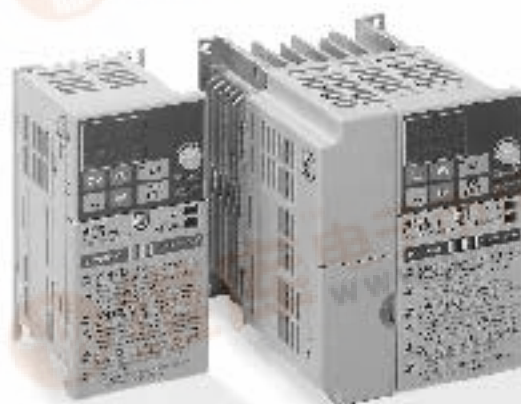


## General

The 3G3MV is a sensorless flux vector control inverter for power sizes up to 7.5 kW. Vector control provides improved speed holding and motor torque at low speeds, without the need for an encoder feedback signal. To enable the 3G3MV to be integrated into systems, there are configurable digital I/O, configurable analogue I/O plus all digital I/O can be wired in NPN or PNP.

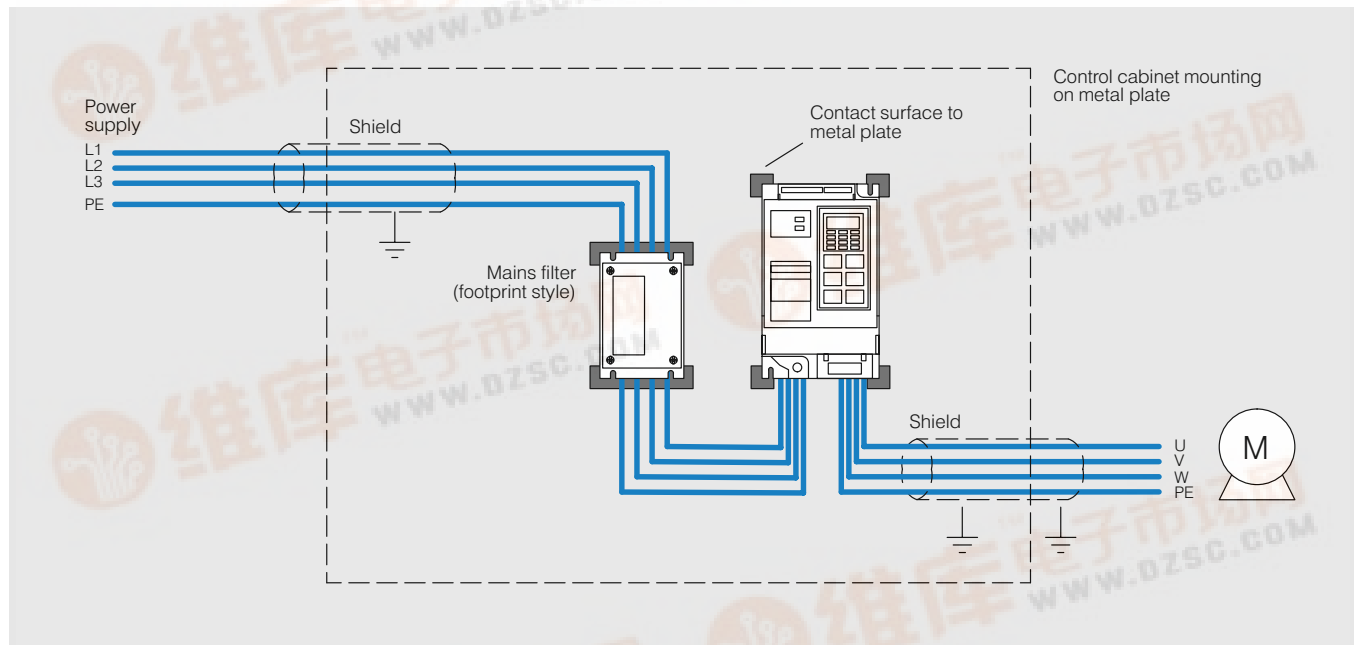
### Characteristics:

- Power range 0.1..7.5 kW
- Sensorless vector controlled inverter
- Compact size
- Frequency setting signal 0..10 V / 4..20 mA
- 150% overload / 60 sec
- 100% torques at 0.5 Hz
- Customised application software
- Overload detection
- Pulse input
- Programmable second analogue input
- Integrated PID controller
- 16 programmable fixed frequencies
- DC injection
- In-built operator/copy unit
- Optional field bus modules (DeviceNet, PROFIBUS, CANopen, Interbus-S)
- True PLC functionality as option
- PC configuration tool SYSDRIVE Configurator
- Approvals: CE, UL, c-UL



## System Configuration

In order to conform to the applicable EMC directives, it is necessary to fit suitable EMC filters and follow the installation guidelines given.



