Hz
	Frequency accuracy (temperature fluctuation)	digital command : ±0,01% at -10 °C to 50 °C analogue command : 1% at 25 °C ±10 °C
	Digital inputs	NPN/PNP switchable 24 VDC, 8 mA (terminal S1-S3)
	Auxiliary voltage output	12 VDC, 20 mA (terminal FS)
	Relay output	250 VAC/30 VDC, 1 A max. (terminal MA, MB, MC)
	Overload capacity	150% of the output rated current for 1 minute
	Frequency reference default	0...10 V = (20 kW) or 4...20 mA (250 W)
	Accelerating and braking times	0...999 s (values can be set separately for acceleration and braking ramp)
	Braking torque	approximately 20% (with braking resistor: 125% to 220%) continuously
Protective functions	Stall prevention	Stall prevention during the acceleration and braking phase, and also at assigned frequency can be programmed separately
	Instantaneous overcurrent	when 250% of the rated output current is exceeded, the motor coasts to stop
	Overload	at 150% of the rated output current the motor runs down to a halt after 1 minute
	Earth fault	via electronic circuit
	Protection against motor overload	electronic thermal protection against overload
Ambient conditions	Type of protection	IP20
	Cooling	self-cooling
	Operating temperature	-10 °C to +50 °C (without frozen-fog formation)
	Humidity	90% rel. humidity (without condensation)

Modbus model (3G3EV-A_MA-CUE)*

Communication	modbus protocol
Speed	19,2 kbps
Number of slaves	32 max.
Transmission	transposed 2 wire lead, RS-485

* can only be used in connection with the 3G3EV-PJVOP485 adapter

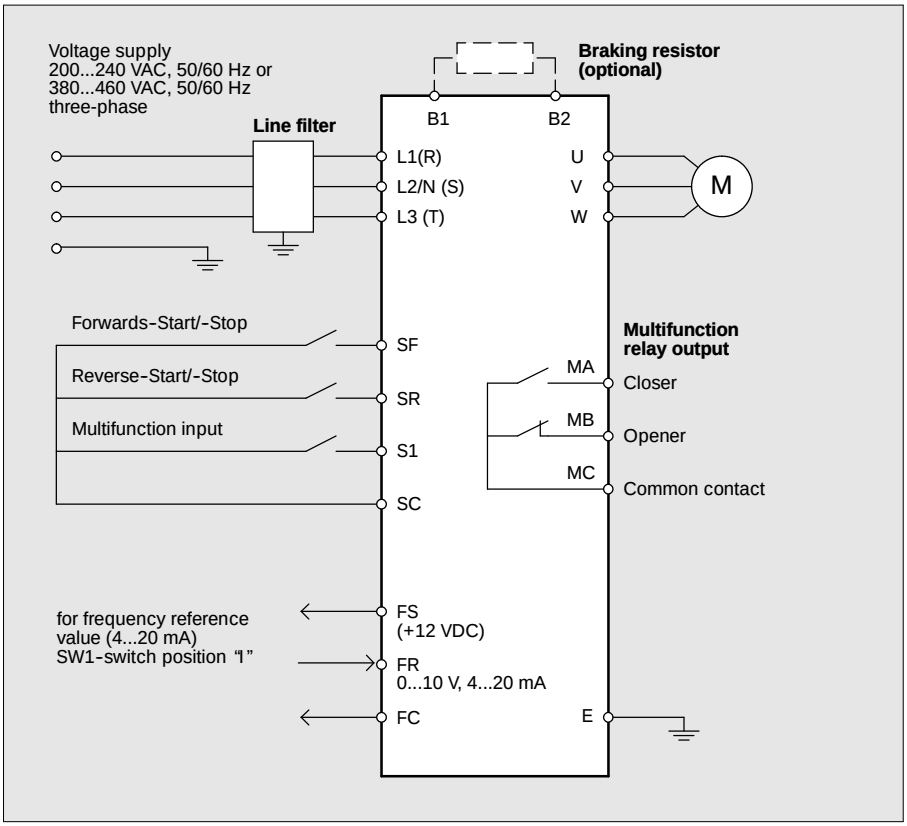
Technical data (continued)

		Standard model	Multifunction model (modbus)
Number of defined inputs		2	2
Number of free programmable inputs		1	3
Programmable with:	three-wire sequence	NO	YES
	fault reset	NO	YES
	external fault	NO	A or B contact – optional
	multifunction frequency	max. 2	max. 8
	2 prog. ramp times	NO	YES
	external controller block	NO	A or B contact – optional
	choice of operating mode	NO	YES
	order for blocking accel/braking	NO	YES
	UP/DOWN function	NO	YES
	REMOTE/LOCAL-switching function	NO	YES
	JOG speed (creeping)	NO	YES
Relay output		1a, 1b contact (AC: 250 V, 1 A / DC: 30 V, 1 A)	1a, 1b contact (AC: 250 V, 1 A / DC: 30 V, 1 A)
Programmable opto-coupler output		0	1
Programmable with:	fault	YES	YES
	motor runs	YES	YES
	$f_{ref} = f_{actual}$	NO	YES
	zero speed	NO	YES
	speed change	NO	YES
	excess torque	NO	YES
	controller block	NO	YES
	insufficient voltage	NO	YES
	speed search	NO	YES
Automatic new start		NO	max. 10 repeats
Output frequency limitation		NO	YES
Jump frequency		NO	max. 3 positions
Block for reverse turning direction		NO	YES
DC braking		on braking	on starting and braking
Slip compensation		NO	YES
Frequency reference value and amplification offset		YES	YES
Display (operator)		Fref, Fout, output current, fault	Fref, Fout, output current, fault
Forward/Reverse display (operator)		initialised with LED	initialised with LED
Analogue output monitor		NO	DC, 0 to 10 V (Fout or Iout)
Torque performance		150% from 1,5 Hz	150% from 1,5 Hz
Noise		extremely quiet	extremely quiet

Connections diagram

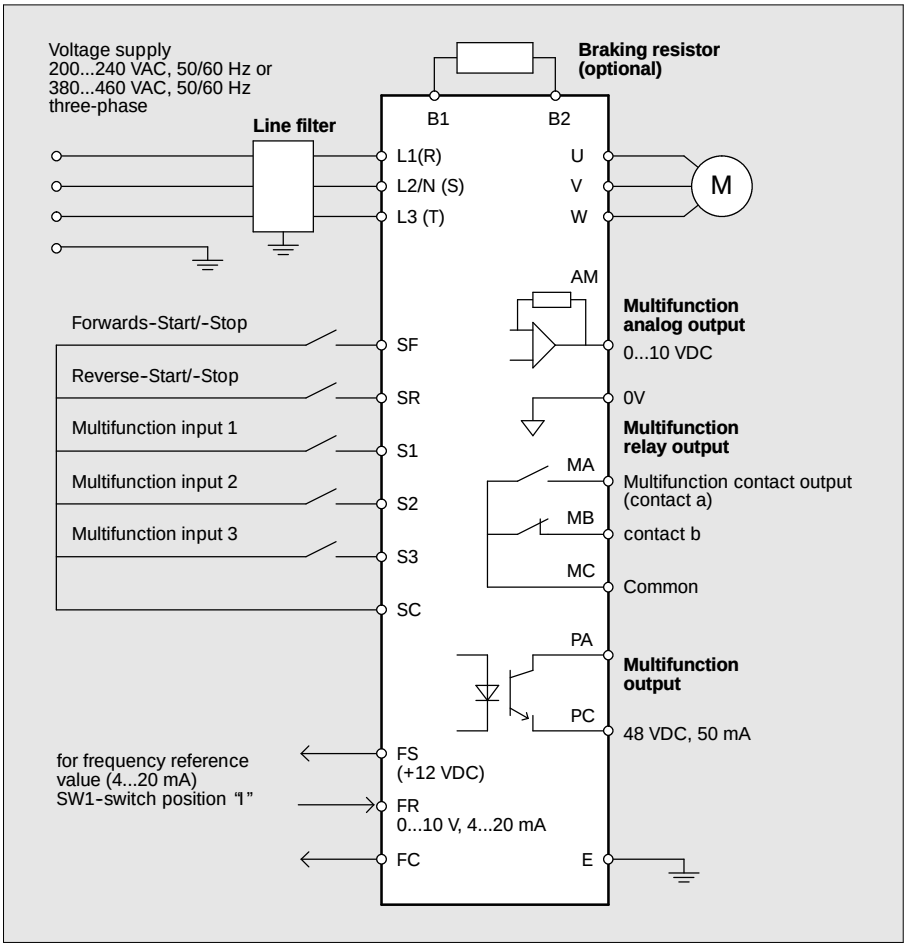
Standard design
3G3EV-A_-CE

With single-phase models L3 remains free.



Multifunction design
3G3EV-A_M-CE

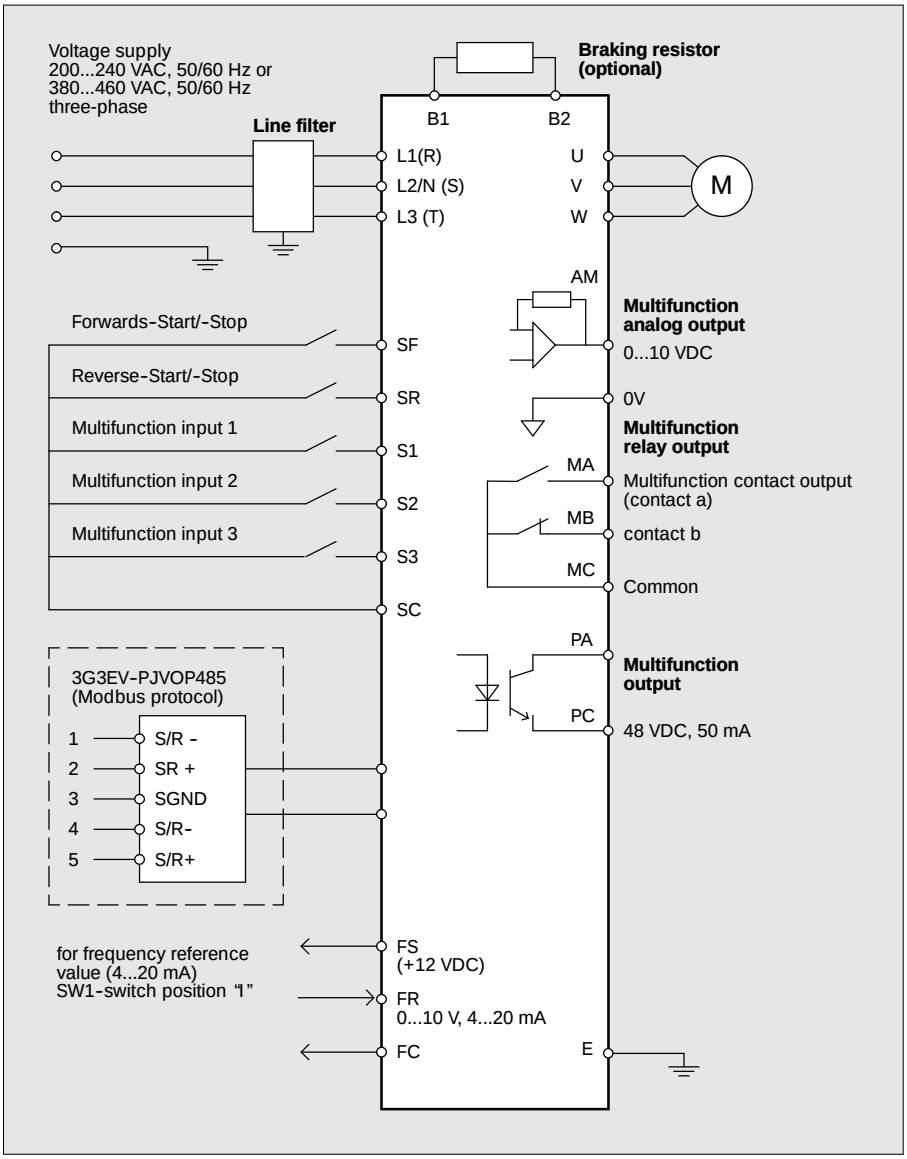
With single-phase models L3 remains free.



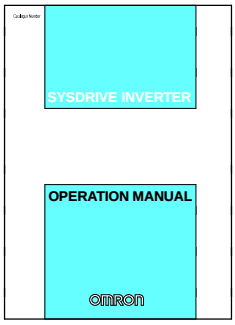
Connections diagram (continued)

Modbus design
3G3EV-A_MA-CUE with 3G3EV-PJVOP485

With single-phase models L3 remains free.



Technical documentation



English documentation

Product	Title	Product number
Standard type	User Manual	**I011-E1-1A**
Multifunction Type	User Manual	**I013-E1-2**
Multifunction MA-CUE type	User Manual	**I013-E2-1**

Dimensions (mm)

3G3EV-AB_

B	B1	T	T1	Dia-gram	Product number
68	56	75	3	1	001
68	56	108	5	1	002
108	96	130	-	2	004
108	96	130	-	2	007
130	118	170	-	2	015

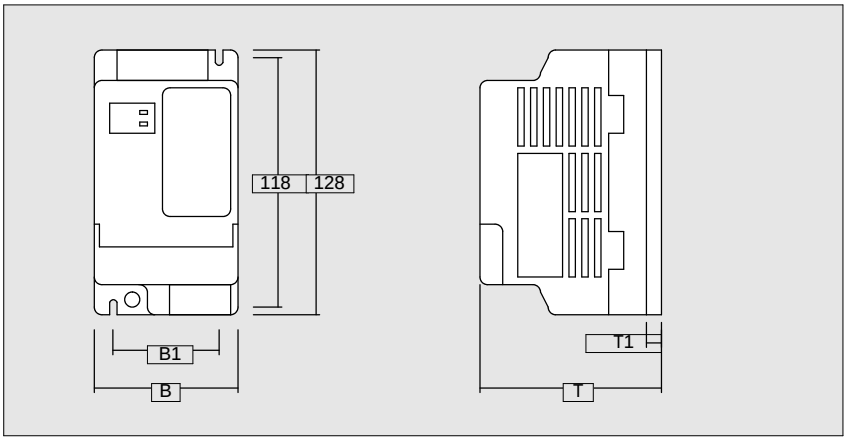


Diagram 1

Dimensions (mm) (continued)

3G3EV-A4_

B	B1	T	T1	Dia-gram	Product number
108	96	83	8	2	002
108	96	110	5	2	004
108	96	140	5	2	007
130	118	170	5	2	015

3G3EV-A2_

B	B1	T	T1	Dia-gram	Product number
68	56	75	3	1	001
68	56	88	3	1	002
68	56	110	5	1	004
108	96	130	-	2	007
108	96	155	-	2	015

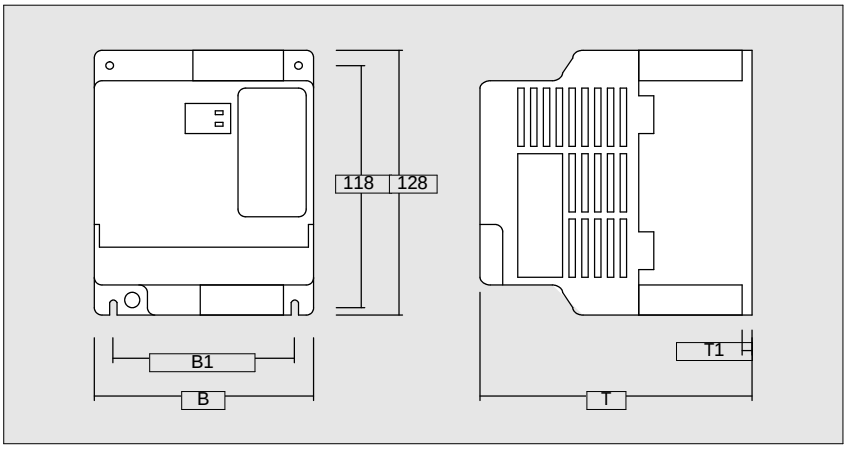
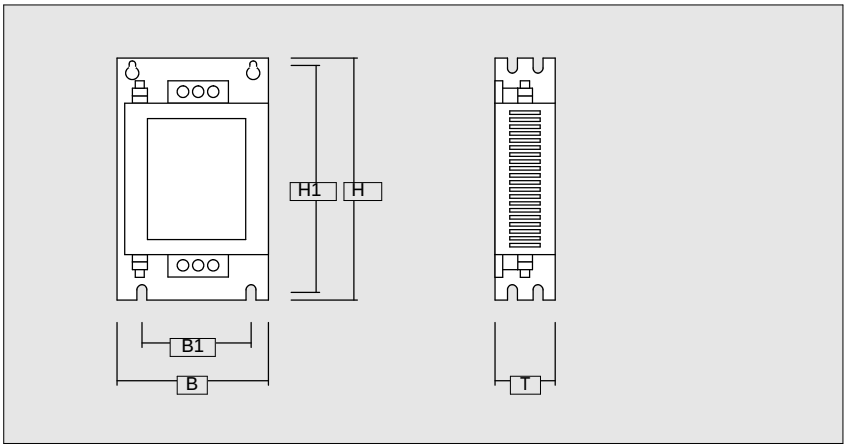


Diagram 2

Line filter 3G3EV-PFI_

B	B1	H	H1	T	Product number
72	51	162	149	41	1010E(N)
111	91	162	149	41	1015E(N)
134	91	162	148	42	1020E(N)
112	91	162	148	42	3006E(N)
134	91	162	148	42	3008E(N)



General

The 3G3JV is a miniature high-efficiency frequency inverter with an excellent price- performance relationship.

