

PF080101



ATV 312H075M2

PF080107



ATV 312HU15N4

PF080108



ATV 312HU30N4

PF080108



ATV 312HU75N4

Drives (frequency range from 0.5 to 500 Hz)

| Motor | | Line supply | | | | Altivar 312 | | | Reference | Weight |
|--|------|-------------|----------------------------|----------------|-------------------------------|---|---------------------------------|---|---------------|--------|
| Power indicated on rating plate (1) | kW | HP | Max. line current (2), (3) | Apparent power | Max. prospective line Isc (4) | Max. continuous output current (In) (1) | Max. transient current for 60 s | Power dissipated at maximum output current (In) (1) | | |
| | | | | | | | | | at U1 | at U2 |
| Single-phase supply voltage: 200...240 V 50/60 Hz, with integrated EMC filter (3) (5) (6) | | | | | | | | | | |
| 0.18 | 0.25 | 3.0 | 2.5 | 0.6 | 1 | 1.5 | 2.3 | 24 | ATV 312H018M2 | 1.500 |
| 0.37 | 0.5 | 5.3 | 4.4 | 1 | 1 | 3.3 | 5 | 41 | ATV 312H037M2 | 1.500 |
| 0.55 | 0.75 | 6.8 | 5.8 | 1.4 | 1 | 3.7 | 5.6 | 46 | ATV 312H055M2 | 1.500 |
| 0.75 | 1 | 8.9 | 7.5 | 1.8 | 1 | 4.8 | 7.2 | 60 | ATV 312H075M2 | 1.500 |
| 1.1 | 1.5 | 12.1 | 10.2 | 2.4 | 1 | 6.9 | 10.4 | 74 | ATV 312HU11M2 | 1.800 |
| 1.5 | 2 | 15.8 | 13.3 | 3.2 | 1 | 8 | 12 | 90 | ATV 312HU15M2 | 1.800 |
| 2.2 | 3 | 21.9 | 18.4 | 4.4 | 1 | 11 | 16.5 | 123 | ATV 312HU22M2 | 3.100 |
| Three-phase supply voltage: 200...240 V 50/60 Hz, without EMC filter (3) (7) | | | | | | | | | | |
| 0.18 | 0.25 | 2.1 | 1.9 | 0.7 | 5 | 1.5 | 2.3 | 23 | ATV 312H018M3 | 1.300 |
| 0.37 | 0.5 | 3.8 | 3.3 | 1.3 | 5 | 3.3 | 5 | 38 | ATV 312H037M3 | 1.300 |
| 0.55 | 0.75 | 4.9 | 4.2 | 1.7 | 5 | 3.7 | 5.6 | 43 | ATV 312H055M3 | 1.300 |
| 0.75 | 1 | 6.4 | 5.6 | 2.2 | 5 | 4.8 | 7.2 | 55 | ATV 312H075M3 | 1.300 |
| 1.1 | 1.5 | 8.5 | 7.4 | 3 | 5 | 6.9 | 10.4 | 71 | ATV 312HU11M3 | 1.700 |
| 1.5 | 2 | 11.1 | 9.6 | 3.8 | 5 | 8 | 12 | 86 | ATV 312HU15M3 | 1.700 |
| 2.2 | 3 | 14.9 | 13 | 5.2 | 5 | 11 | 16.5 | 114 | ATV 312HU22M3 | 1.700 |
| 3 | — | 19.1 | 16.6 | 6.6 | 5 | 13.7 | 20.6 | 146 | ATV 312HU30M3 | 2.900 |
| 4 | 5 | 24.2 | 21.1 | 8.4 | 5 | 17.5 | 26.3 | 180 | ATV 312HU40M3 | 2.900 |
| 5.5 | 7.5 | 36.8 | 32 | 12.8 | 22 | 27.5 | 41.3 | 292 | ATV 312HU55M3 | 6.400 |
| 7.5 | 10 | 46.8 | 40.9 | 16.2 | 22 | 33 | 49.5 | 388 | ATV 312HU75M3 | 6.400 |
| 11 | 15 | 63.5 | 55.6 | 22 | 22 | 54 | 81 | 477 | ATV 312HD11M3 | 10.500 |
| 15 | 20 | 82.1 | 71.9 | 28.5 | 22 | 66 | 99 | 628 | ATV 312HD15M3 | 10.500 |
| Three-phase supply voltage: 380...500 V 50/60 Hz, with integrated EMC filter (3) (5) (6) | | | | | | | | | | |
| 0.37 | 0.5 | 2.2 | 1.7 | 1.5 | 5 | 1.5 | 2.3 | 32 | ATV 312H037N4 | 1.800 |
| 0.55 | 0.75 | 2.8 | 2.2 | 1.8 | 5 | 1.9 | 2.9 | 37 | ATV 312H055N4 | 1.800 |
| 0.75 | 1 | 3.6 | 2.7 | 2.4 | 5 | 2.3 | 3.5 | 41 | ATV 312H075N4 | 1.800 |
| 1.1 | 1.5 | 4.9 | 3.7 | 3.2 | 5 | 3 | 4.5 | 48 | ATV 312HU11N4 | 1.800 |
| 1.5 | 2 | 6.4 | 4.8 | 4.2 | 5 | 4.1 | 6.2 | 61 | ATV 312HU15N4 | 1.800 |
| 2.2 | 3 | 8.9 | 6.7 | 5.9 | 5 | 5.5 | 8.3 | 79 | ATV 312HU22N4 | 3.100 |
| 3 | — | 10.9 | 8.3 | 7.1 | 5 | 7.1 | 10.7 | 125 | ATV 312HU30N4 | 3.100 |
| 4 | 5 | 13.9 | 10.6 | 9.2 | 5 | 9.5 | 14.3 | 150 | ATV 312HU40N4 | 3.100 |
| 5.5 | 7.5 | 21.9 | 16.5 | 15 | 22 | 14.3 | 21.5 | 232 | ATV 312HU55N4 | 6.500 |
| 7.5 | 10 | 27.7 | 21 | 18 | 22 | 17 | 25.5 | 269 | ATV 312HU75N4 | 6.500 |
| 11 | 15 | 37.2 | 28.4 | 25 | 22 | 27.7 | 41.6 | 397 | ATV 312HD11N4 | 11.000 |
| 15 | 20 | 48.2 | 36.8 | 32 | 22 | 33 | 49.5 | 492 | ATV 312HD15N4 | 11.000 |
| Three-phase supply voltage: 525...600 V 50/60 Hz, without EMC filter (3) (8) | | | | | | | | | | |
| 0.75 | 1 | 2.8 | 2.4 | 2.5 | 5 | 1.7 | 2.6 | 36 | ATV 312H075S6 | 1.700 |
| 1.5 | 2 | 4.8 | 4.2 | 4.4 | 5 | 2.7 | 4.1 | 48 | ATV 312HU15S6 | 1.700 |
| 2.2 | 3 | 6.4 | 5.6 | 5.8 | 5 | 3.9 | 5.9 | 62 | ATV 312HU22S6 | 2.900 |
| 4 | 5 | 10.7 | 9.3 | 9.7 | 5 | 6.1 | 9.2 | 94 | ATV 312HU40S6 | 2.900 |
| 5.5 | 7.5 | 16.2 | 14.1 | 15 | 22 | 9 | 13.5 | 133 | ATV 312HU55S6 | 6.200 |
| 7.5 | 10 | 21.3 | 18.5 | 19 | 22 | 11 | 16.5 | 165 | ATV 312HU75S6 | 6.200 |
| 11 | 15 | 27.8 | 24.4 | 25 | 22 | 17 | 25.5 | 257 | ATV 312HD11S6 | 10.000 |
| 15 | 20 | 36.4 | 31.8 | 33 | 22 | 22 | 33 | 335 | ATV 312HD15S6 | 10.000 |