## Product Overview

|                                                                                     | Max. motor output | Output current | Model code  |
|-------------------------------------------------------------------------------------|-------------------|----------------|-------------|
| <b>Single-phase 230 V</b>                                                           |                   |                |             |
|    | 0.12 kW           | 0.8 A          | 3G3MV-AB001 |
|                                                                                     | 0.25 kW           | 1.5 A          | 3G3MV-AB002 |
|                                                                                     | 0.55 kW           | 3.0 A          | 3G3MV-AB004 |
|                                                                                     | 1.1 kW            | 5.0 A          | 3G3MV-AB007 |
|                                                                                     | 1.5 kW            | 8.0 A          | 3G3MV-AB015 |
|                                                                                     | 2.2 kW            | 11 A           | 3G3MV-AB022 |
|                                                                                     | 4.0 kW            | 17.5 A         | 3G3MV-AB040 |
| <b>Three-phase 230 V</b>                                                            |                   |                |             |
|    | 0.12 kW           | 0.8 A          | 3G3MV-A2001 |
|                                                                                     | 0.25 kW           | 1.5 A          | 3G3MV-A2002 |
|                                                                                     | 0.55 kW           | 3.0 A          | 3G3MV-A2004 |
|                                                                                     | 1.1 kW            | 5.0 A          | 3G3MV-A2007 |
|                                                                                     | 1.5 kW            | 8.0 A          | 3G3MV-A2015 |
|                                                                                     | 2.2 kW            | 11 A           | 3G3MV-A2022 |
|                                                                                     | 4.0 kW            | 17.5 A         | 3G3MV-A2040 |
| <b>Three-phase 400 V</b>                                                            |                   |                |             |
|  | 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            | 18.0 A         | 3G3MV-A4075 |

## Accessories

### Mains filter, braking resistors, ferrite rings

| Inverter | Model code                     |                            |                            |                |
|----------|--------------------------------|----------------------------|----------------------------|----------------|
|          | Mains filter (footprint style) | Braking resistors (3% ED)  | Braking resistors (10% ED) | Ferrite rings  |
| AB001    | 3G3MV-PFI1010-E                | 3G3IV-PERF150WJ401 (400 Ω) | —                          | 3G3IV-PFO OC/1 |
| AB002    | 3G3MV-PFI1010-E                | 3G3IV-PERF150WJ401 (400 Ω) | —                          | 3G3IV-PFO OC/1 |
| AB004    | 3G3MV-PFI1010-E                | 3G3IV-PERF150WJ201 (200 Ω) | —                          | 3G3IV-PFO OC/1 |
| AB007    | 3G3MV-PFI1020-E                | 3G3IV-PERF150WJ201 (200 Ω) | —                          | 3G3IV-PFO OC/1 |
| AB015    | 3G3MV-PFI1020-E                | 3G3IV-PERF150WJ101 (100 Ω) | —                          | 3G3IV-PFO OC/1 |
| AB022    | 3G3MV-PFI1030-E                | 3G3IV-PERF150WJ700 (70 Ω)  | —                          | 3G3IV-PFO OC/1 |
| AB040    | 3G3MV-PFI1040-E                | 3G3IV-PERF150WJ620 (62 Ω)  | —                          | 3G3IV-PFO OC/2 |
| A2001    | 3G3MV-PFI2010-E                | 3G3IV-PERF150WJ401 (400 Ω) | —                          | 3G3IV-PFO OC/1 |
| A2002    | 3G3MV-PFI2010-E                | 3G3IV-PERF150WJ401 (400 Ω) | —                          | 3G3IV-PFO OC/1 |
| A2004    | 3G3MV-PFI2010-E                | 3G3IV-PERF150WJ201 (200 Ω) | —                          | 3G3IV-PFO OC/1 |
| A2007    | 3G3MV-PFI2010-E                | 3G3IV-PERF150WJ201 (200 Ω) | —                          | 3G3IV-PFO OC/1 |
| A2015    | 3G3MV-PFI2020-E                | 3G3IV-PERF150WJ101 (100 Ω) | —                          | 3G3IV-PFO OC/1 |
| A2022    | 3G3MV-PFI2020-E                | 3G3IV-PERF150WJ700 (70 Ω)  | —                          | 3G3IV-PFO OC/1 |
| A2040    | 3G3MV-PFI2030-E                | 3G3IV-PERF150WJ620 (62 Ω)  | —                          | 3G3IV-PFO OC/2 |