The generous dimensions of the power section ensure a high starting torque and low susceptibility to overload which increases machine reliability.

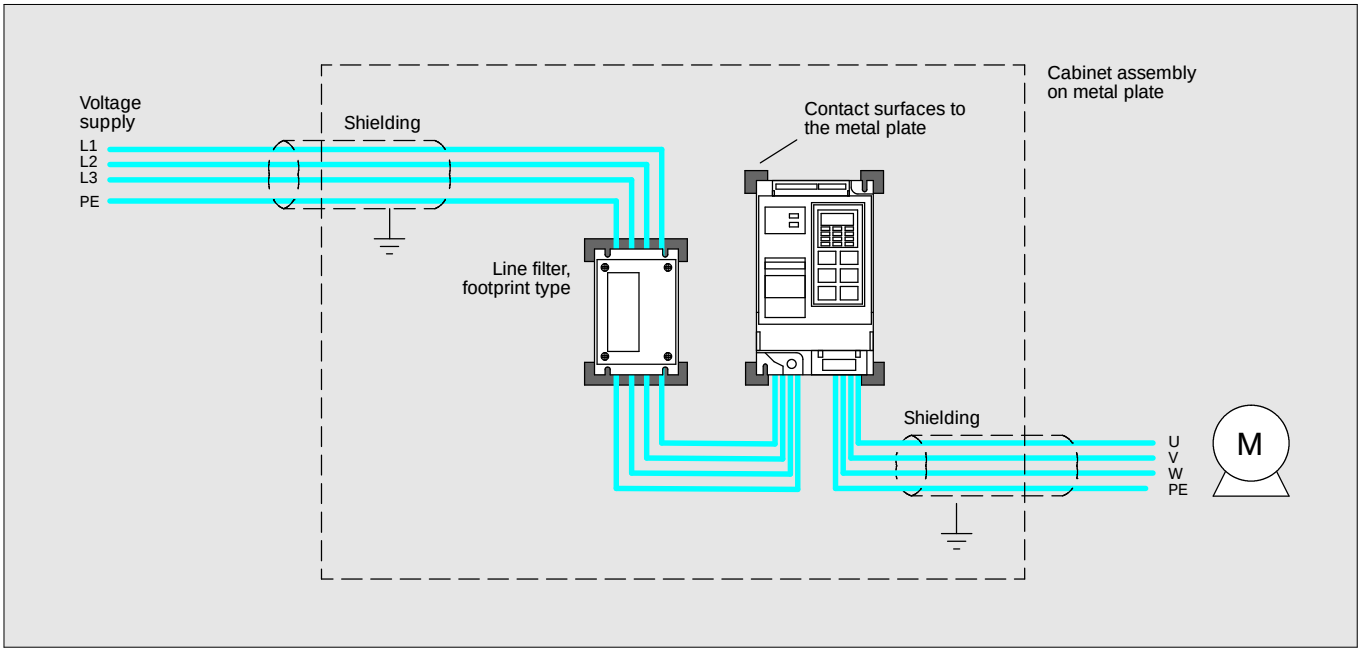
Its many programmable inputs and outputs, an integrated potentiometer for speed control and various monitor functions provide the inverter with high versatility and flexibility. The multifuntion inputs can be set to either PNP or NPN. The analog inputs can be 0..10 V, 4..20 mA or 0..20 mA.

Features

- exceptionally compact design
- integrated reference value potentiometer
- modbus interface, optional
- 8 fixed frequencies
- 4 multifunction digital inputs
- 1 multifunction digital output
- 1 multifunction analog output
- Approval: CE, UL, CSA

System architecture

To comply with relevant EMC guidelines it is imperative for frequency inverters to be operated with line filters.



Product overview

Max. motor output	Output current	Rated voltage	Product number
			Standard type
Single phase 230 V			
0,1 kW	0,8 A	1 x 230 VAC	**3G3JV-AB001**
0,25 kW	1,6 A	1 x 230 VAC	**3G3JV-AB002**
0,55 kW	3,0 A	1 x 230 VAC	**3G3JV-AB004**
1,1 kW	5,0 A	1 x 230 VAC	**3G3JV-AB007**
1,5 kW	8,0 A	1 x 230 VAC	**3G3JV-AB015**
Three phase 230 V			
0,1 kW	0,8 A	3 x 230 VAC	**3G3JV-A2001**
0,25 kW	1,6 A	3 x 230 VAC	**3G3JV-A2002**
0,55 kW	3,0 A	3 x 230 VAC	**3G3JV-A2004**
1,1 kW	5,0 A	3 x 230 VAC	**3G3JV-A2007**
1,5 kW	8,0 A	3 x 230 VAC	**3G3JV-A2015**
2,2 kW	11 A	3 x 230 VAC	**3G3JV-A2022**
4,0 kW	11 A	3 x 230 VAC	**3G3JV-A2040**
Three phase 400 V			
0,37 kW	1,2 A	3 x 400 VAC	**3G3JV-A4002**
0,55 kW	1,8 A	3 x 400 VAC	**3G3JV-A4004**
1,1 kW	3,4 A	3 x 400 VAC	**3G3JV-A4007**
1,5 kW	4,8 A	3 x 400 VAC	**3G3JV-A4015**
2,2 kW	5,5 A	3 x 400 VAC	**3G3JV-A4022**
3,0 kW	7,2 A	3 x 400 VAC	**3G3JV-A4030**
4,0 kW	9,2 A	3 x 400 VAC	**3G3JV-A4040**

Accessories

Line filter, braking resistors, ferrite rings, DIN track mounting bracket

Inverter	Product number		
	Line filter (footprint filter)	Ferrite rings	DIN track mounting bracket
3G3JV-AB001	**3G3JV-PFI1010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-AB002	**3G3JV-PFI1010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-AB004	**3G3JV-PFI1010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-AB007	**3G3JV-PFI1020-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122B**
3G3JV-AB015	**3G3JV-PFI1020-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122B**
3G3JV-A2001	**3G3JV-PFI2010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-A2002	**3G3JV-PFI2010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-A2004	**3G3JV-PFI2010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-A2007	**3G3JV-PFI2010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122A**
3G3JV-A2015	**3G3JV-PFI2020-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122B**
3G3JV-A2022	**3G3JV-PFI2020-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122B**
3G3JV-A2040	**3G3JV-PFI2030-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122C**
3G3JV-A4002	**3G3JV-PFI3005-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122**B
3G3JV-A4004	**3G3JV-PFI3005-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122B**
3G3JV-A4007	**3G3JV-PFI3010-E**	**3G3IV-PFO OC/1**	**3G3IV-PZZ08122B**
3G3JV-A4015	**3G3JV-PFI3010-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122B**
3G3JV-A4022	**3G3JV-PFI3010-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122B**
3G3JV-A4030	**3G3JV-PFI3020-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122C**
3G3JV-A4040	**3G3JV-PFI3020-E**	**3G3IV-PFO OC/2**	**3G3IV-PZZ08122C**

Technical data

230 V class

Single phase: 3G3JV-AB			AB001	AB002	AB004	AB007	AB015		
Three phase: 3G3JV-A2			A2001	A2002	A2004	A2007	A2015	A2022	A2040
Maximum allowed motor output		kW	0,12	0,25	0,55 (0,4*)	1,1 (0,75*)	1,5 (1,1*)	2,2	4,0
Output data	Inverter output	kVA	0,3	0,6	1,1	1,9	3,0	4,2	6,7
	Output rated current	A	0,8	1,6	3,0	5,0	8,0	11,0	17,5
	Max. output voltage		proportional to the input voltage: 0..240 V						
	Output frequencies		400 Hz						
Supply	Rated input voltage and frequency		200..240 V, 50/60 Hz						
	Max. voltage variation		-15 % to +10 %						
	Max. frequency variation		± 5 %						

* With single phase connection for JV-A2 type s

400 V class

Three phase: 3G3JV-A4			A4002	A4004	A4007	A4015	A4022	A4030	A4040
Maximum allowed motor output		kW	0,37	0,55	1,1	1,5	2,2	3,0	4,0
Output data	Inverter output	kVA	0,9	1,4	2,6	3,7	4,2	5,5	7,0
	Output rated current	A	1,2	1,8	3,4	4,8	5,5	7,2	9,2
	Max. output voltage		proportional to the input voltage: 0..460 V						
	Output frequencies		400 Hz						
Supply	Rated input voltage and frequency		3-phase, 380..460 V, 50/60 Hz						
	Max. voltage variation		-15 % to +10 %						
	Max. frequency variation		+/- 5 %						

* With single phase connection for JV-A2 type s

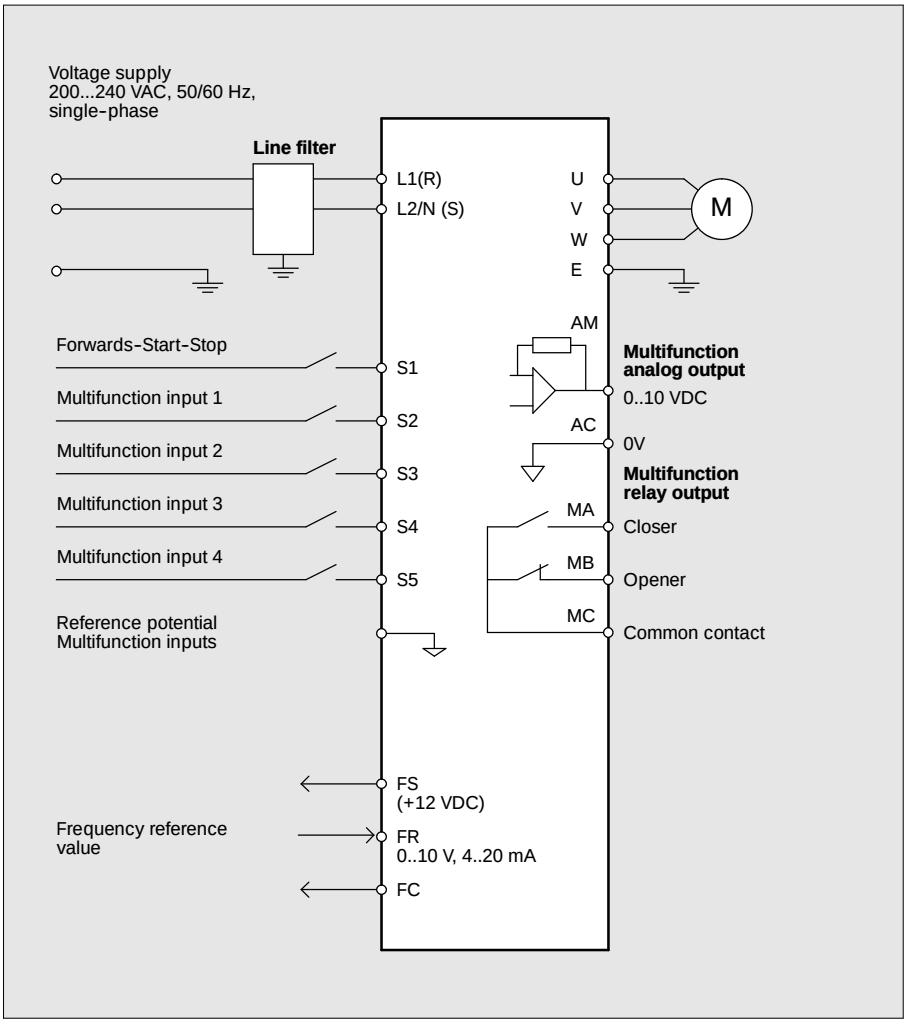
Technical data (continued)

General data

Control functions	Control method	Sinusoidal PWM, terminal Volts/Hertz control
	Output frequency range	0,1..400 Hz
	Frequency precision	digital reference value: ±0,01 % (-10..+50 °C)
		analogue reference value: ±0,5% (25 ±10 °C)
	Resolution of frequency reference value	digital reference value: 0,01 Hz (<100 Hz), 0.1 Hz (>100 Hz)
		analogue reference value 1/1000 of maximum frequency
	Resolution of output frequency	0,01 Hz
	Overload capacity	150%/60 s
	Frequency reference value	0..10 V (20 kW), 4-20 mA (250 W), 0-20 mA (250 W)
	Braking torque (short-time peaks)	up to 200 W 150%
		550W, 1,1 kW 100%
		1,5 kW 50%
		>1,5 kW 20%
		Sustained braking torque approx. 20% without, 150% with external braking resistor
Protective functions	Motor overload protection	electronically adjustable motor protection
	Instantaneous overcurrent protection	stops at approx. 250% of rated output current
	Overload protection	stops at 150% of rated current for 1 min.
	Overvoltage protection	stops when maincircuit DC voltage is approx. 410 V
	Undervoltage protection	stops when maincircuit DC voltage is approx. 160 V
	Momentary power interruption compensation (selection)	stops for 15 ms or more by setting the inverter to momentary power interruption mode, operation can be continued if power is restored within approx. 0,5 sec.
	Cooling fin overheating	detects at 110 °C ± 10 °C
	Ventilator control	electronic protection against blocking
	Grounding protection	protection at rated output current level
Functions	Digital inputs	4 multifunction digital input
	Digital outputs	1 multifunction digital output
	Analog output	1 multifunction analog output (0..10 V)
	Braking and acceleration times	0,0..999 s
	Display	frequency, current or reference value by selection
		error and status LED
Ambient conditions	Type of protection	IP20, wall installation
	Cooling	separate cooler for 0,75 kW (200 V)
	Ambient temperature	open installation: -10 °C to 50 °C
		wall installation: -10 °C to 40 °C
	Air humidity	95% (without condensation)
	Storage temperature	-20 °C to +60 °C
	Assembly	in cabinet, free of dust and corrosive gases
	Position height	max. 1000 m
Ambient conditions	Vibration resistance	1 *g* at <20 Hz, 0,2 *g* at <50 Hz

Connections diagram

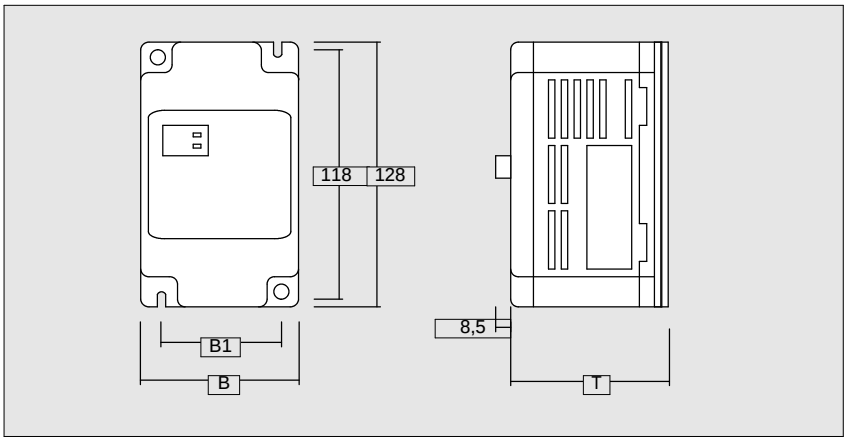
L3 remains free with single-phase equipment



Dimensions (mm)