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. The switching frequency is adjustable from 2 to 16 kHz. Above 4 kHz, derate the nominal drive current. The nominal motor current should not exceed this value. See derating curves on page 56.

(2) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max. prospective line Isc (4).

(3) Nominal supply voltage, min. U1, max. U2: 200 (U1)...240 V (U2), 380 (U1)...500 V (U2), 525 (U1)...600 V (U2).

(4) If line Isc is greater than the values in the table, add line chokes (see page 43).

(5) Drives supplied with category C2 or C3 integrated EMC filter. This filter can be disconnected.

(6) If a communication card is used, it takes the place of the control I/O card. To reduce installation costs, the drive can be ordered without a control I/O card. To do this, simply add a B at the end of the reference. For example: ATV 312H075N4 becomes ATV 312H075N4B. The communication card must be ordered separately (see page 28).

(7) EMC filter available as an option (see page 45).

(8) Mandatory line choke to be ordered separately (see page 43).

PF090670



VW3 A9 804

Accessories

| Description | For drives | Sold in lots of | Reference | Weight kg | |
|---|---|-----------------|------------|---------------|---|
| Plates for mounting on  rail, width 35 mm | ATV 312H018M2...H075M2 ATV 312H018M3...H075M3 | – | VW3 A9 804 | 0.290 | |
| | ATV 312HU11M2, HU15M2 ATV 312HU11M3...HU22M3 ATV 312H037N4...HU15N4 ATV 312H075S6, HU15S6 | – | VW3 A9 805 | 0.385 | |
| UL Type 1 conformity kits Mechanical device for fixing to the lower part of the drive. For direct connection of cables to the drive via tubes or cable glands | ATV 312H018M2...H075M2 | – | VW3 A31812 | 0.400 | |
| | ATV 312H018M3...H075M3 | – | VW3 A31811 | 0.400 | |
| | ATV 312HU11M3, HU15M3 | – | VW3 A31813 | 0.400 | |
| | ATV 312HU11M2, HU15M2 ATV 312HU22M3 | – | VW3 A31814 | 0.500 | |
| | ATV 312H037N4...HU15N4 ATV 312H075S6, HU15S6 | – | VW3 A31815 | 0.500 | |
| | ATV 312HU22M2 ATV 312HU30M3, HU40M3 ATV 312HU22N4...HU40N4 ATV 312HU22S6, HU40S6 | – | VW3 A31816 | 0.900 | |
| | ATV 312HU55M3, HU75M3 ATV 312HU55N4, HU75N4 ATV 312HU55S6, HU75S6 | – | VW3 A31817 | 1.200 | |
| | ATV 312HD11M3, HD15M3 ATV 312HD11N4, HD15N4 ATV 312HD11S6, HD15S6 | – | | | |
| | Shielding connection clamps | ATV 312H●●●●● | 25 | TM200 RSRCEMC | – |
| | Attachment and earthing of the cable shielding Pack of 25 clamps including: ■ 20 clamps for Ø 4.8 mm cable ■ 5 clamps for Ø 7.9 mm cable | | | | |

D4206056



TM200 RSRCEMC

Documentation

| Description | Reference | Weight kg |
|---|------------|--------------|
| “Description of the Motion & Drives offer” DVD-ROM Comprises (1): ■ Technical documentation (programming manuals, installation manuals, quick reference guides) ■ SoMove lite setup software ■ Catalogues ■ Brochures | VW3 A8 200 | 0.100 |