## Accessories (Continued)

### Mains filter, braking resistors, ferrite rings (Continued)

| Inverter | Model code                     |                               |                            |                |
|----------|--------------------------------|-------------------------------|----------------------------|----------------|
|          | Mains filter (footprint style) | Braking resistors (3% ED)     | Braking resistors (10% ED) | Ferrite rings  |
| A4002    | 3G3MV-PFI3005-E                | 3G3IV-PERF150WJ751 (750 Ω)    | –                          | 3G3IV-PFO OC/1 |
| A4004    | 3G3MV-PFI3005-E                | 3G3IV-PERF150WJ751 (750 Ω)    | –                          | 3G3IV-PFO OC/1 |
| A4007    | 3G3MV-PFI3010-E                | 3G3IV-PERF150WJ751 (750 Ω)    | –                          | 3G3IV-PFO OC/1 |
| A4015    | 3G3MV-PFI3010-E                | 3G3IV-PERF150WJ401 (400 Ω)    | 3G3IV-PLKEB41P5 (400 Ω)    | 3G3IV-PFO OC/1 |
| A4022    | 3G3MV-PFI3010-E                | 3G3IV-PERF150WJ301 (300 Ω)    | 3G3IV-PLKEB42P2 (250 Ω)    | 3G3IV-PFO OC/1 |
| A4030    | 3G3MV-PFI3020-E                | 2x 3G3IV-PERF150WJ401 (200 Ω) | 3G3IV-PLKEB43P7 (150 Ω)    | 3G3IV-PFO OC/2 |
| A4040    | 3G3MV-PFI3020-E                | 2x 3G3IV-PERF150WJ301 (150 Ω) | 3G3IV-PLKEB43P7 (150 Ω)    | 3G3IV-PFO OC/2 |
| A4055    | 3G3MV-PFI3030-E                | –                             | 3G3IV-PLKEB45P5 (100 Ω)    | 3G3IV-PFO OC/2 |
| A4075    | 3G3MV-PFI3030-E                | –                             | 3G3IV-PLKEB47P5 (75 Ω)     | 3G3IV-PFO OC/2 |

### Other accessories

| Description                                             | Cable length | Model code                                                    |
|---------------------------------------------------------|--------------|---------------------------------------------------------------|
| Connecting cable for 2nd analogue input                 | –            | 3G3MV-PCN-CN2                                                 |
| DIN track adapter for installation without mains filter | –            | 3G3EV-PSPAT3 (<1.1 kW single-phase)                           |
| –                                                       | –            | 3G3EV-PSPAT4 (>1.1 kW single-phase, 0.25..2.2 kW three-phase) |

### Option cards



| Description                                                     | Model code       |
|-----------------------------------------------------------------|------------------|
| Option cards for DeviceNet                                      | 3G3MV-PDRT-SINV1 |
| Option cards for:<br>– CANopen<br>– Interbus S<br>– PROFIBUS-DP | On request       |

## Programming and Documentation

### Programming

| Description                                                                                                             | Cable length | Model code            |
|-------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|
| <b>SYSDRIVE Configurator.</b> Programming software for Frequency Inverter.<br>For WINDOWS 95/98/NT4.0<br>– see page 456 | –            | SYSDRIVE Configurator |
| Connecting cable <-> PC                                                                                                 | 3 m          | 3G3IV-PCN329-E        |

### Technical Documentation

| English documentation | Product | Title       | Model code |
|-----------------------|---------|-------------|------------|
|                       | 3G3MV   | User Manual | I527-E2    |