3G3JV

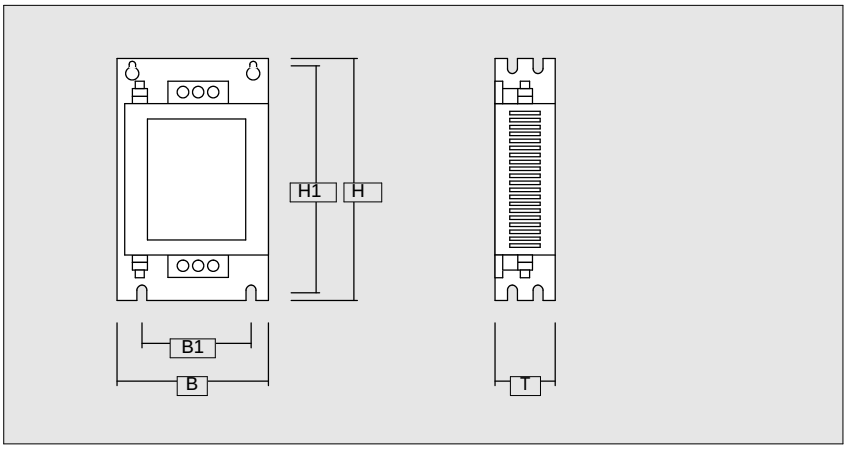
			Product number	
B	**B1**	**T**	**AB**	**A2**
68	56	70	001	001
68	56	70	002	002
68	56	112	004	004
68	56	112	-	007
108	96	129	007	015
108	96	154	015	022
140	128	161	-	040



			Product number
B	**B1**	**T**	**A4**
108	96	81	002
108	96	99	004
108	96	129	007
108	96	154	015
108	96	154	022
140	128	161	030
140	128	161	040

Line filter 3G3JV-PFI_

B	**B1**	**H**	**H1**	**T**	**Product number**
71	51	169	156	45	1010E
111	91	169	156	50	1020E
82	62	194	181	50	2010E
111	91	169	156	50	2020E
144	120	174	161	50	2030E
111	91	169	156	50	3005E
111	91	169	156	50	3010E
144	120	174	161	50	3020E



Set of Parameters

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n001	1	101H	Parameter write prohibit selection/ parameter initialization	0 Only n01 can be adjusted 1 n01-079 can be altered 6 reset error memory 7 not used 8 initializes parameters to default values in 2-wire sequence 9 initializes parameters to default values in 3-wire sequence
n002	0	102H	Operation mode selection	0 Operator console 1 Multifunction inputs 2 via modbus (option card needed)
n003	0	103H	Frequency reference selection	0 integrated potentiometer 1 parameter n021 2 0..10 V 3 4..20 mA 4 0..20 mA 6 modbus (option card needed)
n004	0	104H	Stop method	0 Stop at ramp (n017) 1 Coast to stop
n005	0	105H	Backwards direction of rotation	0 Reverse enabled 1 Reverse disabled
n006	0	106H	Operator stop button	0 Stop button at n02= 1 enabled 1 Stop button at n02= 1 disabled
n007	0	107H	Reference value in local mode	0 integrated potentiometer 1 digital via operator (n024)
n008	0	108H	Reference value input in local mode	0 complete input with ENTER 1 no ENTER necessary
n009	60.0 Hz	109H	Maximum output frequency	50,0..400 Hz
n010	200 V	10AH	Max. output voltage	1..255 V
n011	60.0 Hz	10BH	Corner frequency	0,2..400 Hz
n012	1.5 Hz	10CH	Middle output frequency	0,1..399,9 Hz
n013	12 V	10DH	Output voltage at middle output frequency	0,1..255 V
n014	1.5 Hz	10EH	Minimum output frequency	0,1..10 Hz
n015	12 V	10FH	Output voltage at minimum output frequency	0.1..50 V
n016	10.0s	110H	Acceleration time 1	0,0..999 s

Set of parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n017	10.0s	111H	Braking time 1	0,0..999 s
n018	10.0s	112H	Acceleration time 2	0,0..999 s
n019	10.0s	113H	Braking time 2	0,0..999 s
n020	0	114H	S curve slide on braking/ accelerating	0 no S curve 1 0,2 s 2 0,5 s 3 1,0 s
n021	0.00 Hz	115H	Frequency reference value 1	0,0..400 Hz
n022	0.00 Hz	116H	Frequency reference value 2	0,0..400 Hz
n023	0.00 Hz	117H	Frequency reference value 3	0,0..400 Hz
n024	0.00 Hz	118H	Frequency reference value 4	0,0..400 Hz
n025	0.00 Hz	119H	Frequency reference value 5	0,0..400 Hz
n026	0.00 Hz	11AH	Frequency reference value 6	0,0..400 Hz
n027	0.00 Hz	11BH	Frequency reference value 7	0,0..400 Hz
n028	0.00 Hz	11CH	Frequency reference value 8	0,0..400 Hz
n029	6.00 Hz	11DH	Jog frequency	0,0..400 Hz
n030	100%	11EH	Max. reference value limit	0..110 % of n09
n031	0	11FH	Min. reference value limit	0..110 % of n09
n032	depending on model	120H	Motor rated current for simulation of motor protection switch	0..120% in relation to inverter rated current
n033	0	121H	Simulation of motor protection switch	0 Standard motor with standard rated data 1 Standard motor for short-time operation 2 No thermal protection
n034	8min	122H	Thermal motor time constant	1 - 60min
n035	0	123H	Function of ventilator (in the inverter)	0 only runs during RUN (1 min after STOP) 1 always runs
n036	2	124H	Multifunction input 2	2 reverse/stop (2-wire) 3 external error (NO) 4 external error (NC) 5 Error reset 6 Multi-step speed reference 1 7 Multi-step speed reference 2 8 Multi-step speed reference 3 10 Jogging 11 Acc./dec. time change over 12 external base block (NO) 13 external base block (NC) 14 Speed search of max. frequency 15 Speed search of assigned frequency 16 Acc./dec. prohibit 17 Local/Remote change-over 18 Serial change-over/operator 19 Fast stop n19 error (NO) 20 Fast stop n19 alarm (NO) 21 Fast stop n19 error (NC) 22 Fast stop n19 alarm (NC)
n037	5	125H	Multifunction input 3	0 Change in rotation direction (3-wire) otherwise see n036
n038	3	126H	Multifunction input 4	see n036
n039	6	127H	Multifunction input 5	34 Up or down comment 35 Self-test otherwise see n036

Set of Parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n040	1	128H	Multifunction output MA, MB, MC (relay)	0 Fault 1 Inverter in operation 2 Reference value reached 3 Zero frequency reached 4 Output frequency ³ n058 5 Output frequency £ n058 6 Over-torque (NO) 7 Over-torque (NC) 10 Alarm 11 Base block 12 Run mode 13 Ready for operation 14 active during error reset 15 under-voltage recognised 16 Reverse direction 17 Speed search 18 Data transfer via ModBus
n041	100%	129H	Reinforcement of analog input	0..255%
n042	0%	12AH	Offset of analog input	-99..99%
n043	0.1s	12BH	Filter time for analog input	0.00..2.00s
n044	0	12CH	Analog input holding	0 Output frequency 1 Motor current
n045	1	12DH	Analog input reinforcement	0,00..2,00
n046	4	12EH	Clock frequency	1 2,5 kHz 2 5,0 kHz 3 7,5 kHz 4 10 kHz 7 12 x motor frequency 8 24 x motor frequency 9 36 x motor frequency
n047	0	12FH	Operation after short voltage breakdown	0 Error signal 1 Error signal after >0.5 s 2 Operation is continued
n048	0	130H	New start attempts after error	0..10
n049	0.0 Hz	131H	Gating frequency 1	0,0..400 Hz
n050	0.0 Hz	132H	Gating frequency 2	0,0..400 Hz
n051	0.0 Hz	133H	Bandwidth of gating frequencies	0,0..25,5 Hz
n052	50%	134H	Current for d.c. braking	0..100 % of the inverter rated current
n053	0.5s	135H	d.c. braking time at Stop	0,0..25,5 s
n054	0.5s	136H	d.c. braking time at Start	0,0..25,5 s
n055	0	137H	Protection against sweep on braking	0 Enabled 1 Disabled (braking resistor!!)
n056	170%	138H	Level of protection against sweep on accelerating	30..200% of the rated current
n057	160%	139H	Level of protection against sweep during operation	30..200% of the rated current
n058	0.0 Hz	13AH	Frequency recognition level	0,0..400 Hz
n059	0	13BH	Over-torque recognition	0 Disabled 1 Detection only when speed coincides and operation continues 2 Detection only when speed coincides and output shut off 3 Always detection, issues alarm 4 Always detection, output shut off

Set of Parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n060	160%	13CH	Level of torque recognition	30..200%
n061	0.1s	13DH	Time of torque recognition	0,1..10 s
n062	0	13EH	Storing of reference value during motor poti operation	0 No stored after STOP 1 Stored after STOP
n063	1.0	13FH	Torque boost	0,0..2,5
n064	depending on model	140H	Rated slip	0,0..20.0 Hz
n065	depending on model	141H	no-load current	0..99%
n066	0.0	142H	Slip compensation reinforcement	0,0..2.5
n067	2.0s	143H	Delay time for slip compensation	0,0..25,5 s
n068	0	144H	Slip compensation on braking	0 Disabled 1 Enabled
n069	0	145H	Setting unit of transmission frequence reference / frequency monitor	0 0,1 Hz 1 0,01 Hz 2 30000 = max. frequency 3 0,1 %
n070	0	146H	Slave address	0..1
n071	2	147H	Baud rate	0 2400 Kbaud 1 4800 Kbaud 2 9600 Kbaud 3 19200 Kbaud
n072	0	148H	Parity	0 straight 1 not straight 2 no parity
n073	10ms	149H	Send waiting time	10..65 ms
n074	0	14AH	RTS control	0 RTS control 1 RS422A, 1:1 link
n075	0	14BH	Low speed carrier frequency reduction	0 Function disabled 1 Function enabled
n077	0	14DH	Select to prevent accidently overwriting constants stored in EEPROM or digital operator	0 Read prohibited 1 Read allowed
n078		14EH	Error memory	
n079		14FH	Software number	

General

The 3G3MV is a miniature frequency inverter incorperating an open loop vector control function, which ensures a torque output that is 150% of the rated motor torque at an output frequency of 1Hz. Furthermore, the 3G3MV suppresses the revolution fluctuation caused by the load.

Incorporates a high-speed current limit function, thus suppressing overcurrent caused by high torque and ensuring smooth operation of the motor.

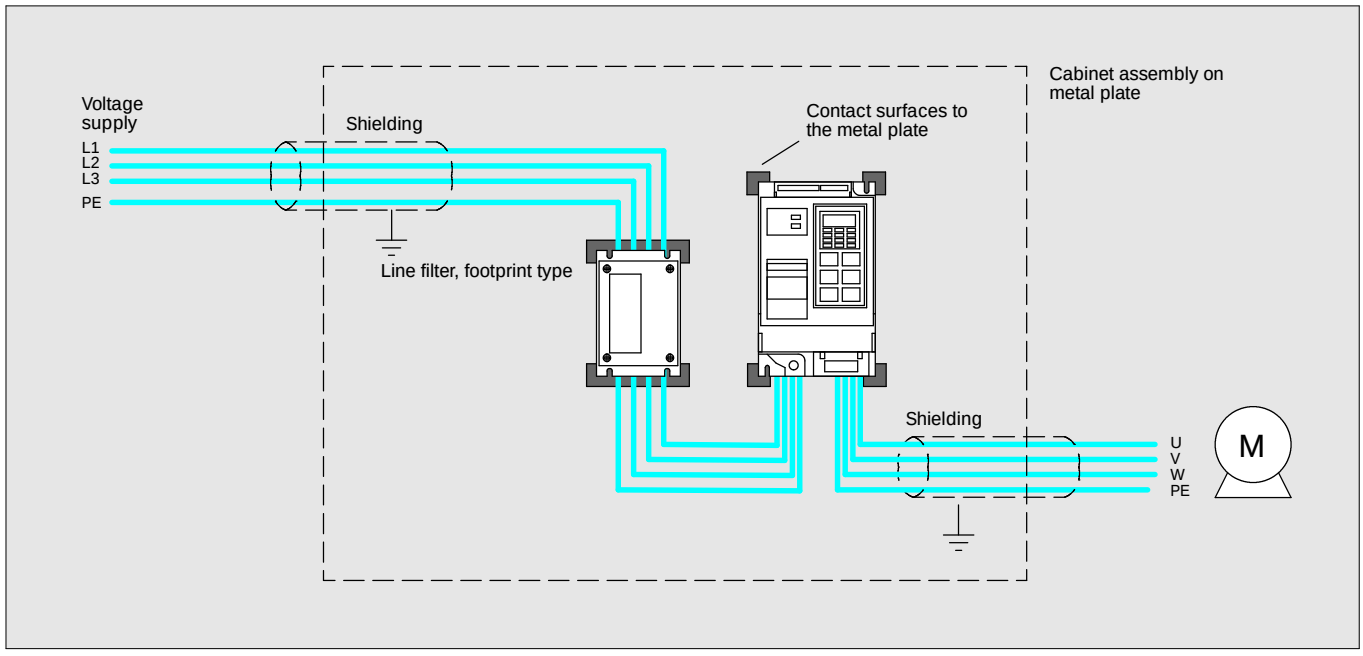
Flexibility is an important feature: the reference value default is selected through 4..20 mA, 0..10 V or a pulse train that is speed proportional in its frequency. The multi-function inputs can be set to either PNP or NPN. Plug-in are available for different options.

Features

- exceptionally compact design
- integrated reference value potentiometer
- integrated modbus interface
- optional field bus cards
  (I.E. DeviceNet)
- 16 fixed frequencies
- 6 multifunction digital inputs
- 3 multifunctional digital outputs
- 1 multifunctional analog output
- 1 multifunctional analog input
- Approval: CE, UL, CSA

System architecture

To comply with relevant EMC guidelines it is imperative for frequency inverters to be operated with line filters.



Product overview

	Max. motor output	Output current	Product number
Single phase 230 V			
	0,12 kW	0,8 A	**3G3MV-AB001**
	0,25 kW	1,6 A	**3G3MV-AB002**
	0,55 kW	3,0 A	**3G3MV-AB004**
	1,1 kW	5,0 A	**3G3MV-AB007**
	1,5 kW	7,0 A	**3G3MV-AB015**
	2,2 kW	11 A	**3G3MV-AB022**
	4,0 kW	17,5 A	**3G3MV-AB040**
Three-phase 230 V			
	0,12 kW	0,8 A	**3G3MV-A2001**
	0,25 kW	1,6 A	**3G3MV-A2002**
	0,55 kW	3,0 A	**3G3MV-A2004**
	1,1 kW	5,0 A	**3G3MV-A2007**
	1,5 kW	7,0 A	**3G3MV-A2015**
	2,2 kW	11 A	**3G3MV-A2022**
	4,0 kW	17,5 A	**3G3MV-A2040**
	5,5 kW	25 A	**3G3MV-A2055**
	7,5 kW	33 A	**3G3MV-A2075**
Three-phase 400 V			
	0,25 kW	1,2 A	**3G3MV-A4002**
	0,55 kW	1,8 A	**3G3MV-A4004**
	1,1 kW	3,4 A	**3G3MV-A4007**
	1,5 kW	4,8 A	**3G3MV-A4015**
	2,2 kW	5,5 A	**3G3MV-A4022**
	3,0 kW	7,2 A	**3G3MV-A4030**
	4,0 kW	9,2 A	**3G3MV-A4040**
	5,5 kW	14,8 A	**3G3MV-A4055**
	7,5 kW	18 A	**3G3MV-A4075**