Replacement parts

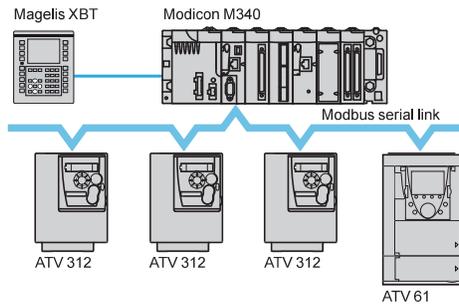
| Description | For drives | Reference | Weight kg |
|--------------------------|--|-------------|--------------|
| ATV 312 control I/O card | ATV 312H●●●●● | VW3 A312 01 | 0.200 |
| Fans | ATV 312HU11M2, HU15M2 ATV 312HU11M3, HU22M3 ATV 312H037N4, HU15N4 ATV 312H075S6, HU15S6 | VZ3 V3 101 | 0.200 |
| | ATV 312HU22M2 ATV 312HU30M3, HU40M3 ATV 312HU22N4, HU40N4 ATV 312HU22S6, HU40S6 | VZ3 V3 102 | 0.200 |
| | ATV 312HU55M3, HU75M3 ATV 312HU55N4, HU75N4 ATV 312HU55S6, HU75S6 | VZ3 V3 103 | 0.200 |
| | ATV 312HD11M3, HD15M3 ATV 312HD11N4, HD15N4 ATV 312HD11S6, HD15S6 | VZ3 V3 104 | 0.300 |
| | | | |
| | | | |

PF090647

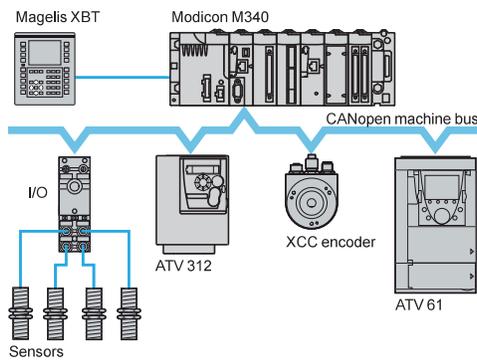


VZ3 V3 101

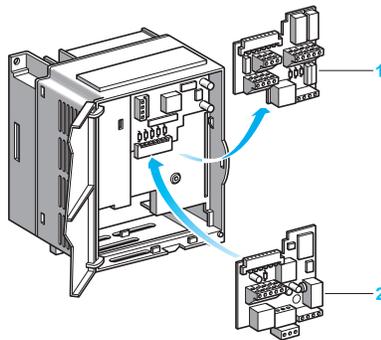
(1) The contents of this DVD-ROM are also available on our website www.schneider-electric.com.



Example of configuration on Modbus serial link



Example of configuration on CANopen machine bus



Example of installation of a communication card (1)

Presentation

The Altivar 312 drive is designed to meet the configuration requirements found in the main industrial communication installations. It includes the Modbus and CANopen communication protocols as standard. It can also be connected to other industrial communication buses and networks using one of the communication cards or modules that are available as options.

Standard configuration

The Altivar 312 drive is equipped with a control I/O card **1** which integrates:

- I/O terminals, comprising:
 - Six logic inputs: LI1 to LI6
 - Three analog inputs: AI1 to AI3
 - Two analog outputs: AOV and AOC (2)
 - Two relay outputs: R1 and R2
- A Modbus/CANopen communication port, that is accessed on an RJ45 connector

The Modbus/CANopen communication port is specifically for controlling the drive via a PLC or another type of controller.

It is also used for connecting dialogue and configuration tools:

- Remote display terminal
- Remote graphic display terminal
- SoMove setup software
- SoMove Mobile software for mobile phones
- Simple Loader and Multi-Loader configuration tools

Communication cards for industrial applications

Several communication cards for industrial applications **2** are available as options. These cards are used in place of the drive's control I/O card **1** (1)

The following communication cards are available:

- CANopen Daisy chain card (optimized solution for daisy chain connection to CANopen machine bus, see page 32)
- DeviceNet card
- PROFIBUS DP card

Communication modules

The Altivar 312 drive can be connected to other communication buses and networks via modules that are available as options:

- Modbus TCP network via the Ethernet/Modbus bridge
- Fipio bus via the Fipio/Modbus gateway

(1) To reduce installation costs when replacing the control I/O card **1** with a communication card **2**, ATV 312H●●●M2 and ATV 312H●●●N4 drives can be ordered without a control I/O card. See page 26.

(2) These two outputs cannot be used at the same time.

Functions

All the functions of the Altivar 312 drive can be accessed via the communication buses and networks:

- Control
- Monitoring
- Adjustment
- Configuration

The speed control and reference may come from different control sources:

- Logic input or analog I/O terminals
- Communication bus or network
- Remote display terminal

The advanced functions of the Altivar 312 drive can be used to manage switching of these control sources according to the requirements of the application.

The assignment of the communication periodic I/O data can be selected using the network configuration software.

The Altivar 312 drive is controlled using the CiA 402 native profile.

Communication is monitored according to criteria specific to each protocol.