## Specifications

### 230 V class

|                                  |                                   |                                         |              |              |              |              |              |              |
|----------------------------------|-----------------------------------|-----------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Single-phase: 3G3MV-__           |                                   | <b>AB001</b>                            | <b>AB002</b> | <b>AB004</b> | <b>AB007</b> | <b>AB015</b> | <b>AB022</b> | <b>AB040</b> |
| Three-phase: 3G3MV-__            |                                   | <b>A2001</b>                            | <b>A2002</b> | <b>A2004</b> | <b>A2007</b> | <b>A2015</b> | <b>A2022</b> | <b>A2040</b> |
| Maximum permissible motor output |                                   | 0.12                                    | 0.25         | 0.55         | 1.1          | 1.5          | 2.2          | 4.0          |
| Output data                      | Inverter rating                   | 0.3                                     | 0.6          | 1.1          | 1.9          | 3.0          | 4.2          | 6.7          |
|                                  | Rated output current              | 0.8                                     | 1.6          | 3.0          | 5.0          | 8.0          | 11.0         | 17.5         |
|                                  | Max. output voltage               | Proportional to input voltage: 0..240 V |              |              |              |              |              |              |
|                                  | Output frequencies                | 0.1..400 Hz                             |              |              |              |              |              |              |
| Supply                           | Rated input voltage and frequency | 200..240 VAC, 50/60 Hz                  |              |              |              |              |              |              |
|                                  | Max. voltage deviation            | -15%..+10%                              |              |              |              |              |              |              |
|                                  | Max. frequency deviation          | +5%                                     |              |              |              |              |              |              |
| Weight                           | kg                                | 0.5                                     | 0.5          | 0.5          | 0.8          | 0.8          | 1.3          | 1.5          |

### 400 V class

|                                  |                                   |                                         |              |              |              |              |              |              |              |              |
|----------------------------------|-----------------------------------|-----------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Three-phase: 3G3MV-__            |                                   | <b>A4002</b>                            | <b>A4004</b> | <b>A4007</b> | <b>A4015</b> | <b>A4022</b> | <b>A4030</b> | <b>A4040</b> | <b>A4055</b> | <b>A4075</b> |
| Maximum permissible motor output |                                   | 0.25                                    | 0.55         | 1.1          | 1.5          | 2.2          | 3.0          | 4.0          | 5.5          | 7.5          |
| Output data                      | Inverter rating                   | 0.9                                     | 1.4          | 2.6          | 3.7          | 4.2          | 5.5          | 7.0          | 11.0         | 13.8         |
|                                  | Rated output current              | 1.2                                     | 1.8          | 3.4          | 4.8          | 5.5          | 7.2          | 9.2          | 14.8         | 18.0         |
|                                  | Max. output voltage               | Proportional to input voltage: 0..400 V |              |              |              |              |              |              |              |              |
|                                  | Output frequencies                | 0.1..400 Hz                             |              |              |              |              |              |              |              |              |
| Supply                           | Rated input voltage and frequency | 380..460 VAC, 50/60 Hz                  |              |              |              |              |              |              |              |              |
|                                  | Max. voltage deviation            | -15%..+10%                              |              |              |              |              |              |              |              |              |
|                                  | Max. frequency deviation          | +5%                                     |              |              |              |              |              |              |              |              |
| Weight                           | kg                                | 1.3                                     | 1.3          | 1.3          | 1.3          | 1.5          | 2.0          | 2.0          | 2.0          | 2.0          |