Accessories

Line filter, braking resistors, ferrite rings, DIN track mounting bracket

Inverter	Product number			
	Line filter (mountable under-neath)	Braking resistors	Ferrite rings	DIN track mounting bracket
3G3MV-AB001	3G3MV-PFI1010-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-AB002	3G3MV-PFI1010-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-AB004	3G3MV-PFI1010-E	3G3IV-PERF150WJ201	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-AB007	3G3MV-PFI1020-E	3G3IV-PERF150WJ201	3G3IV-PFO OC/1	3G3IV-PZZ08122B
3G3MV-AB015	3G3MV-PFI1020-E	3G3IV-PERF150WJ101	3G3IV-PFO OC/2	3G3IV-PZZ08122B
3G3MV-AB022	3G3MV-PFI1030-E	3G3IV-PERF150WJ700	3G3IV-PFO OC/2	3G3IV-PZZ08122C
3G3MV-AB040	3G3MV-PFI1040-E	3G3IV-PERF150WJ620	3G3IV-PFO OC/2	3G3IV-PZZ08122D
3G3MV-A2001	3G3MV-PFI2010-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-A2002	3G3MV-PFI2010-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-A2004	3G3MV-PFI2010-E	3G3IV-PERF150WJ201	3G3IV-PFO OC/1	3G3IV-PZZ08122A
3G3MV-A2007	3G3MV-PFI2010-E	3G3IV-PERF150WJ201	3G3IV-PFO OC/1	3G3IV-PZZ08122B
3G3MV-A2015	3G3MV-PFI2020-E	3G3IV-PERF150WJ101	3G3IV-PFO OC/2	3G3IV-PZZ08122B
3G3MV-A2022	3G3MV-PFI2020-E	3G3IV-PERF150WJ700	3G3IV-PFO OC/2	3G3IV-PZZ08122C
3G3MV-A2040	3G3MV-PFI2030-E	3G3IV-PERF150WJ620	3G3IV-PFO OC/2	3G3IV-PZZ08122C
3G3MV-A2055	3G3MV-PFI2050-E	3G3IV-PERF500WJ360T	3G3IV-PFO OC/2	-
3G3MV-A2075	3G3MV-PFI2050-E	3G3IV-PERF101WJ360T	3G3IV-PFO OC/2	-
3G3MV-A4002	3G3MV-PFI3005-E	3G3IV-PERF150WJ751	3G3IV-PFO OC/1	3G3IV-PZZ08122B
3G3MV-A4004	3G3MV-PFI3005-E	3G3IV-PERF150WJ751	3G3IV-PFO OC/1	3G3IV-PZZ08122B
3G3MV-A4007	3G3MV-PFI3010-E	3G3IV-PERF150WJ751	3G3IV-PFO OC/2	3G3IV-PZZ08122B
3G3MV-A4015	3G3MV-PFI3010-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/2	3G3IV-PZZ08122B
3G3MV-A4022	3G3MV-PFI3010-E	3G3IV-PERF150WJ301	3G3IV-PFO OC/2	3G3IV-PZZ08122B
3G3MV-A4030	3G3MV-PFI3020-E	3G3IV-PERF150WJ401	3G3IV-PFO OC/2	3G3IV-PZZ08122C
3G3MV-A4040	3G3MV-PFI3020-E	3G3IV-PERF150WJ401 (2)	3G3IV-PFO OC/2	3G3IV-PZZ08122C
3G3MV-A4055	3G3MV-PFI3030-E	3G3IV-PERF500WJ360T	3G3IV-PFO OC/2	-
3G3MV-A4075	3G3MV-PFI3030-E	3G3IV-PERF101WJ360T	3G3IV-PFO OC/2	-

Miscellaneous

Description	Product number
Multi function analog input cable	3G3MV-PCN-CN2

Accessories (continued)

Miscellaneous

	Description	Product number
	**Option card holder**	**on demand**
	**Option cards** - CAN-Bus - DeviceNet - Interbus S - PROFIBUS DP	**on demand**

Technical data

230 V class

Single phase: 3G3MV-AB			AB001	AB002	AB004	AB007	AB015	AB022	AB040		
Three phase: 3G3MV-A2			A2001	A2002	A2004	A2007	A2015	A2022	A2040	A2055	A2075
Maximum allowed motor output		kW	0,12	0,25	0,55 (0,4*)	1,1 (0,75*)	1,5 (1,1*)	2,2	4,0	5,5	7,5
Output data	Inverter output	kVA	0,3	0,6	1,1	1,9	3,0	4,2	6,7	9,5	13,0
	Output rated current	A	0,8	1,6	3,0	5,0	8,0	11,0	17,5	25,0	33,0
	Max. output voltage		proportional to the input voltage: 0..240 V								
	Output frequencies		400 Hz								
Supply	Rated input voltage and frequency		200..240 V, 50/60 Hz								
	Max. voltage variation		-15 % to +10 %								
	Max. frequency variation		± 5 %								
Weight	A2/AB type	kg	0,6/0,6	0,6/0,7	0,9/1,0	1,1/1,5	1,4/1,5	1,5/2,2	2,1/2,9	4,6	4,8

400 V class

Three phase, 3G3MV-A4			A4002	A4004	A4007	A4015	A4022	A4030	A4040	A4055	A4075
Maximum allowed motor output		kW	0,25	0,55	1,1	1,5	2,2	3,0	4,0	5,5	7,5
Output data	Inverter output	kVA	0,9	1,4	2,6	3,7	4,2	5,5	7,0	11,0	14,0
	Output rated current	A	1,2	1,8	3,4	4,8	5,5	7,2	9,2	14,8	18,0
	Max. output voltage		proportional to the input voltage: 4..400 V								
	Output frequencies		400 Hz								
Supply	Rated input voltage and frequency		380..460 V, 50/60 Hz								
	Max. voltage variation		-15 % to +10 %								
	Max. frequency variation		± 5 %								
Weight		kg	1,0	1,1	1,5	1,5	1,5	2,1	2,1	4,8	4,8

* With single phase connection for MV-A2 type.

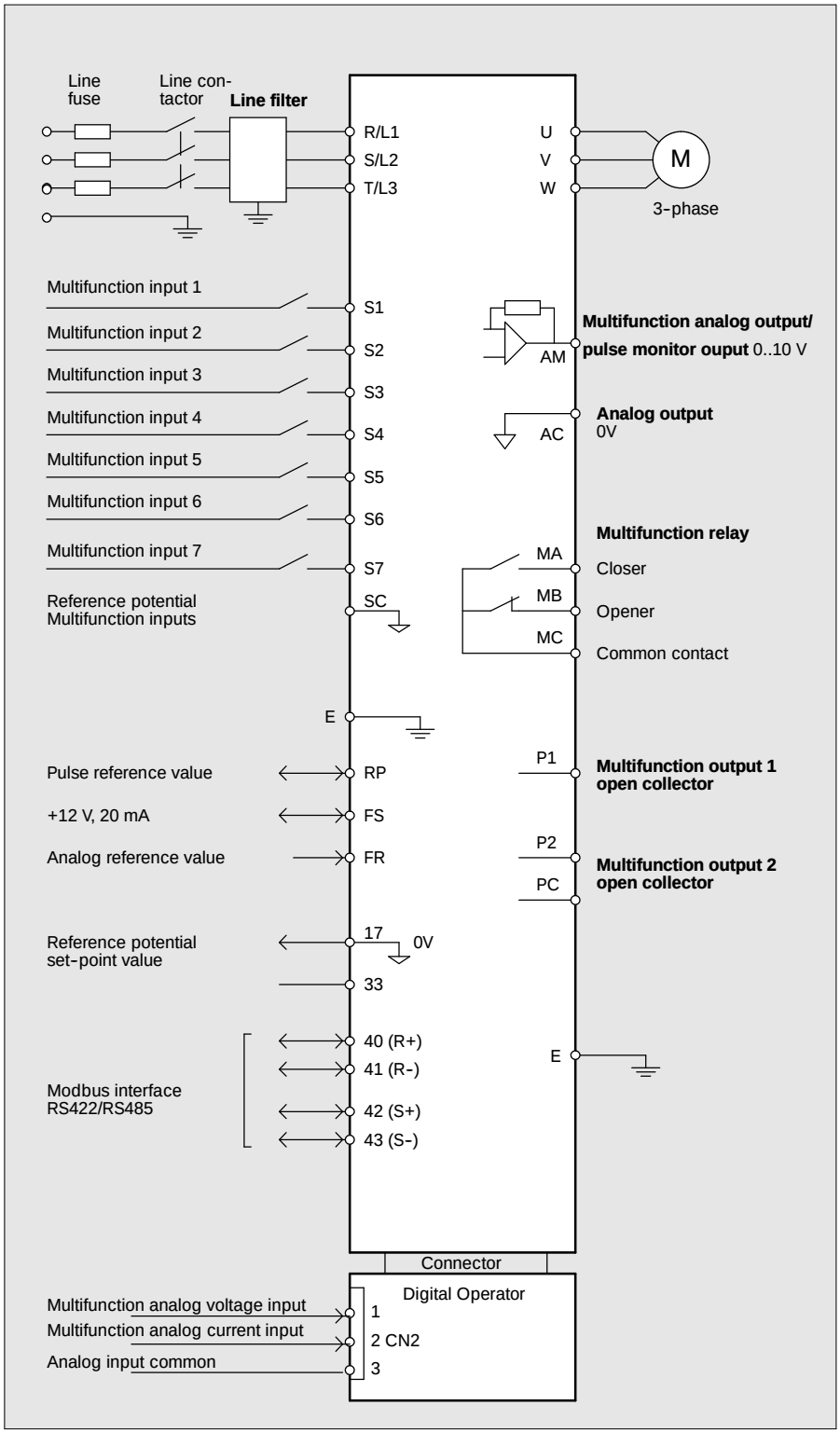
Technical data (continued)

General data

Control functions	Control method		Sinusoidal PWM, can be switched between v/f control and voltage vector control
	Output frequency range		0,1..400 Hz
	Frequency precision		digital reference value: ±0,01 % (-10..+50 °C)
			analog reference value: ±0,5% (25 ±10 °C)
	Resolution of frequency reference value		digital reference value: 0,01 Hz (<100 Hz), 0.1 Hz (>100 Hz)
			analog reference value 1/1000 of maximum frequency
	Resolution of output frequency		0,01 Hz
	Overload capacity		150%/60 s
	Frequency reference value		0..10 V (20 kW), 4-20 mA (250 W), 0-20 mA (250 W)
			pulse signal
	Braking torque (short-time peaks)	up to 200 W	150%
		550W, 1,1 kW	100%
		1,5 kW	50%
		>1,5 kW	20%
			Sustained braking torque approx. 20% without, 150% with external braking resistor
Protective functions	Motor overload protection		electronically adjustable motor protection
	Instantaneous overcurrent protection		stops at approx: 250% of rated output current
	Overload protection		stops at 150% of rated current for 1 min.
	Overvoltage protection		stops when main circuit DC voltage is approx 410 V
	Undervoltage protection		stops when main circuit DC voltage is approx 160 V
	Momentary power interruption compensation selection		stops for 15 ms or more by setting the inverter to momentary power interruption mode, operation can be continued if power is restored within approx 0.5 sec.
	Cooling fin overheating		electronic protection
	Ventilator control		electronic protection against blocking
	Grounding protection		protection of rated output current
Functions	Digital inputs		7 multifunction digital input
	Digital outputs		1 relay output, 2 open collector outputs, multifunction
	Analog input		1 multifunction analog input
	Analog output		1 multifunction analog output
	Braking and acceleration times		0,01..6000 s
	Display		frequency, current or reference value by selection
			error and status LED
Ambient conditions	Type of protection		IP20, wall installation
	Cooling		separate cooler for 0,75 kW (200 V), 1,5 kW (400 V)
	Ambient temperature	open installation:	-10 °C to 50 °C
		wall installation:	-10 °C to 40 °C
	Air humidity		95% (without condensation)
	Storage temperature		-20 °C to +60 °C
	Assembly		cabinet, free of dust and corrosive gases
	Position height		1000 mA
	Vibration resistance		1 *g* at <20 Hz, 0,2 *g* at <50 Hz

Connections diagram

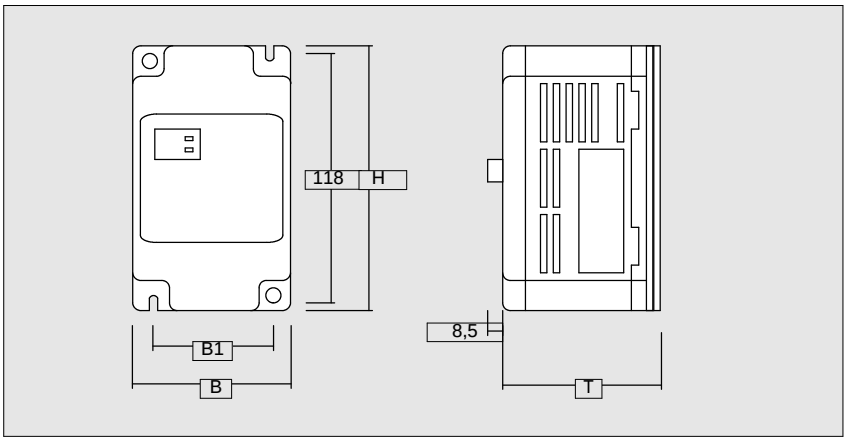
(Connect L2/L3 with single-phase equipment)



Dimensions (mm)

3G3MV-AB_

B	B1	T	H	Product number
68	56	76	128	001
68	56	89	128	002
68	56	138	128	004
108	96	140	128	007
108	96	156	128	015
140	128	163	128	022
170	158	180	128	040



3G3MV-A2_

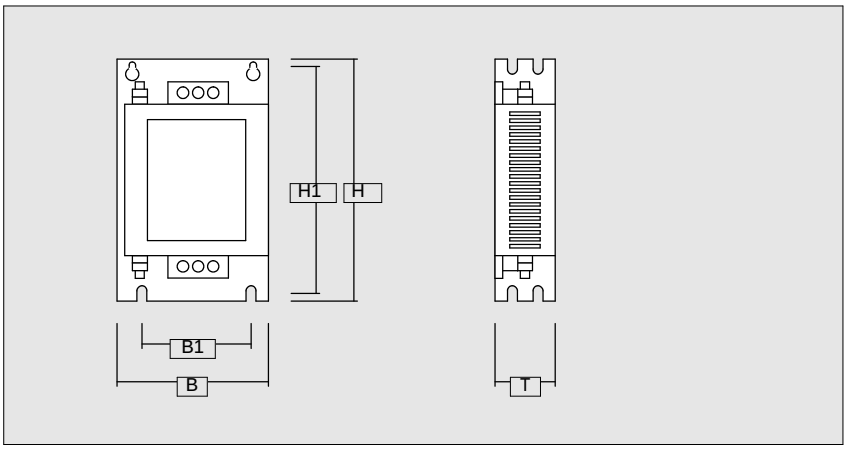
B	B1	T	H	Product number
68	56	76	128	001
68	56	76	128	002
68	56	108	128	004
68	56	128	128	007
108	96	131	128	015
108	96	140	128	022
140	128	143	128	040
180	164	170	260	055
180	164	170	260	075

3G3MV-A4_

B	B1	T	H	Product number
108	96	92	128	002
108	96	110	128	004
108	96	140	128	007
108	96	156	128	015
108	96	156	128	022
140	128	143	128	030
140	128	143	128	040
180	164	170	260	055
180	164	170	260	075

Line filter 3G3MV-PFI_

B	B1	H	H1	T	Product number
71	51	169	156	45	1010E
111	91	169	156	50	1020E
144	120	174	161	50	1030E
174	150	174	161	50	1040E
82	62	194	181	50	2010E
111	91	169	156	50	2020E
144	120	174	161	50	2030E
184	150	304	288	56	2050E
111	91	169	156	45	3005E
111	91	169	156	45	3010E
144	120	174	161	50	3020E
184	150	304	288	56	3030E



Set of Parameters

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n001	1	101H	Parameter record protection Parameter initialising	0: Only n01 can be adjusted 1: n01-049 can be altered 2: n01-079 can be altered 3: n01-119 can be altered 5: not used 6: reset error memory 7: not used 8: initialising works adjustment (2-wire) 9: initialising works adjustment (3-wire)
n002	0	102H	Choice of control mode	0: Terminal Volts/Hertz mode 1: Voltage vector control
n003	0	103H	Start/Stop source	0: Operator console 1: via terminal strip 2: via modbus
n004	0	104H	Reference value source	0: integrated potentiometer 1: parameter n024 2: 0..10 V 3: 4..20 mA 4: 0..20 mA 5: Pulse sequence 6: modbus
n005	0	105H	Stop method	0: Stop at ramp (n020) 1: Spinning out the motor
n006	0	106H	Backwards direction of rotation	0: Backwards released 1: Backwards blocked
n007	0	107H	Operator stop button	0: Stop button at n03=1 button released 1: Stop button at n03= 1 blocked
n008	0	108H	Reference value in local mode	0: integrated potentiometer 1: digital via operator (n024)
n009	0	109H	Reference value input in local mode	0: complete input with ENTER 1: no ENTER necessary
n010	0	10AH	Action on lacking control element	0: no error 1: error signal
n011	60.0 Hz	10BH	Maximum output frequency	50,0 Hz to 400 Hz
n012	200 V (400 V)	10CH	Max. output voltage	200V-class: 1 to 255 V 400V-class: 2 to 510 V
n013	60.0 Hz	10DH	Corner frequency	0,2 Hz to 400 Hz
n014	1.5 Hz	10EH	Middle output frequency	0,1 Hz to 399,9 Hz
n015	12 V (24 V)	10FH	Output voltage at middle output frequency	200V-class: 0,1 V to 255 V 400V-class: 0,2 V to 510 V
n016	1.5 Hz	110H	Minimum output frequency	0,1 Hz to 10 Hz
n017	12 V (24 V)	111H	Output voltage at minimum output frequency	200V-class: 0,1 V to 50 V 400V-class: 0,2 V to 100 V
n018	0	112H	Unit for braking/acceleration ramp	0: 0,0..999.9/1000..6000 s 1: 0,00..99.99/100.0..600,0 s
n019	10.0s	113H	Acceleration time1	see n018
n020	10.0s	114H	Braking time 1	see n018
n021	10.0s	115H	Acceleration time 2	see n018
n022	10.0s	116H	Braking time 2	see n018
n023	0	117H	S curve slide on braking/ accelerating	0: no S-curve 1: 0.2 s 2: 0.5 s 3: 1.0 s
n024	6.00 Hz	118H	Frequency reference value 1	0,00 Hz to 400 Hz
n025	0.00 Hz	119H	Frequency reference value 2	0,00 Hz to 400 Hz
n026	0.00 Hz	11AH	Frequency reference value 3	0,00 Hz to 400 Hz
n027	0.00 Hz	11BH	Frequency reference value 4	0,00 Hz to 400 Hz