Regardless of protocol type, the reaction of the drive to a communication fault can be configured as follows:

- Freewheel stop, stop on ramp, fast stop or braked stop
- Maintain the last command received
- Fallback position at a predefined speed
- Ignore the fault

Characteristics of the CANopen Daisy chain card VW3 A312 08 (1)

| | | |
|------------------|-----------|---|
| Structure | Connector | 4 connectors: <ul style="list-style-type: none"> ■ 1 removable screw terminal block: <ul style="list-style-type: none"> □ 3 logic inputs: LI1 to LI3 □ 2 analog inputs: AI2 and AI3 □ 1 relay output: R2 ■ 2 RJ45 connectors for daisy-chain connection to the CANopen machine bus ■ 1 RJ45 connector for connection to the Modbus serial link |
|------------------|-----------|---|

(1) The other characteristics of the CANopen Daisy chain card are identical to those of the drive's CANopen protocol. See page 24.

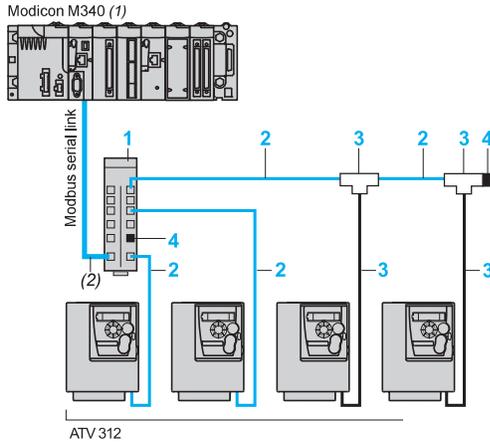
Characteristics of the DeviceNet card VW3 A312 09

| | | |
|-------------------------|--------------------------|--|
| Structure | Connector | 3 connectors: <ul style="list-style-type: none"> ■ 1 removable screw terminal block: <ul style="list-style-type: none"> □ 3 logic inputs: LI1 to LI3 □ 2 analog inputs: AI2 and AI3 □ 1 relay output: R2. ■ 1 five-way screw connector, 5.08 pitch, for connection to the DeviceNet network ■ 1 RJ45 connector for connection to the Modbus serial link |
| | Transmission speed | 125 kbps, 250 kbps or 500 kbps, configurable using switches on the card |
| | Address | 1 to 63, configurable using switches on the card |
| Services | Periodic variables | ODVA AC drive type profile 20, 21, 70 and 71 ATV 312 native profile (CiA 402) 100 and 101 |
| | Exchange mode | Inputs: by polling, change of state, periodic Outputs: by polling |
| | Auto Device Replacement | No |
| | Communication monitoring | Can be inhibited Time out can be set via the DeviceNet network configurator |
| Diagnostics | Using LEDs | One two-tone LED on the card: "MNS" (status) |
| Description file | | An eds file is available on our website www.schneider-electric.com or on the "Description of the Motion & Drives offer" DVD-ROM |

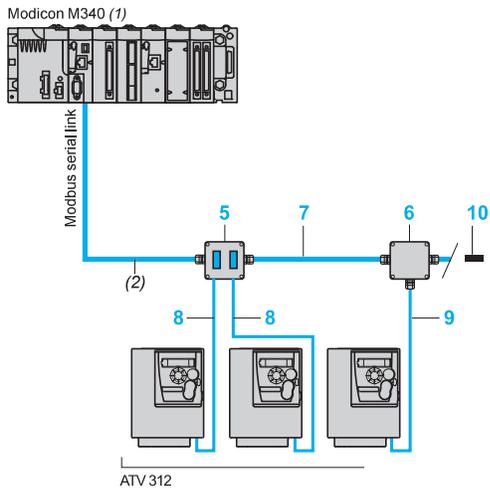
| Characteristics of the PROFIBUS DP card VW3 A312 07 | | |
|---|--------------------|--|
| Structure | Connector | 3 connectors: <ul style="list-style-type: none"> ■ 1 removable screw terminal block: <ul style="list-style-type: none"> □ 3 logic inputs: LI1 to LI3 □ 2 analog inputs: AI2 and AI3 □ 1 relay output: R2. ■ 1 screw terminal block for connection to the PROFIBUS DP bus ■ 1 RJ45 connector for connection to the Modbus serial link |
| | Transmission speed | 9600 bps, 19.2 kbps, 93.75 kbps, 187.5 kbps, 500 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps or 12 Mbps |
| | Address | 1 to 126, configurable using switches on the card |
| Services | Periodic variables | Input: 4 PKW and 2 PZD Output: 4 PKW and 2 PZD |
| | Messaging | Via PKW periodic variables |
| | Functional profile | IEC 61800-7 (CiA 402) |
| Diagnostics | Using LEDs | 2 LEDs on the card: "ST" (status) and "DX" (data exchange) |
| Description file | | A gsd file is available on our website www.schneider-electric.com or on the "Description of the Motion & Drives offer" DVD-ROM |

| Communication card references (1) | | | |
|---|--------------------|--------|----|
| Designation | References | Weight | kg |
| CANopen Daisy chain communication card for daisy chaining (see page 32) | VW3 A312 08 | 0.200 | |
| DeviceNet communication card | VW3 A312 09 | 0.200 | |
| PROFIBUS DP communication card | VW3 A312 07 | 0.200 | |

(1) To reduce installation costs when replacing the control I/O card with a communication card, ATV 312H●●●M2 and ATV 312H●●●N4 drives can be ordered without a control I/O card. See page 26.