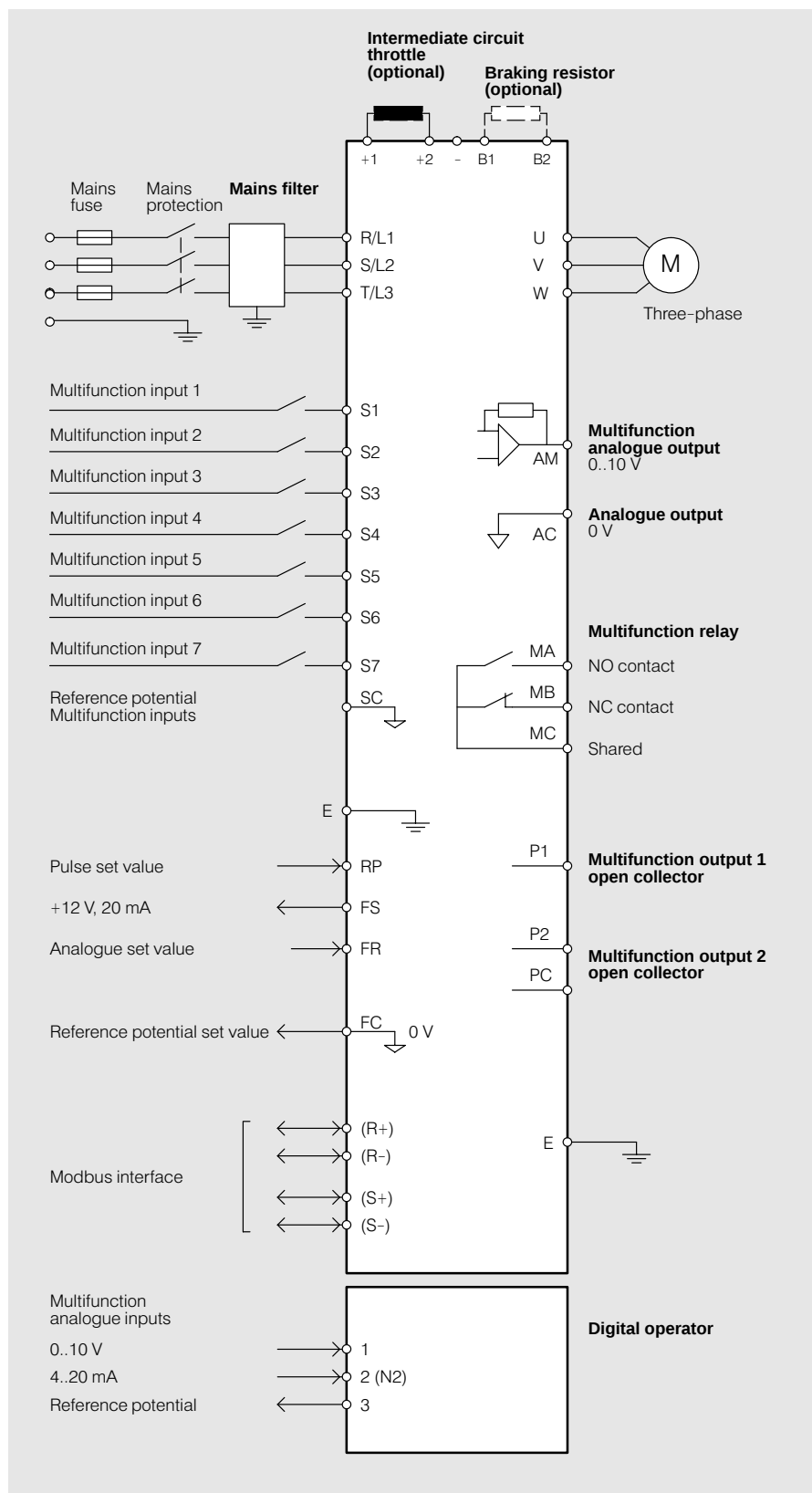
## Specifications (Continued)