Set of Parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n028	0.00 Hz	11CH	Frequency reference value 5	0,00 Hz to 400 Hz
n029	0.00 Hz	11DH	Frequency reference value 6	0,00 Hz to 400 Hz
n030	0.00 Hz	11EH	Frequency reference value 7	0,00 Hz to 400 Hz
n031	0.00 Hz	11FH	Frequency reference value 8	0,00 Hz to 400 Hz
n032	6.00 Hz	120H	Jog frequency	0,00 Hz to 400 Hz
n033	100%	121H	Max. reference value limit	0 % to 110 % of n011
n034	0	122H	Min. reference value limit	0 % to 110 % of n011
n035	0	123H	Frequency reference setting/display unit	0: 0.01 Hz 1: 0.1% 2 to 39: rpm (number of motor poles) 40 to 3999: value can be set or monitored at max. frequency
n036	depending on model	124H	Motor rated current for simulation of motor protection switch	0..150% in relation to inverter rated current
n037	0	125H	Simulation of motor protection switch	0: Standard motor with standard rated data 1: Standard motor for short-time operation 2: No thermal protection
n038	8 min	126H	Thermal motor time constant	1 - 60 min
n039	0	127H	Function of ventilator (in the inverter)	0: only runs during RUN (1 min after STOP) 1: always runs
n050	1	132H	Multifunction input S1	1: forwards start (2-wire) 2: backwards start (2-wire) 3: external error (NO) 4: external error (NC) 5: Error reset 6: Fixed frequency 1 7: Fixed frequency 2 8: Fixed frequency 3 9: Fixed frequency 4 10: Jogging 11: Ramp change-over 12: external regulator block (NO) 13: external regulator block (NC) 14: Speed search of max. frequency 15: Speed search of assigned. frequency 16: Stopping during the ramp 17: Local/Remote change-over 18: Serial/operator change-over 19: Fast stop n022 (NO) 20: Fast stop n022 (NC) 21: Fast stop error (NO) 22: Fast stop error (NC)
n051	2	133H	Multifunction input S2	see n050
n052	3	134H	Multifunction input S3	0: Change in rotation direction (3-wire) otherwise see n050
n053	5	135H	Multifunction input S4	see n050
n054	6	136H	Multifunction input S5	see n050
n055	7	137H	Multifunction input S6	see n050
n056	10	138H	Multifunction input S7	34: DOWN for motor poti (S6 automatic UP) 35: Self-test otherwise see

Set of Parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n057	0	139H	Multifunction output MA, MB (relay)	0: Fault 1: Inverter in operation 2: Reference value reached 3: Zero frequency reached 4: Output frequency ³ n095) 5: Output frequency £ n095 6: Over-torque (closer) 7: Over-torque (opener) 10: Alarm 11: Base block 12: active during local operation 13: Ready for operation 14: active during error reset 15: undervoltage detection 16: Backwards rotational direction 17: Trapping active 18: Data transfer via ModBus 19: PID Feedback loss
n058	1	13AH	Multifunction output P1	like n057
n059	2	13BH	Multifunction output P2	like n057
n060	100%	13CH	Reinforcement of analog input	0..255%
n061	0%	13DH	Offset of analog input	-100..+100%
n062	0.1s	13EH	Filter time for analog input	0,00..2.00 s
n064	0	140H	Operation method for frequency reference loss detection	0.1 Note: only for 5,5/7,5kW models
n065	0	141H	Multi function analog output type	0.1
n066	0	142H	Analog output holding	0: Output frequency 1: Motor current
n067	1	143H	Analog output reinforcement	0,00..2,00
n068	100	0144	Multifunction analog voltage input gain	-255..255%
n069	0	0145	Multifunction analog voltage input bias	-100..100%
n070	0.10	0146	Multifunction analog voltage input filter time constant	0.00..2.00 s
n071	100	0147	Multifuntion analog current input gain	-255..255
n072	0	0148	Multifunction analog current input bias	-100..100%
n073	0.10	0149	Multifunction analog current input filter time constant	0.00..2.00 s
n074	100	014A	Pulse train frequency reference gain	0..255%
n075	0	014B	Pulse train frequency reference bias	-100..100%
n076	0.10	014C	Pulse train frequency reference input filter time constant	0.00..2.00 s
n077	0	014D	Multifunction analog input function	0..4
n078	0	014E	Multifunction analog input signal selection	0.1
n079	10	014F	Frequency reference bias (FBIAS) value	0..50%
n080	4	150H	Clock frequency	1: 2,5 kHz 2: 5,0 kHz 3: 7,5 kHz 4: 10 kHz 7: 12 x motor frequency 8: 24 x motor frequency 9: 36 x motor frequency

n081	0	151H	Operation after short voltage breakdown	0: Error signal 1: Error signal after >0,5 s 2: Operation is continued
n082	0	152H	New start attempts after error	0..10
n083	0.00 Hz	153H	Gating frequency 1	0,00..400 Hz
n084	0.00 Hz	154H	Gating frequency 2	0,00..400 Hz
n085	0.00 Hz	155H	Gating frequency 3	0,00..400 Hz
n086	0.00 Hz	156H	Bandwidth of gating frequencies	0,00..25,50 Hz
n087	0.00 Hz	157H	Cumulative operation time selection	0.1 Note: only for 5,5/7,5kW models
n088	0	158H	Cumulative operation time	0 to 6550, 1=10H Note: only for 5,5/7,5kW models
n089	0	159H	SCurrent for d.c. braking	0..100% of the inverter's rated current
n090	0.5s	15AH	d.c. braking time at Stop	0,0..25,50 s
n091	0.5s	15BH	d.c. braking time at Start	0,0..25,50 s
n092	0	15CH	Protection against sweep on braking	0: switched on 1: switched off (braking resistor!!)
n093	170%	15DH	Level of protection against sweep on accelerating	30..200% of the rated current
n094	160%	15EH	Level of protection against sweep during operation	30..200% of the rated current
n095	0.00 Hz	15FH	Frequency recognition level	0,00..400 Hz
n096	0	160H	Over-torque detection 1	0: no detection 1: Detection at constant speed, no error signal 2: Detection at constant speed, with error signal and stop 3: Always detection, no error signal 4: Always detection with error signal and stop
n097	0	161H	Over-torque detection 2	0: Detection via current 1: Detection via torque
n098	160%	162H	Level of torque detection	30..200%
n099	0.1s	163H	Time of torque detection	0,1.10 s
n100	0	164H	Storing of reference value during motor poti operation	0: No storing after STOP 1: Storing after STOP
n101	2.0	165H	Speed search deceleration time	0,0..10,0s Note: only for 5,5/7,5kW models
n102	150	166H	Speed search operation level	0..200% Note: only for 5,5/7,5kW models
n103	1.0	167H	Torque boost	0,0..2.5
n104	0.3s	168H	Delay time for boost	0,0..25.5 s
n105	depending on model	169H	Iron losses in motor	0,0..6550 W
n106	depending on model	16AH	Rated slip	0,0..20.0 Hz
n107	depending on model	16BH	Motor coil resistance	0,000..65,50 W
n108	depending on model	16CH	Motor inductance	0,00..655,0 mH
n109	150%	16DH	Torque limit	0..250%
n110	depending on model	16EH	no-load current	0..99%
n111	0.0	16FH	Slip compensation reinforcement	0,0..2,5
n112	2.0s	170H	Delay time for slip compensation	0,0..25,5 s
n113	0	171H	Slip compensation on braking	0: not active 1: active
n115	0	173H	Stall prevention level automatic suppression selection	0.1
n116	0	174H	Stall prevention acc/dec time setting	0.1

Set of Parameters (continued)

Parameter number	Default setting	MODBUS address	Name	Adjustment range
n120	0.00 Hz	178H	Frequency reference value 9	0,00..400 Hz
n121	0.00 Hz	179H	Frequency reference value 10	0,00..400 Hz
n122	0.00 Hz	17AH	Frequency reference value 11	0,00..400 Hz
n123	0.00 Hz	17BH	Frequency reference value 12	0,00..400 Hz
n124	0.00 Hz	17CH	Frequency reference value 13	0,00..400 Hz
n125	0.00 Hz	17DH	Frequency reference value 14	0,00..400 Hz
n126	0.00 Hz	17EH	Frequency reference value 15	0,00..400 Hz
n127	0.00 Hz	17FH	Frequency reference value 16	0,00..400 Hz
n128	0	180H	PID control selection	0: PID control disabled 1 to 8: PID control enabled
n129	1.00	181H	Feedback value adjustment gain	0,00 to 10,00
n130	1.0	182H	Proportional (P) gain	0,0 to 25,0
n131	1.0	183H	Integral (I) time	0,0 to 360,0 s
n132	0.00	184H	Derivative (D) time	0,00 to 2,50 s
n133	0	185H	PID offset adjustment	-100 to 100 %
n134	100	186H	Integral (I) upper limit	0 to 100 %
n135	0.0	187H	PID primary delay time	0,0 to 10,0 s
n136	0	188H	Feedback loss detection level	0: Feedback loss detection disabled 1: Feedback loss detection enabled (Nonfatal error: FbL warning) 2: Feedback loss detection enabled (Fatal error: FbL fault)
n137	0	189H	Feedback loss detection level	0 to 100 %
n138	1.0	18AH	Feedback loss detection time	0,0 to 25,5
n139	0	18BH	Energy saving control selection	0: disabled 1: enabled
n140	Varies with capacity	18CH	Energy saving control coefficient K2	0,0 to 6550
n141	50	18DH	Energy saving voltage lower limit at 60Hz output	0 to 120 %
n142	12	18EH	Energy saving voltage lower limit at 6Hz output	0 to 25 %
n143	1	18FH	Power averaging time	1 to 200 ms
n144	0	190H	Probe operation voltage limit	0 to 100 %
n145	0.5	191H	Probe operation control voltage step at 100%	0,1 to 10,0 %
n146	0.2	192H	Probe operation control voltage step at 5%	0,1 to 10,0 %
n149	2500	195H	Scaling pulse input	100..3000 (x10Hz)
n150	0	195H	Multi-function analog output, pulse train frequency selection	0: 1440Hz at max. frequency 1: 1x output frequency 6: 6x output frequency 12: 12x output frequency 24: 24x output frequency 36: 36x output frequency
n151	0	197H	RS422/485 communications time-over detection selection	0: Spinning out 1: STOP with ramp 1 (n020) 2: STOP with ramp 2 (n022) 3: no STOP, alarm signal 4: no STOP
n152	0	198H	RS422/485 communications frequency reference/display unit selection	0: 0,1 Hz 1: 0,01 Hz 2: 30000 = max. frequency 3: 0,1 %
n153	0	199H	RS422/485 slave address	0..31

n154	0	19AH	RS422/485 baud rate	0: 2400 Kbaud 1: 4800 Kbaud 2: 9600 Kbaud 3: 19200 Kbaud
n155	0	19BH	RS422/485 parity	0: straight 1: not straight 2: no parity
n156	10ms	19CH	RS422/485 waiting time when sending	10..65 ms
n157	0	19DH	RS422/485 RTS control	0: RTS control 1: RS422A, 1:1 link
n158	Varies with capacity	19EH	Motor code	0 to 70
n159	120	19FH	Energy saving voltage upper limit at 60Hz output	0 to 120 %
n160	16	1A0H	Energy saving voltage upper limit at 6Hz output	0 to 25 %
n161	10	1A1H	Power detection width for probe operation switching	0 to 100 %
n162	5	1A2H	Power detection filter constant	0 to 255 ms
n163	1,0	1A3H	PID output gain	0,0 to 25,0
n164	0	1A4H	PID feedback input block selection	0: frequency reference control terminal for voltage input (0 to 10V) is enabled 1: frequency reference control terminal for current input (4 to 20mA) is enabled 2: frequency reference control terminal for current input (0 to 2-mA) is enabled 3: multi-function analog voltage input (0 to 10V) is enabled 4: multi-function analog current input (4 to 20mA) is enabled 5: pulse train reference control terminal is enabled
n165	0	1A5H	Installed braking resistor overheating protection	0: disabled 1: enabled Note: only for 5,5/7,5kW models
n166	0	1A6H	Input open phase detection level	0 to 100% Note: only for 5,5/7,5kW models
n167	0	1A7H	Input open phase detection time	0 to 255s Note: only for 5,5/7,5kW models
n168	0	1A8H	Output open phase detection level	0 to 100% Note: only for 5,5/7,5kW models
n169	0,0	1A9H	Output open phase detection tiime	0..2.0s Note: only for 5,5/7,5kW models
n175	0	1AFH	Low speed carrier frequency reduction selection	0: disabled 1: enabled
n176	rdy	1B0H	Parameter copy and verify function selection	rdy: ready to accept the nect command rEd: reads the inverter parameter Cpy: copies the parameter to the inverter vFy: verifies the inverter parameter vA: checks the inverter capacity display Sno: checks the software number
n177	0	1B1H	Copy-prohibit function	0: read prohibited for inverter parameters (data cannot be stored in EEPROM) 1: read possible for invertr parameters (data can be stored in EEPROM)
n178	--	1B2H	Fault log	
n179		1B3H	Software number	

Set of Parameters (continued)

Apart from the parameters which are accessible through the programming unit and MODBUS communication, there are other parameters which can only be operated and read through MODBUS communication.

MODBUS address	Name	Function	Access*
0001h	**Control word** Start / Stop Selection of rotational direction External error Reset after error Multifunction input S1 Multifunction input S2 Multifunction input S3 Multifunction input S4 Multifunction input S5 Multifunction input S6 Multifunction input S7	**Bit** 0 1 Run; 0 Stop 1 1 Reverse; 0 Forward 1 1 Error (EF0) 3 1 Error reset 4 1 Input S1 selected 5 1 Input S2 selected 6 1 Input S3 selected 7 1 Input S4 selected 8 1 Input S5 selected 9 1 Input S6 selected A 1 Input S7 selected 9 10 11 12 13 14 15	R, W
0002H	Frequency reference value in units as given in n152		R, W
0003H	V/f gain		R, W
0009H	Multifunction outputs MA, P1, P2 (n057–n059=18)	Bit 0 Multifunction output MA 1 Multifunction output P1 2 Multifunction output P2	R, W
0020H	 Start / Stop Selection of rotational direction Inverter readiness for operation Inverter error Invalid parameter entry Multifunction output MA Multifunction output P1 Multifunction output P2	Bit 0 1 Start; 0 Stop 1 1 Reverse; 0 Forward 2 1 Ready for operation 0 Not ready for oper. 3 1 Fault; 0 No fault 4 1 Parameter error; 0: No parameter error 5 1 active 0 not active 6 1 active 0 not active 7 1 active 0 not active 8 9 10 11 12 13 14 15	R

Set of Parameters (continued)

MODBUS address	Name	Function	Access*
0021H	Inverter error	Bit 1 Overcurrent (OC) 2 Overvoltage (OV) 3 Inverter overload (OL2) 3 Inverter overheat (OH) 4 5 6 7 External error (EF0, EF) 8 Hardware error(CPFxx) 9 Motor overload (OL1) 10 Over-torque (OL3) 11 12 Line cut-off (UV1) 13 Control voltage error (UV2) 14 Bus error (BUS) 15 Control element error (OPR)	R
0022H	Status inverter communication Data transfer Range error parameter	Bit 0 1 during data recording 1 2 3 Range error 4 Data inconsistency 5 6 7 8 9 10 11 12 13 14 15	R
0023H	Frequency reference value in units of n152		R
0024H	Frequency actual value in units of n152		R
0027H	Output current(10 / A)		
0028H	Output voltage(1 / V)		
002BH	Binary inputs Multifunction input S1 Multifunction input S2 Multifunction input S3 Multifunction input S4 Multifunction input S5 Multifunction input S6 Multifunction input S7	Bit 0 1 input active 1 1 input active 2 1 input active 3 1 input active 4 1 input active 5 1 input active 6 1 input active	R
002CH	 Operating condition Standstill signal Frequency reference value reached Alarm Rotating field frequency £ n095 Rotating field frequency ³ n095 Inverter is ready for operation Undervoltage detection Base block Reference value source Inverter control Over-torque detection Bad error (including transfer) Transfer error	Bit 0 1 Operation; 0: no operation 1 1 Standstill; 0: Motor turning 2 1 reached; 0: not reached 3 1 Alarm; 0: no alarm 4 1 yes; 0: no 5 1 yes; 0: no 6 1 yes; 0: no 7 1 undervoltage 0 no undervoltage 8 1 yes; 0: no 9 1 not serial; 0: serial 10 1 not serial; 0: serial 11 1 registered; 0: not registered 12 13 14 1 yes; 0: no 15 1 yes; 0: no	R

Set of Parameters (continued)

MODBUS address	Name	Function	Access*
002DH	Multifunction output MA Multifunction output P1 Multifunction output P2	Bit 0 1 active 1 1 active 2 1 active	R
0031H	Intermediate circuit voltage(1 / V)		
0032H	Torque		
003DH	Communication error	Bit 0 CRC error 1 Data length wrong 2 3 Parity error 4 Overrun error 5 Frame error 6 Time over 7 8 9 10 11 12 13 14 15	R

The following MODBUS functions can be carried out using a Broadcast order (all connected inverters are described at the same time, slave address = 0).