Example of Modbus serial link architecture, connections via splitter boxes and RJ45 connectors



Example of Modbus serial link architecture, connections via tap junctions



TSX SCA 62



TSX SCA 50

Modbus serial link

Accessories for connection via splitter boxes and RJ45 connectors

| Description | Item no. | Length m | Unit reference | Weight kg |
|---|----------|----------|-----------------|-----------|
| Modbus splitter box 10 RJ45 connectors and 1 screw terminal block | 1 | – | LU9 GC3 | 0.500 |
| Cables for Modbus serial link equipped with 2 RJ45 connectors | 2 | 0.3 | VW3 A8 306 R03 | 0.025 |
| | 1 | – | VW3 A8 306 R10 | 0.060 |
| | 3 | – | VW3 A8 306 R30 | 0.130 |
| Modbus T-connectors (with integrated cable) | 3 | 0.3 | VW3 A8 306 TF03 | – |
| | 1 | – | VW3 A8 306 TF10 | – |
| Modbus line terminators for RJ45 connector (3) (4) | 4 | – | VW3 A8 306 RC | 0.200 |
| | 4 | – | VW3 A8 306 R | 0.200 |

Accessories for connection via tap junctions

| Description | Item no. | Length m | Unit reference | Weight kg |
|---|----------|----------|----------------|-----------|
| Modbus subscriber socket Two 15-way female SUB-D connectors and 2 screw terminal blocks, RC line terminator To be connected using cable VW3 A8 306 | 5 | – | TSX SCA 62 | 0.570 |
| Modbus junction box 3 screw terminal blocks, RC line terminator To be connected using cable VW3 A8 306 D30 | 6 | – | TSX SCA 50 | 0.520 |
| RS 485 double shielded twisted pair Modbus cables Supplied without connector | 7 | 100 | TSX CSA 100 | – |
| | – | 200 | TSX CSA 200 | – |
| | – | 500 | TSX CSA 500 | – |
| Modbus drop cable 1 RJ45 connector and 1 x 15-way male SUB-D connector for TSX SCA 62 | 8 | 3 | VW3 A8 306 | 0.150 |
| Modbus drop cable 1 RJ45 connector and one stripped end | 9 | 3 | VW3 A8 306 D30 | 0.150 |
| Modbus line terminators for screw terminal block (3) (4) | 10 | – | VW3 A8 306 DRC | 0.200 |
| | 10 | – | VW3 A8 306 DR | 0.200 |

(1) Please refer to the "M340 Automation platform" catalogue.

(2) Cable dependent on the type of controller or PLC.

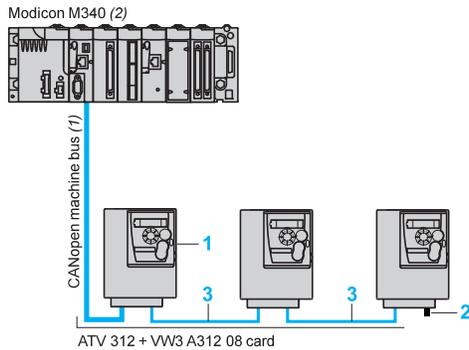
(3) Depends on the bus architecture. Please refer to the "Soft starters and variable speed drives" catalogue.

(4) Sold in lots of 2.

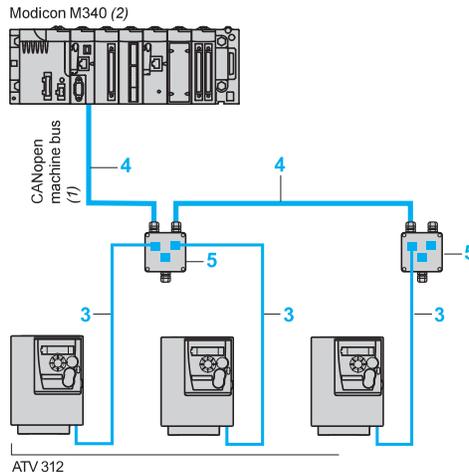
Variable speed drives

Altivar 312

Communication buses and networks



Optimized solution for daisy chain connection to the CANopen machine bus



Conventional solution for connection to the CANopen machine bus



TCS CAR013M120

CANopen machine bus

Connection with CANopen Daisy chain communication card

(optimized solution for daisy chain connection to the CANopen machine bus)

| Description | Item no. | Length m | Reference | Weight kg |
|--|----------|----------|----------------|-----------|
| CANopen Daisy chain communication card | 1 | | VW3 A312 08 | 0.200 |
| CANopen line terminator for RJ45 connector (4) | 2 | – | TCS CAR013M120 | – |
| CANopen cables fitted with 2 RJ45 connectors | 3 | 0.3 | VW3 CAN CARR03 | 0.050 |
| | | 1 | VW3 CAN CARR1 | 0.500 |

Other connection accessories and cables (1)

| Description | Item no. | Length m | Unit reference | Weight kg |
|--|----------|----------|----------------|-----------|
| CANopen cable Standard cable, C€ marking Low smoke emission, halogen-free Flame retardant (IEC 60332-1) | 4 | 50 | TSX CAN CA50 | 4.930 |
| | | 100 | TSX CAN CA100 | 8.800 |
| | | 300 | TSX CAN CA300 | 24.560 |
| CANopen cable Standard cable, UL certification, C€ marking Flame retardant (IEC 60332-2) | 4 | 50 | TSX CAN CB50 | 3.580 |
| | | 100 | TSX CAN CB100 | 7.840 |
| | | 300 | TSX CAN CB300 | 21.870 |
| CANopen cable Cable for harsh environments (3) or mobile installations, C€ marking Low smoke emission, halogen-free Flame retardant (IEC 60332-1) | 4 | 50 | TSX CAN CD50 | 3.510 |
| | | 100 | TSX CAN CD100 | 7.770 |
| | | 300 | TSX CAN CD300 | 21.700 |

IP20 CANopen junction boxes 5 – VW3 CAN TAP2 0.250

equipped with:

- 2 screw terminal blocks for trunk cable tap link
- 2 RJ45 connectors for connecting drives
- 1 RJ45 connector for connecting a PC

Daisy chain tap – 0.6 TCS CTN026M16M –

equipped with:

- 2 spring terminals for daisy chain connection of the CANopen bus
- 1 cable equipped with an RJ45 connector for connecting the drive

Daisy chain tap – 0.3 TCS CTN023F13M03 –

equipped with:

- 2 RJ45 connectors for daisy chain connection of the CANopen bus
- 1 cable equipped with an RJ45 connector for connecting the drive

CANopen line terminator – – TCS CAR01NM120 –

for screw terminal connector (4)

(1) For other connection accessories, please refer to the "Machine & installations with industrial communication" catalogue.