### General data

|                      |                                             |                                                                                    |
|----------------------|---------------------------------------------|------------------------------------------------------------------------------------|
| Control functions    | Control methods                             | Sinus PWM, switchable between V/f and voltage vector control                       |
|                      | Output frequency range                      | 0.1..400 Hz                                                                        |
|                      | Frequency tolerance                         | Digital set value: $\pm 0.01\%$ ( $-10\ldots+50^{\circ}\text{C}$ )                 |
|                      |                                             | Analogue set value: $\pm 0.5\%$ ( $25 \pm 10^{\circ}\text{C}$ )                    |
|                      | Resolution of frequency set value           | Digital set value: 0.01 Hz ( $<100\text{ Hz}$ ), 0.1 Hz ( $>100\text{ Hz}$ )       |
|                      |                                             | Analogue set value: 1/1000 of maximum frequency                                    |
|                      | Resolution of output frequency              | 0.01 Hz                                                                            |
|                      | Overload capability                         | 150%/60 s                                                                          |
|                      | Frequency set value                         | 0..10 V (20 k $\Omega$ ), 4..20 mA (250 $\Omega$ ), 0..20 mA (250 $\Omega$ )       |
|                      |                                             | Pulse signal                                                                       |
| Protection functions | Braking torque<br>(short term peak torques) | Up to 200 W      150%                                                              |
|                      |                                             | 550 W, 1.1 kW      100%                                                            |
|                      |                                             | 1.5 kW      50%                                                                    |
|                      |                                             | > 1.5 kW      20%                                                                  |
|                      |                                             | Continuous braking torque approx. 20% without, 150% with external braking resistor |
|                      | Motor overload protection                   | Electronically adjustable motor protection                                         |
|                      | Short-term peak current                     | Fault switch off at 250% motor current                                             |
|                      | Overload                                    | Fault switch off at 150% rated current after 60 s                                  |
|                      | Overvoltage                                 | Fault tripping at 410 V (820 V for 400V types) intermediate circuit voltage        |
|                      | Undervoltage                                | Fault tripping at 160 V (400 V for 400V types) intermediate circuit voltage        |
|                      | Mains failure, adjustable                   | Fault switch off for failure >15 ms                                                |
|                      |                                             | Fault switch off for failure >0.5 s                                                |
|                      |                                             | No fault tripping                                                                  |
|                      | Excess temperature of heat sink             | Electronic protection                                                              |
|                      | Stall prevention                            | Separately adjustable for braking, operation and acceleration                      |
| Functionality        | Fan monitoring                              | Electronic stall prevention                                                        |
|                      | Earth fault                                 | Electronic protection (earth current monitoring)                                   |
|                      | Binary inputs                               | 7 freely programmable inputs                                                       |
|                      | Binary outputs                              | 1 relay output, 2 freely programmable open collector outputs                       |
|                      | Analogue output                             | 1 programmable analogue output (0..10 V)/pulse output                              |
|                      | Analogue inputs                             | 2 analogue inputs, 0..10 V, 4..20 mA, 0..20 mA                                     |
|                      | Braking/acceleration times                  | 0.01..6000 s                                                                       |
| Ambient conditions   | Display                                     | Optionally frequency, current or set value                                         |
|                      |                                             | Error and status LED                                                               |
|                      | Degree of protection                        | IP20, wall mounting                                                                |
|                      | Cooling                                     | Cooling fan for 0.75 kW (200 V), 1.5 kW (400 V)                                    |
|                      | Ambient temperature                         | Open air mounting: $-10^{\circ}\text{C}\ldots 50^{\circ}\text{C}$                  |
|                      |                                             | Wall mounting: $-10^{\circ}\text{C}\ldots 40^{\circ}\text{C}$                      |
|                      | Ambient humidity                            | 95% (without condensation)                                                         |
|                      | Storage temperature                         | $-20^{\circ}\text{C}\ldots +60^{\circ}\text{C}$                                    |
|                      | Installation                                | In control cabinet, free of dust and corrosive gases                               |
|                      | Installation height                         | Max. 1000 m                                                                        |
|                      | Vibrations                                  | 1 g at <20 Hz, 0.2 g at <50 Hz                                                     |

## Connection Diagram

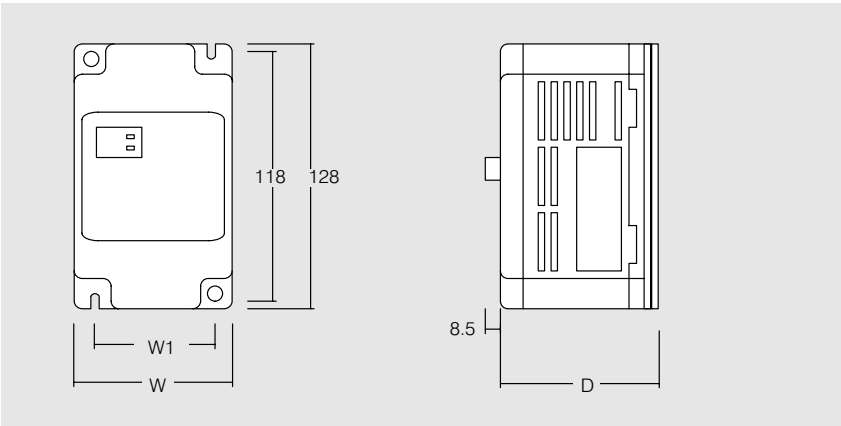
(On single-phase devices, L3 remains free)



Dimensions (mm)

3G3MV-AB\_

| W   | W1  | D   | Fig. | Model code |
|-----|-----|-----|------|------------|
| 68  | 56  | 76  | 1    | 001        |
| 68  | 56  | 89  | 1    | 002        |
| 68  | 56  | 138 | 1    | 004        |
| 108 | 96  | 140 | 2    | 007        |
| 108 | 96  | 156 | 2    | 015        |
| 140 | 128 | 163 | 2    | 022        |
| 170 | 158 | 180 | 2    | 040        |