MODBUS address	Name	Function	Access*
0001h	**Control word** Start/Stop Direction of rotation selection External error Error reset	**Bit** 0 1 Run; 0 Stop 1 1 Reverse; 0 Forward 2 3 4 1 Input selected 5 1 active 6 7 8 9 10 11 12 13 14 15	BC
0002H	Frequency reference value 30000 = 100%		BC

* R = Read only
W = Write only
BC = Broadcast

General

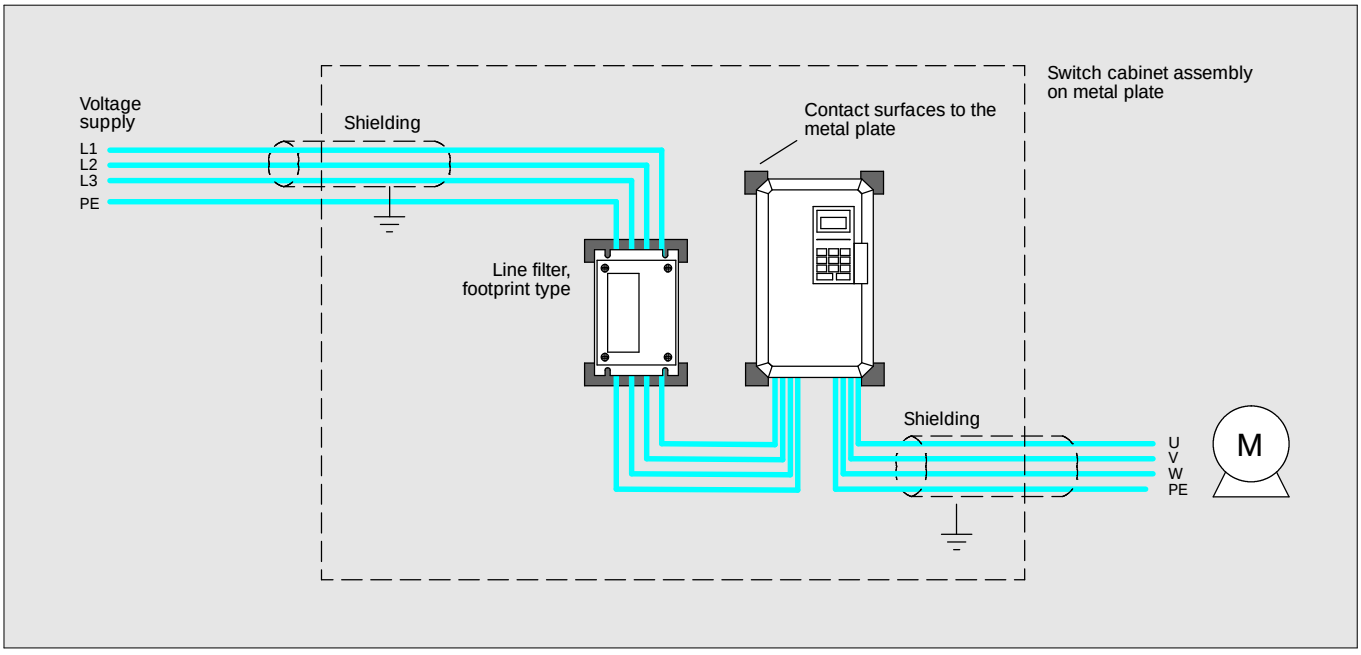
The 3G3HV is designed in particular for applications with quadratic power requirement. Pumps and ventilators are always operated with the highest efficiency by means of a self-adapting energy saving function.

Features:

- power range: 0,4...300 kW
- PID controller
- self-adapting energy saving function
- NPN or PNP digital inputs
- analog frequency default: 0...10 VDC or 4...20 mA
- high continuous output current
- low noise thanks to high carrier frequency (adjustable to 15 kHz)
- built-in programming unit
- MODBUS interface RS-422/-485
- built-in DC reactor above 15 kW
- 12 pulse rectifier above 15 kW

System architecture

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



Product overview

Inverter: 200 V Class: Model 3G3HV-AB_-CE

	3G3HV-A	B004	B007	B015	B022	B037
Maximum allowed motor output	kW	0,55	1,1	1,5	2,2	3,7
Output data — Inverter performance	kVA	1,2	2,3	3,0	4,2	6,7
Output data — Output rated current	A	3,2	6	8	11	17,5

Inverter: 400 V Class: Model 3G3HV-A4_-CE

	3G3HV-A	4004	4007	4015	4022	4037	4040	4055	4075	4110	4150
Maximum allowed motor output	kW	0,55	1,1	1,5	2,2	3,7	4,0	5,5	7,5	11	15
Output data — Inverter performance	kVA	1,4	2,6	3,7	4,7	6,1	8,4	11	14	21	26
Output data — Output rated current	A	1,8	3,4	4,8	6,2	8	11	14	18	27	34

	3G3HV-B	4185	4220	4300	4370	4450	4550	4750	411K	416K
Maximum allowed motor output	kW	18,5	22	30	37	45	55	75	110	160
Output data — Inverter performance	kVA	31	40	50	61	73	98	130	170	230
Output data — Output rated current	A	41	52	65	80	96	128	165	224	302

	3G3HV-B	418K	422K	430K
Maximum allowed motor output	kW	185	220	300
Output data — Inverter performance	kVA	260	340	460
Output data — Output rated current	A	380	506	675

Accessories

Line filter

Line filter	Rated voltage	Line filter	Current*
3G3HV-AB004-CE	1 x 230 VAC	3G3HV-PFI1010-E	10 A
3G3HV-AB007-CE and 3G3HV-AB015-CE	1 x 230 VAC	3G3HV-PFI1020-E	20 A
3G3HV-AB022-CE and 3G3HV-AB037-CE	1 x 230 VAC	3G3HV-PFI1040-E	40 A
3G3HV-A4004-CE and 3G3HV-A4007-CE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3HV-A4015-CE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3HV-A4022-CE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3HV-A4037-CE and 3G3HV-A4040-CE	3 x 400 VAC	3G3FV-PFI4012-E*	12 A
3G3HV-A4055-CE	3 x 400 VAC	3G3FV-PFI4025-E*	25 A
3G3HV-A4075-CE	3 x 400 VAC	3G3FV-PFI4025-E*	25 A
3G3HV-A4110-CE	3 x 400 VAC	3G3FV-PFI4040-E*	40 A
3G3HV-A4150-CE	3 x 400 VAC	3G3FV-PFI4040-E*	40 A
3G3HV-B4185-CE and 3G3HV-B4220-CE	3 x 400 VAC	3G3FV-PFI4060-E	60 A
3G3HV-B4300-CE and 3G3HV-B4370-CE	3 x 400 VAC	3G3FV-PFI4100-E	100 A
3G3HV-B4450-CE	3 x 400 VAC	3G3FV-PFI4120-E	120 A
3G3HV-B4550-CE	3 x 400 VAC	3G3FV-PFI4150-E	150 A
3G3HV-B4750-CE	3 x 400 VAC	3G3FV-PFI4180-E	180 A
3G3HV-B411K-CE	3 x 400 VAC	3G3FV-PFI4280-E	280 A
3G3HV-B418K-CUE	3 x 400 VAC	3G3FV-PFI4450-E	450 A
3G3HV-B418K-CUE	3 x 400 VAC	3G3FV-PFI4450-E	450 A
3G3HV-B422K-CUE	3 x 400 VAC	3G3FV-PFI4600-E	600 A
3G3HV-B430K-CUE	3 x 400 VAC	3G3FV-PFI4900-E	900 A

* footprint type

Accessories (continued)

Brake choppers, braking resistors

Inverter	Rated voltage	Brake chopper	Number	Braking resistors	Number	Specification for each unit
for inverter, single-phase 230 V						
3G3HV-AB004-CE	1 x 230 VAC	built-in	-	**3G3IV-PERF150W-J620**	1	62 W, 150 W
3G3HV-AB007-CE	1 x 230 VAC	built-in	-	**3G3IV-PERF150W-J620**	1	62 W, 150 W
3G3HV-AB015-CE	1 x 230 VAC	built-in	-	**3G3IV-PERF150W-J620**	1	62 W, 150 W
3G3HV-AB022-CE	1 x 230 VAC	built-in	-	**3G3IV-PERF150W-J620**	1	62 W, 150 W
3G3HV-AB037-CE	1 x 230 VAC	built-in		**3G3IV-PERF150W-J620**	1	62 W, 150 W
for inverter, three-phase 400 V						
3G3HV-A4004-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF150W-J101**	1	100 W, 150 W
3G3HV-A4007-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF150W-J101**	1	100 W, 150 W
3G3HV-A4015-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF150W-J101**	1	100 W, 150 W
3G3HV-A4022-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF250W-J680T**	1	68 W, 250 W
3G3HV-A4037-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF500W-J360T**	1	36 W, 500 W
3G3HV-A4040-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF500W-J360T**	1	36 W, 500 W
3G3HV-A4055-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF500W-J360T**	1	36 W, 500 W
3G3HV-A4075-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF101W-J360T**	1	36 W, 1000 W
3G3HV-A4110-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF151W-J200T**	1	20 W, 1500 W
3G3HV-A4150-CE	3 x 400 VAC	built-in	-	**3G3IV-PERF151W-J200T**	1	20 W, 1500 W

Other

Description	Cable length	Product number
Adapter for front panel installation, fixed mounting of console	-	**3G3FV-PDACT-AD**
Adapter for front panel installation, removable console	-	**3G3FV-PDACT-BD**
Extension cable to programming console	1 m	**3G3FV-PCN125**
Extension cable to programming console	3 m	**3G3FV-PCN325**
Ferrite rings for output, D = 21 to 58 mm	-	**3G3IV-PFO-OC1-OC4**

Programming accessories

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

Technical data

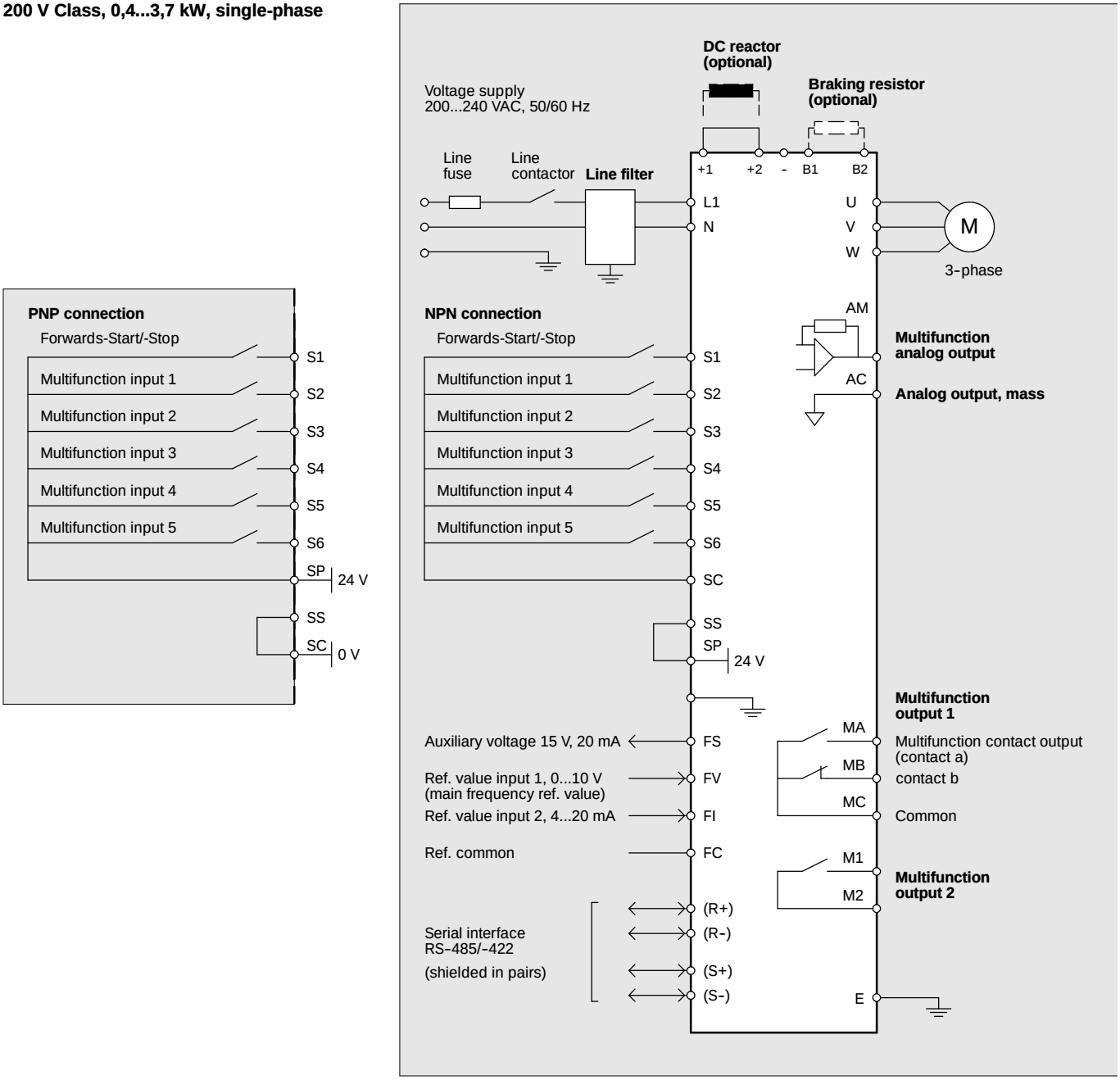
Type		3G3HV-A4_-CE	3G3HV-B4_-(-CE)	3G3HV-AB_-CE
Output data	Max. output voltage	three-phase: 380/400/415/440/460 V (prop. to input volt.)		three-phase: 200-240 V (prop. to input volt.)
	Output frequency	0,1 Hz to 400 Hz		
Supply	Rated input voltage and frequency	three-phase: 380/400/415/440/460 V, 50/60 Hz		three-phase: 200-240 V, 50/60 Hz
	Allowed voltage variation	+10%, -15%		
	Allowed frequency variation	±5%		
Control functions	Type of control	sinusoidal pulse width modulation (PWM)		
	Output frequency range	0,1-400 Hz		
	Frequency precision	digital default: ±0,01% (-10 °C to +40 °C) analog default: ±0,1% (25 °C ±10 °C)		
	Frequency resolution	digital default: 0,1 Hz analog default: 0,05 Hz, 50 Hz (10 Bits)		
	Output frequency resolution	0.01 Hz		
	Overload capacity	150% of the output rated current for 1 minute	120% of the output rated current for 1 minute 150% for 12 s	
	Frequency reference value signal	0-10 VDC (20 kΩ), 4-20 mA (250 Ω)		
	Acceleration/deceleration	0,0 bis 3600 s (can be programmed independently)		
	Braking torque	about 20% (with braking resistor up to 125%)	about 20%	
	U/f characteristics	15 already programmed and one freely programmable characteristic		
Protective functions	Protection against motor overload	thermo-electronic protection against overload		
	Instantaneous overcurrent	stops at approx. 200% of rated output current	stops at approx. 180% of rated output current	
	Overload	at 150% of the output rated current the motor coasts to stop after 1 minute	at 120% of the output rated current the motor coasts to stop after 1 minute	
	Overvoltage	stops when main circuit DC voltage is approx. 820 V		
	Undervoltage	stops when main circuit DC voltage is approx. 380 V (400 V model)		
	Supply voltage failure	after failure of longer than 15 ms the output switches off. After the return of voltage operation can be automatically continued.		
	Cooling fin overheating	protection by thermistor		
	Stall prevention	stall prevention during the acceleration and braking phase, and also during constant frequency operation		
	Earth fault	via electronic circuit		
	Charge indicator	the charge indicator lights up until the intermediate circuit voltage falls under 50 V		