(2) Please refer to the "M340 Automation platform" catalogue.

(3) Standard environment:

- No particular environmental constraints
- Operating temperature between + 5°C and + 60°C
- Fixed installation

Harsh environment:

- Resistance to hydrocarbons, industrial oils, detergents, solder splashes
- Relative humidity up to 100%
- Saline atmosphere
- Operating temperature between - 10°C and + 70°C
- Significant temperature variations

(4) Sold in lots of 2.



TSX ETG 100



LUF P1

Other communication buses and networks

| Description | Cables to be connected | Reference | Weight kg |
|---|------------------------|--------------------|-----------|
| Ethernet gateway/router (1) Modbus Class B10 For connection to the Modbus TCP network | VW3 A8 306 D30 (2) | TSX ETG 100 | – |
| Fipio/Modbus gateway (3) For connection to the Fipio bus | VW3 A8 306 R●● (2) | LUF P1 | 0.240 |

(1) Please refer to the "Machine & installations with industrial communication" catalogue.

(2) See page 31.

(3) Please refer to the "TeSys U starter-controllers" catalogue.



Remote display terminal with cover open



Remote display terminal with cover closed

Remote display terminal (1)

This terminal is used to locate the human-machine interface of the Altivar 312 drive remotely on the door of an enclosure with IP 54 or IP 65 protection.

It is used to:

- Control, adjust and configure the drive remotely
 - Display the drive status and faults remotely
- Its maximum operating temperature is 50°C.
- Description**
- 1 4-digit display
 - 2 Navigation ▲, ▼ and selection ENT, ESC keys
 - 3 Motor local control keys:
 - RUN: starts the motor
 - FWD/REV: reverses the direction of rotation of the motor
 - STOP/RESET: stops the motor/resets drive faults
 - 4 Operating mode selection key MODE.
 - 5 Cover for optional access to the motor local control keys.

References

| Description | Degree of protection | Length m | Reference | Weight kg |
|--|----------------------|----------|----------------------|-----------|
| Remote display terminals | IP 54 | – | VW3 A1 006 | 0.250 |
| A remote cable must be provided, VW3 A1 104R●● | IP 65 | – | VW3 A1 007 | 0.275 |
| Remote cables | | 1 | VW3 A1 104R10 | 0.050 |
| equipped with 2 RJ45 connectors | | 3 | VW3 A1 104R30 | 0.150 |

Remote graphic display terminal (2)

This graphic display terminal, common to all the variable speed drive ranges, provides a user-friendly interface for configuration, debugging and maintenance. Its main functions are as follows:

- The graphic screen displays 8 lines of 24 characters of plain text
 - The navigation button provides quick and easy access to the drop-down menus
 - It is supplied with six languages installed as standard (Chinese, English, French, German, Italian and Spanish). The available languages can be modified using the Multi-Loader configuration tool (VW3 A8 121).
- The maximum operating temperature of the terminal is 60°C and it has IP 54 protection.

Description

- 1 Graphic display:
 - 8 lines of 24 characters, 240 x 160 pixels, large digit display
- 2 Function keys (not operational on the Altivar 312)
- 3 **Navigation button:** rotate ±: goes to the next/previous line, increases/decreases the value - press: saves the current value (ENT).
ESC key: aborts a value, a parameter or a menu to return to the previous selection.
- 4 Motor local control keys:
 - RUN: starts the motor
 - STOP/RESET: stops the motor/resets drive faults
 - FWD/REV: reverses the motor direction of rotation
- 5 Remote graphic display terminal
- 6 Remote cable
- 7 Female/female RJ45 adaptor

References

| Description | Item no. | Length m | Reference | Weight kg |
|---|----------|----------|-----------------------|-----------|
| Remote graphic display terminal | 5 | – | VW3 A1 101 | – |
| A remote cable, VW3 A1 104R●●●, and an RJ45 adaptor, VW3 A1 105, must be provided | | | | |
| Remote cables | 6 | 1 | VW3 A1 104R10 | 0.050 |
| equipped with 2 RJ45 connectors | | 3 | VW3 A1 104R30 | 0.150 |
| | | 5 | VW3 A1 104R50 | 0.250 |
| | | 10 | VW3 A1 104R100 | 0.500 |
| Female/female RJ45 adaptor | 7 | – | VW3 A1 105 | 0.010 |

(1) If an Altivar 31 drive is replaced by an Altivar 312 drive, the remote display terminal VW3 A1 101 can be used. Please consult the quick reference guide for this terminal, which is available on our website www.schneider-electric.com.

(2) The software version of the graphic display terminal must be ≥ V1.1.IE19. It can be updated using the Multi-Loader configuration tool (VW3 A8 121). See page 35.



Graphic display terminal
+ female/female RJ45 adaptor
+ remote cable



Configuration with SoMove Mobile software for mobile phones



Configuration with Simple Loader configuration tool connected to the ATV 312



Configuration with Multi-Loader configuration tool connected to the ATV 312

SoMove setup software

SoMove setup software for PC is used to prepare drive configuration files.