3G3MV-A2\_

| W   | W1  | D   | Fig. | Model code |
|-----|-----|-----|------|------------|
| 68  | 56  | 76  | 1    | 001        |
| 68  | 56  | 76  | 1    | 002        |
| 68  | 56  | 108 | 1    | 004        |
| 68  | 56  | 128 | 2    | 007        |
| 108 | 96  | 131 | 2    | 015        |
| 108 | 96  | 140 | 2    | 022        |
| 140 | 128 | 143 | 2    | 040        |

Figure 1

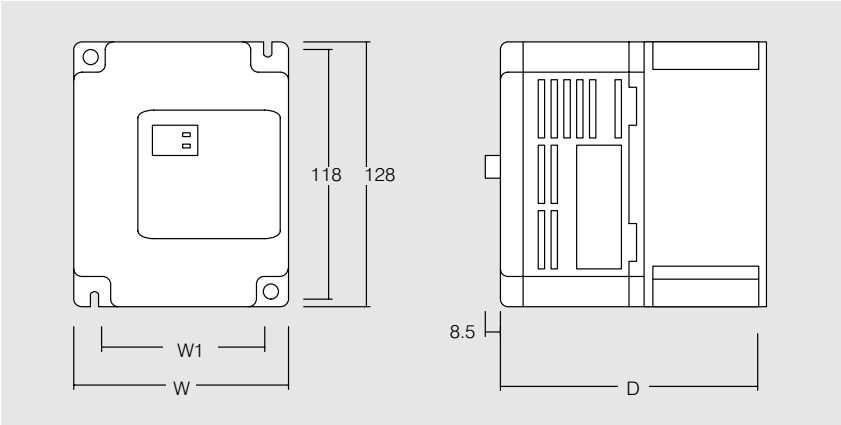
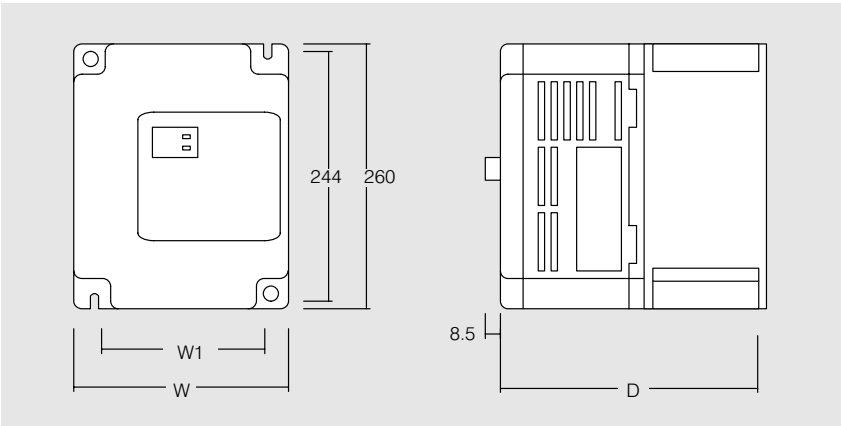


Figure 2

Dimensions (mm) (Continued)

3G3MV-A4\_

| W   | W1  | D   | Model code |
|-----|-----|-----|------------|
| 108 | 96  | 92  | 002        |
| 108 | 96  | 110 | 004        |
| 108 | 96  | 140 | 007        |
| 108 | 96  | 156 | 015        |
| 108 | 96  | 156 | 022        |
| 140 | 128 | 143 | 030        |
| 140 | 128 | 143 | 040        |
| 180 | 164 | 170 | 055        |
| 180 | 164 | 170 | 075        |



Mains filter 3G3MV-PFI\_

| W   | W1  | H   | H1  | D  | Model code |
|-----|-----|-----|-----|----|------------|
| 71  | 51  | 169 | 156 | 45 | 1010-E     |
| 111 | 91  | 169 | 156 | 50 | 1020-E     |
| 144 | 120 | 174 | 161 | 50 | 1030-E     |
| 174 | 150 | 174 | 161 | 50 | 1040-E     |
| 82  | 62  | 194 | 181 | 50 | 2010-E     |
| 111 | 91  | 169 | 156 | 50 | 2020-E     |
| 144 | 120 | 174 | 161 | 50 | 2030-E     |
| 111 | 91  | 169 | 156 | 45 | 3005-E     |
| 111 | 91  | 169 | 156 | 45 | 3010-E     |
| 144 | 120 | 174 | 161 | 50 | 3020-E     |
| 184 | 150 | 304 | 288 | 56 | 3030-E     |