Technical data (continued)

Type		3G3HV-A4_-CE	3G3HV-B4_-(-CE)	3G3HV-AB_-CE
Ambient conditions	Ambient temperature during operation	-10 °C to +45 °C	-10 °C to +45 °C	-10 °C to +45 °C
	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 at 0...20 Hz 0,2 G at 20...50 Hz		

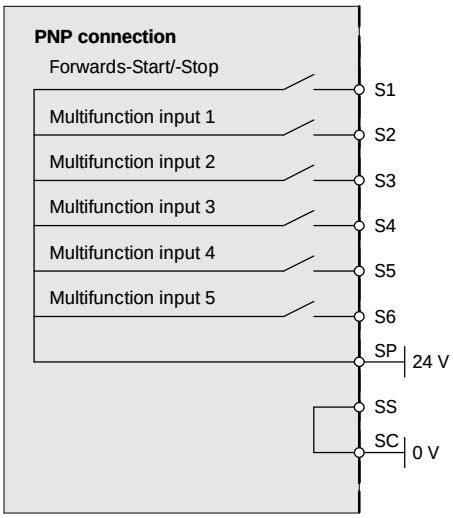
Connections diagram

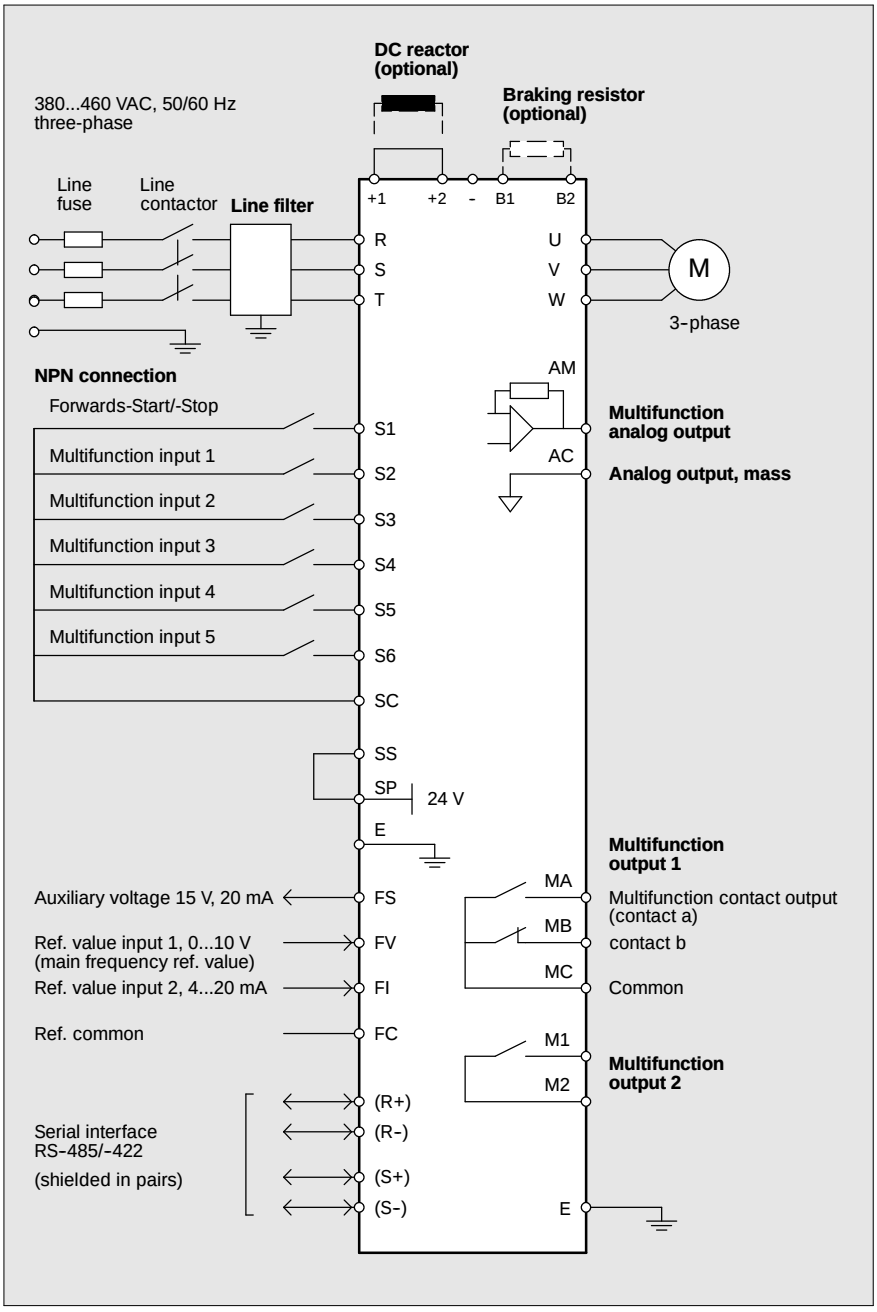
200 V Class, 0,4...3,7 kW, single-phase



Connections diagram (continued)

400 V Class, 0,4...15 kW, three-phase

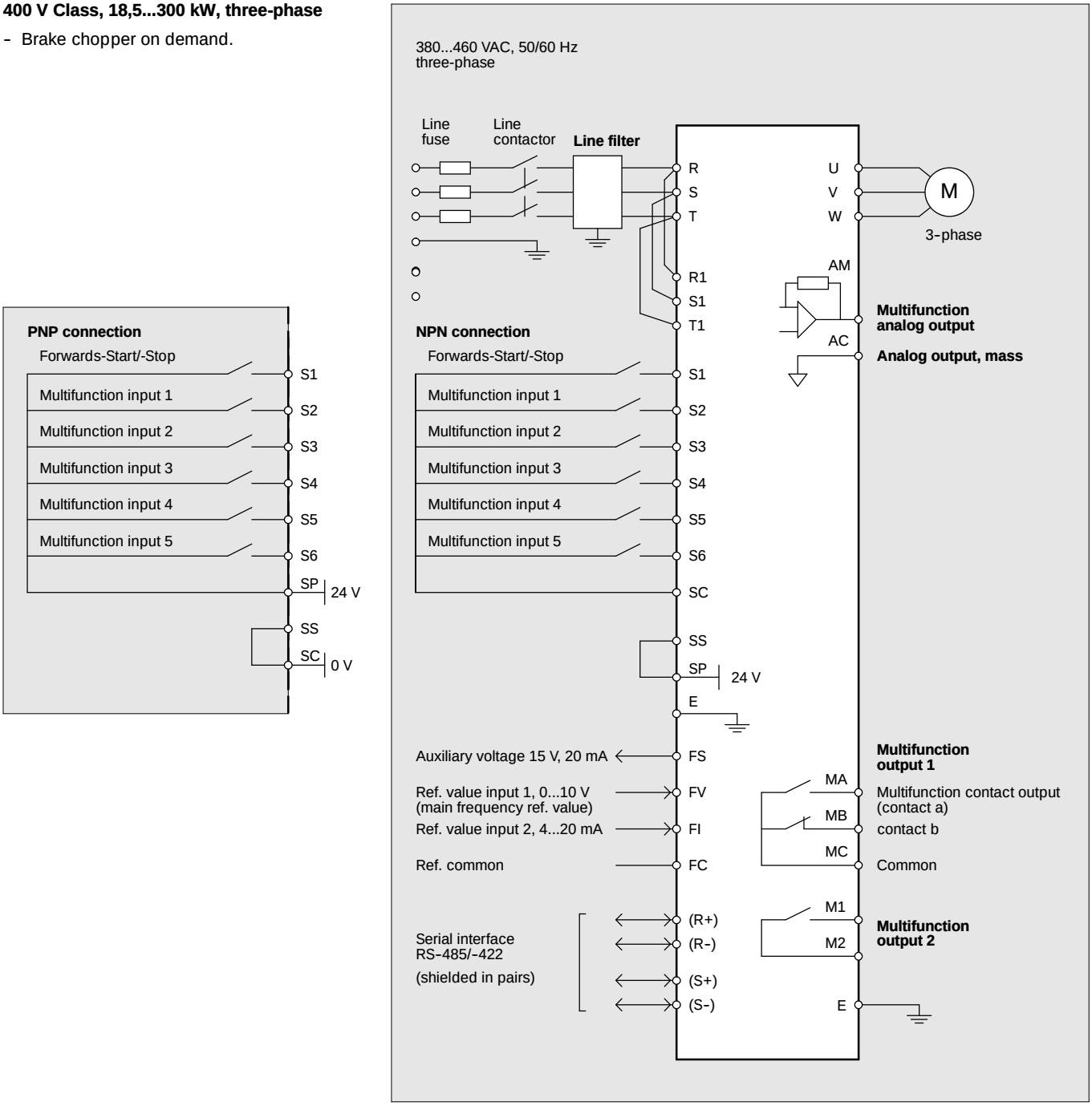




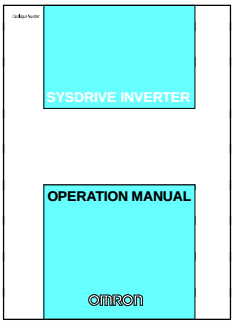
Connections diagram (continued)

400 V Class, 18,5...300 kW, three-phase

- Brake chopper on demand.



Technical documentation



English documentation	Product	Title	Product number
	3G3HV	User Manual	I515-E1-2
		Installation Manual	I520-E1-1

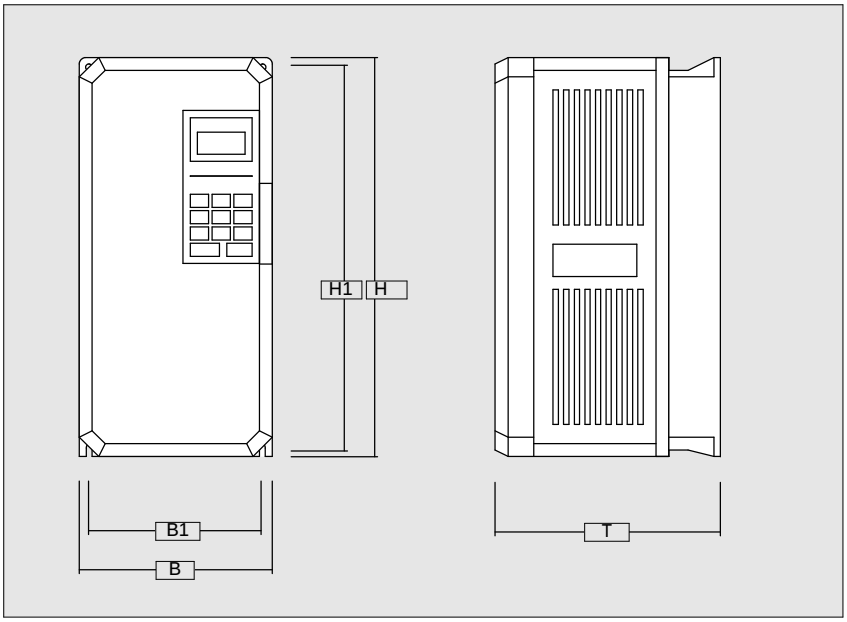
Dimensions (mm)

Inverter
3G3HV-AB_, 200 V single-phase

B	B1	H	H1	T	Weight kg	Product number
140	126	280	266	160	3	004-CE
140	126	280	266	180	4,5	007-CE
140	126	280	266	180	4,5	015-CE
200	186	300	285	205	6	022-CE
200	186	300	285	205	6	037-CE

3G3HV-A4_, 400 V three-phase, up to 15 kW

B	B1	H	H1	T	Weight kg	Product number
140	126	280	266	160	3	004-CE
140	126	280	266	160	3	007-CE
140	126	280	266	180	4	015-CE
140	126	280	266	180	4,5	022-CE
140	126	280	266	180	4,5	037-CE
140	126	280	266	180	4,5	040-CE
200	186	300	285	205	6	055-CE
200	186	300	285	205	6	075-CE
250	236	380	365	225	11	110-CE
250	236	380	365	225	11	150-CE

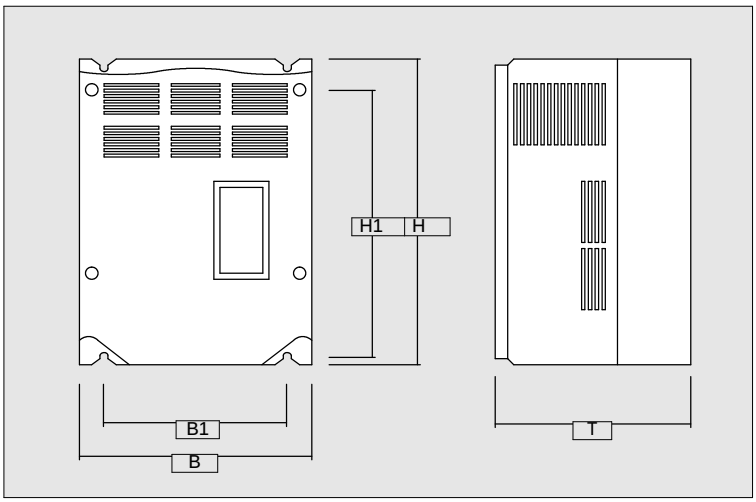


Dimensions (mm) (continued)

Inverter
3G3HV-B_, 400 V three-phase, >15 kW

B	B1	H	H1	T	Product number
325	275	450	435	285	4185-CE
325	275	450	435	285	4220-CE
325	275	625	610	285	4300-CE
325	275	625	610	285	4370-CE
325	275	625	610	285	4450-CE
455	350	820	795	350	4550-CE
455	350	820	795	350	4750-CE
575	445	925	895	375	411K-CE
575	445	925	895	400	416K-CE
950	*	1450	1400	435	418K-CUE
950	*	1450	1400	435	422K-CUE
960	*	1600	1550	455	430K-CUE

* on demand



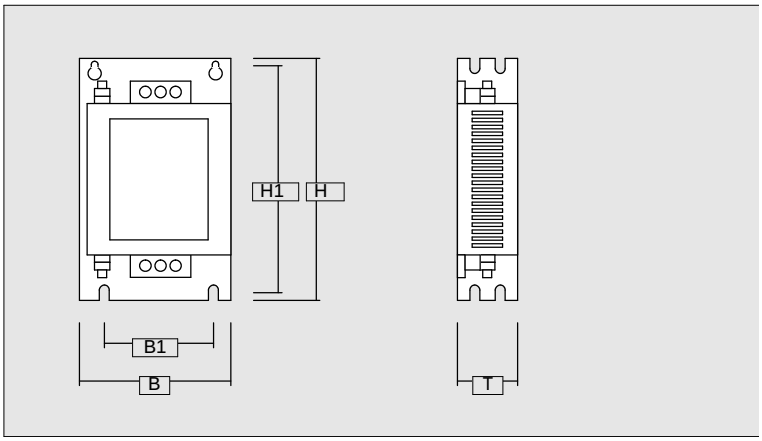
Line filter
3G3HV-PFI_, 200 V single-phase, mountable underneath

B	B1	H	H1	T	Product number
143	90	320	310	46	1010-E
143	90	320	310	46	1020-E
213	150	320	310	51	1040-E

3G3FV-PFI_, 400 V three-phase, mountable underneath

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

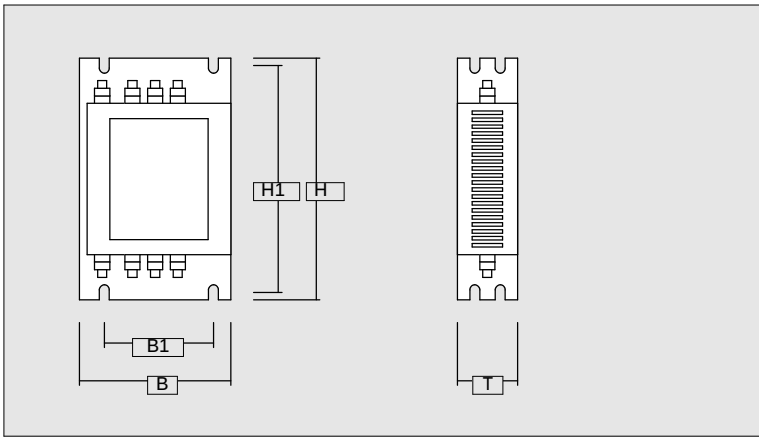
up to 15 kW



3G3FV-PFI_, 400 V three-phase

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	587	560	205	4450-E

from 18,5 kW



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.