The PC can be connected to the drive:

- Directly, using the USB/RJ45 cable (TCSM CNAM 3M002P)
 - Using a Bluetooth® wireless connection, via the Modbus Bluetooth® adaptor (VW3 A8 114)
- See page 36.

SoMove Mobile software for mobile phones (1)

SoMove Mobile software can be used to edit drive configurations on a mobile phone. The configurations can be saved, imported from a PC, exported to a PC or a drive equipped with the Modbus-Bluetooth® adaptor (VW3 A8 114).

The SoMove Mobile software and drive configuration files can be downloaded from our website www.schneider-electric.com.

References

| Description | Reference | Weight kg |
|---|-------------------|-----------|
| SoMove Mobile software for mobile phones (1) Can be downloaded from our website www.schneider-electric.com . | - | - |
| Modbus-Bluetooth® adaptor Comprises: - 1 Bluetooth® adaptor (range 10 m, class 2) with RJ45 connector - 1 x 0.1 m cable with 2 x RJ45 connectors - (2) | VW3 A8 114 | 0.155 |

Simple Loader and Multi-Loader configuration tools

The Simple Loader tool enables one powered-up drive's configuration to be duplicated on another powered-up drive. It is connected to the drive's RJ45 communication port.

The Multi-Loader tool enables several configurations to be copied from a PC or a powered-up drive and loaded on another powered-up drive.

It is connected to:

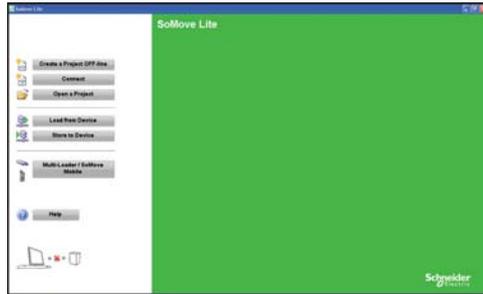
- A PC via a USB port
- The drive's RJ45 communication port

References

| Description | Reference | Weight kg |
|--|-------------------|-----------|
| Simple Loader configuration tool Supplied with a connection cable equipped with 2 RJ45 connectors. | VW3 A8 120 | - |
| Multi-Loader configuration tool Supplied with: - 1 cable equipped with 2 RJ45 connectors - 1 cable equipped with one type A USB connector and one mini B USB connector - 1 x 2 GB SD memory card - 1 x female/female RJ 45 adaptor - 4 AA/LR6 1.5 V batteries | VW3 A8 121 | - |

(1) SoMove Mobile software requires a mobile phone with minimum features, please consult our website www.schneider-electric.com

(2) It also includes other elements for connecting compatible Schneider Electric devices.



SoMove start page

Presentation

SoMove is user-friendly setup software for PCs, for setting up the following Schneider Electric motor control devices:

- ATV 12, ATV 312, ATV 31, ATV 32, ATV 61 and ATV 71 variable speed drives
- ATS 22 starters
- TeSys U starter-controllers
- TeSys T motor management system
- Lexium 32 servo drives

SoMove software incorporates various functions for the device setup phases, such as:

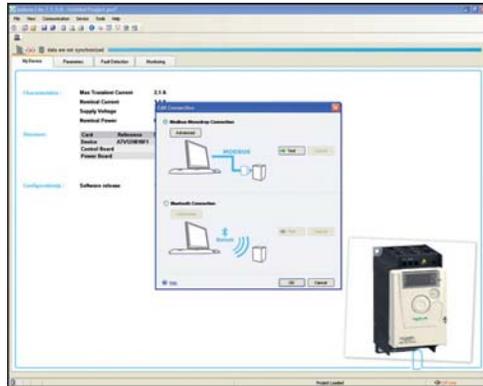
- Configuration preparation
- Start-up
- Maintenance

To facilitate setup and maintenance, SoMove software can use a direct USB/RJ45 cable link or a Bluetooth® wireless link.

SoMove software is also compatible with the Multi-Loader configuration tool and SoMove Mobile software for mobile phones.

These tools can save a significant amount of time when loading, duplicating or editing configurations on a device.

SoMove software and all the DTMs (Device Type Managers) associated with the devices can be downloaded from our website www.schneider-electric.com.



Example of connecting SoMove software to an ATV 12 drive

Functions

Configuration preparation in disconnected mode

SoMove software has a genuine disconnected mode which provides access to all the device parameters. This mode can be used to generate the device configuration. The configuration can be saved, printed and exported to office automation software.

SoMove software also checks the consistency of the parameters, validating the configurations created in disconnected mode.

A large number of functions are available in disconnected mode, in particular:

- The device configuration software wizard
- The configuration comparison function
- Saving, copying, printing and creating configuration files for export to Multi-Loader, SoMove Mobile or Microsoft Excel® and sending configurations by e-mail.