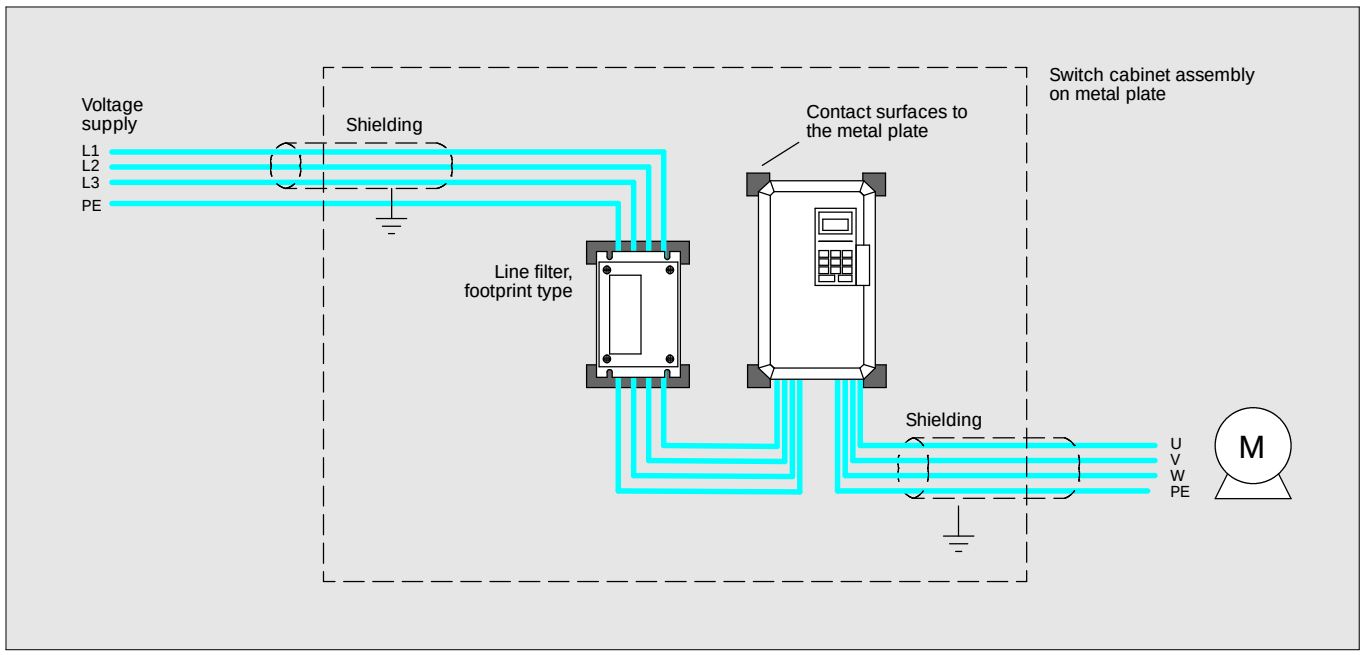
Starting-up is facilitated by an LCD display with indications in 7 languages. If the inverter should ever fail, it shows all the data at the moment of failure (current, voltage etc.). In this way trouble location is made much easier and the standstill time is minimised. Many protective functions (protection 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

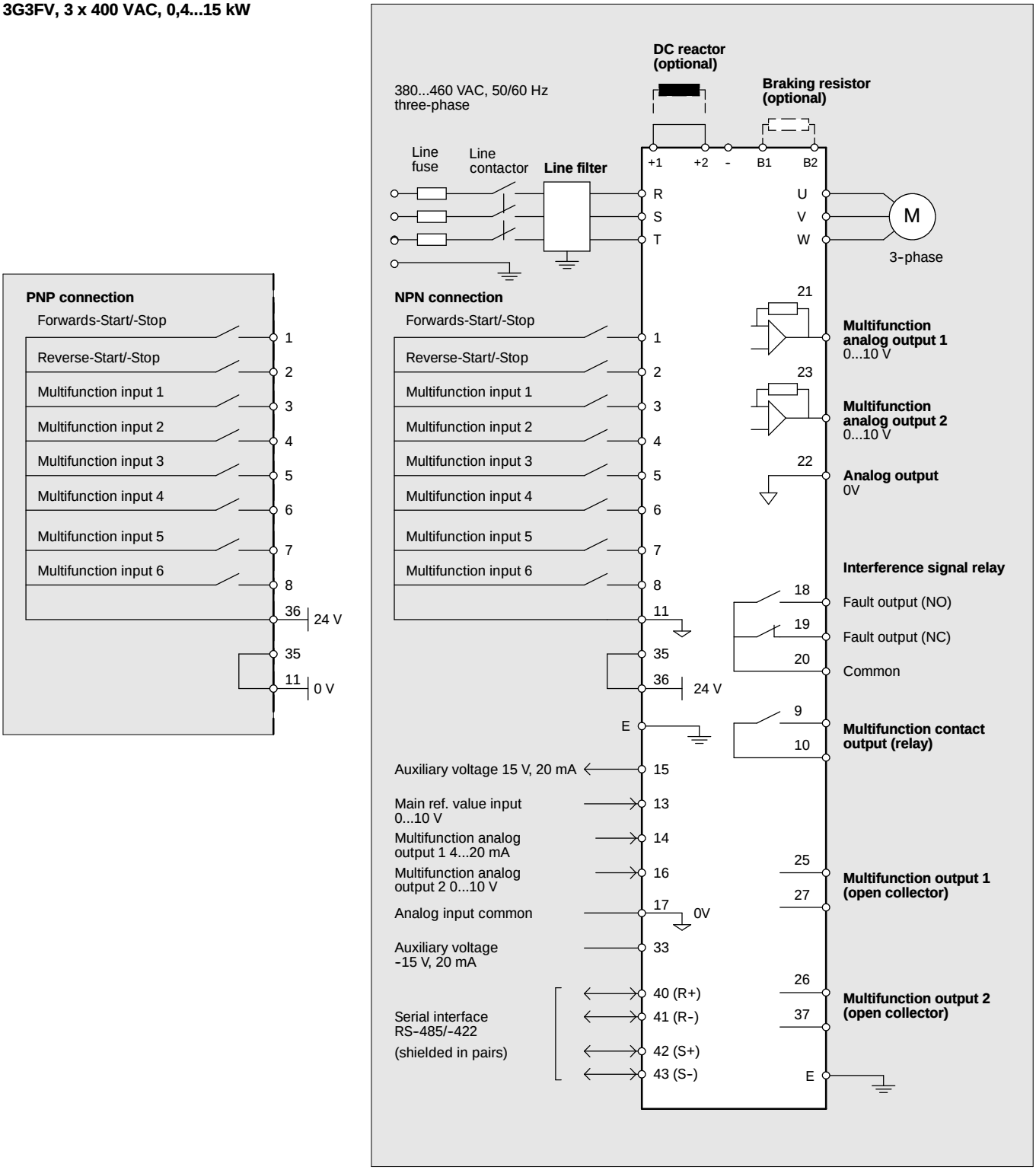
	Description	Cable length	Product number
PC programming	Programming software under WINDOWS	-	**SYSDRIVE Configurator**
	Connecting cable	2 m	**3G3FV-PCNDW225N**

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

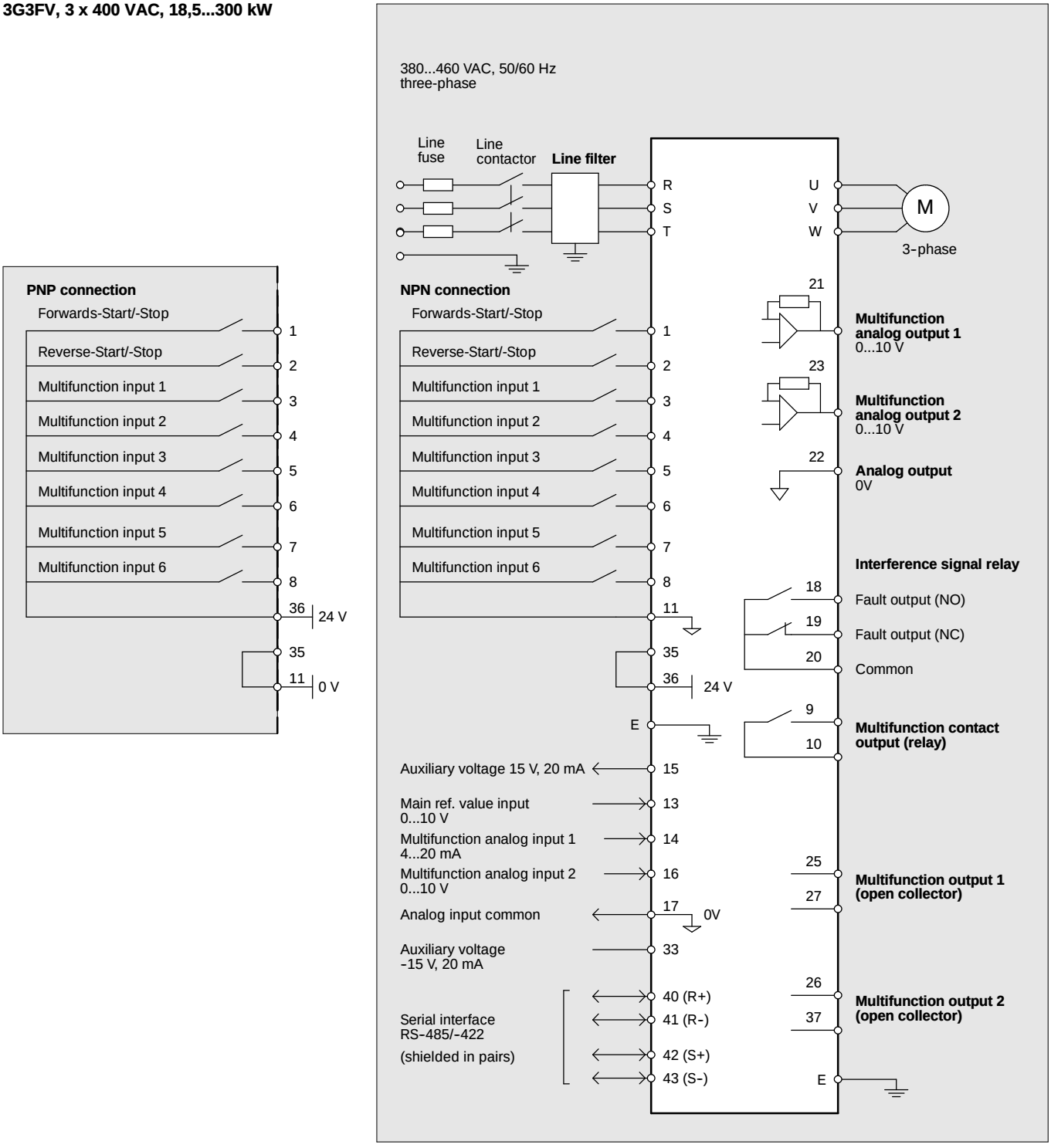
Connections diagram

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

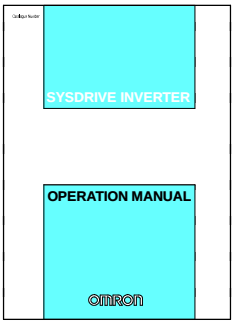


Connections diagram (continued)

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



Technical documentation



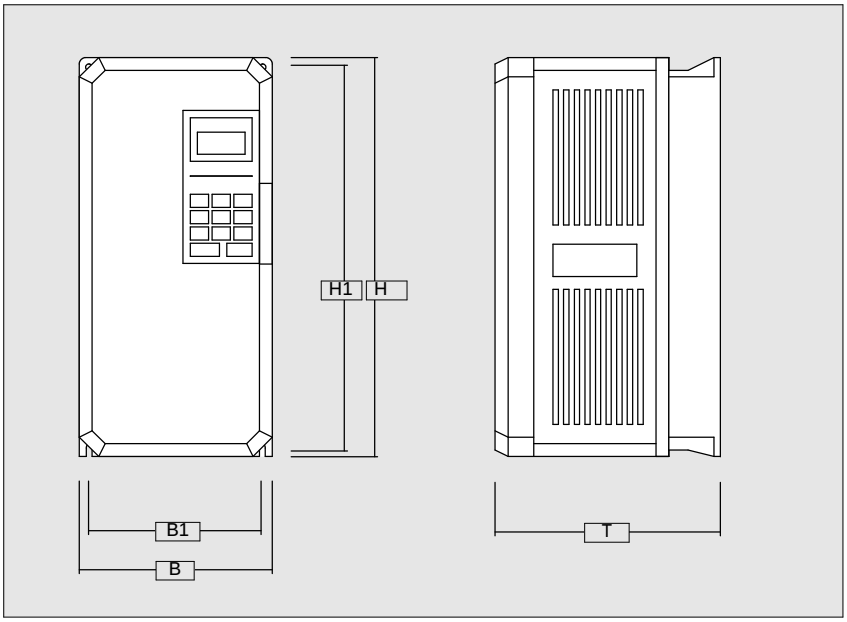
English documentation

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

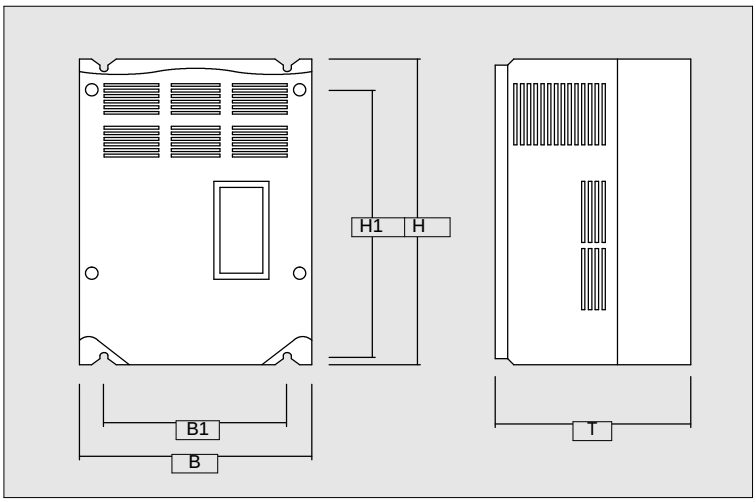


Dimensions (mm) (continued)

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

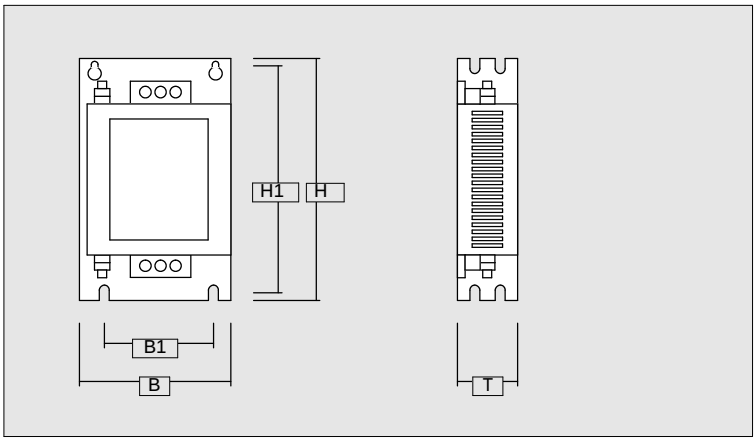
* on demand



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

up to 15 kW

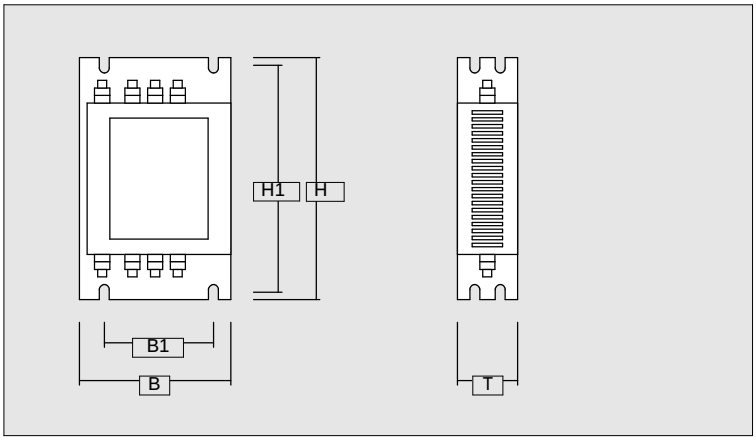
B	B1	H	H1	T	Product number
143	90	320	310	40	4012E
213	150	350	330	40	4025E
266	200	435	415	55	4040E



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



Inverters

Selection Guide

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