Setup

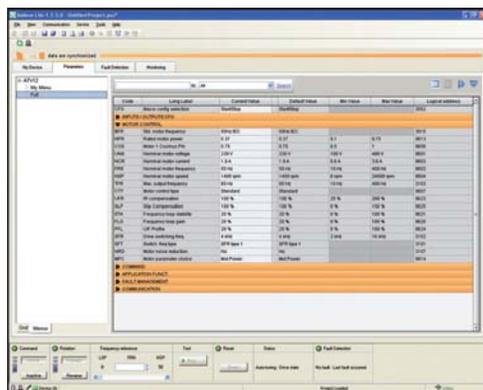
When the PC is connected to the device, SoMove software can be used for:

- Transferring the configuration that has been generated onto the device
- Adjustment and monitoring. This includes such functions as:
 - The oscilloscope
 - Displaying communication parameters
- Easy control via the control panel user interface
- Saving the final configuration

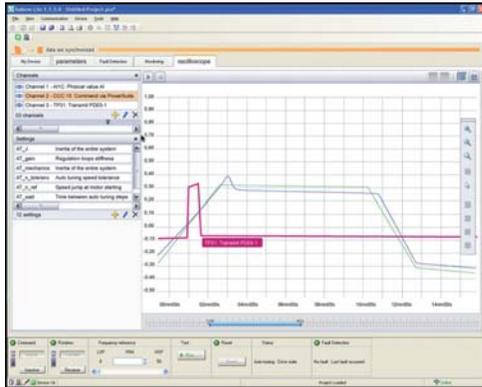
Maintenance

In order to simplify maintenance operations, SoMove software can be used to:

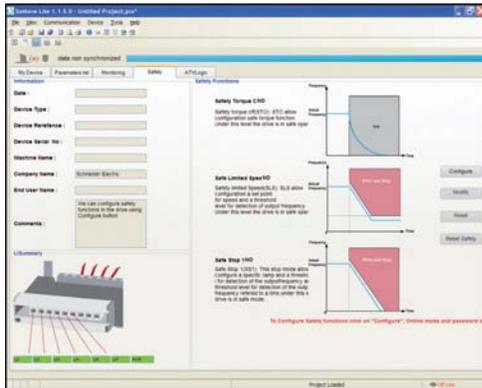
- Compare the configuration of a device currently being used with a configuration saved on the PC
- Transfer a configuration to a device
- Compare oscilloscope curves
- Save oscilloscope curves and faults



SoMove control panel



SoMove oscilloscope function



SoMove Safety function

Functions (continued)

User interface

SoMove software provides fast, direct access to all information on the device via five tabs:

- **My Device:** Displays all the information on the device (type, reference, software versions, option cards, etc.)
- **Parameters:** Displays all the device adjustment parameters, shown in a table or in the form of diagrams
- **Faults:** Displays a list of the faults that may be encountered with the device, the fault log and any current faults or alarms
- **Monitoring:** Provides a realtime display of the device status, its I/O and all the monitoring parameters. It is possible to create your own control panel by selecting your parameters and how they are to be represented.
- **Oscilloscope:** Provides a high-speed oscilloscope (recording traces in the device) or low-speed oscilloscope (recording traces in the software for devices that do not have an integrated oscilloscope)

SoMove's user interface automatically adapts to the specific configured device by offering additional tabs:

- **Safety:** For configuring the Safety functions on ATV 32 variable speed drives and Lexium 32 servo drives. It can also be used to:
 - Display the I/O
 - Compile and print a report
- **ATVLogic:** For accessing the ATV 32 drive's programmable function blocks. It can also be used to:
 - Develop a program and transfer it to the drive
 - Display and debug the program already on the drive
- **Auto-tuning:** For accessing the servo control settings for the three different operating modes of the Lexium 32 servo drive's auto-tuning function:
 - Automatic mode for quick setup, designed for simple applications
 - Semi-automatic mode for quick setup, with the option of optimizing the servo drive/servo motor combination (access to the mechanical and dynamic behaviour parameters)
 - Expert mode for optimizing the adjustment parameters, designed for complex applications

Connections

Modbus serial link

The PC running SoMove software can be connected directly via the RJ45 connector on the device and the USB port on the PC using the USB/RJ45 cable.

See the product references on page 38.

Bluetooth® wireless link

SoMove software can communicate via Bluetooth® wireless link with any Bluetooth® enabled device.

If the device is not Bluetooth® enabled, use the Modbus-Bluetooth® adaptor. This adaptor is connected to the terminal port or the Modbus network port on the device. It has a 10 m range (class 2).

If the PC is not Bluetooth® enabled, use the USB-Bluetooth® adaptor.

See the product references on page 38.



SoMove setup software

PF000632

VW3 A8 114:
Bluetooth® adaptor

References

| Description | Reference | Weight kg |
|--|------------------|--------------|
| SoMove lite setup software Comprising: <ul style="list-style-type: none"> ■ SoMove setup software for PC in English, French, German, Italian, Spanish and Chinese ■ DTMs (Device Type Managers) and technical documentation for variable speed drives, starters and servo motors | (1) | – |
| USB/RJ45 cable Used to connect a PC to the device. This cable is 2.5 m long, and has a USB connector (PC end) and an RJ45 connector (device end). | TCSM CNAM 3M002P | – |
| Modbus-Bluetooth® adaptor Used to enable any non-Bluetooth® device to communicate via Bluetooth® wireless link (2). Comprising: <ul style="list-style-type: none"> ■ 1 Bluetooth® adaptor (range 10 m, class 2) with an RJ45 connector ■ For SoMove: 1 x 0.1 m cable with 2 x RJ45 connectors ■ For TwidoSuite: 1 x 0.1 m cable with 1 RJ45 connector and 1 mini DIN connector | VW3 A8 114 | 0.155 |
| USB-Bluetooth® adaptor for PC Used to enable any non-Bluetooth® PC to communicate via Bluetooth® wireless link (3). It connects to a USB port on the PC. Range 10 m (class 2) | VW3 A8 115 | 0.290 |

(1) Available on our website "www.schneider-electric.com"

(2) Required for the following devices:

- ATV 12, ATV 312, ATV 31, ATV 61 and ATV 71 drives

- ATS 22 starters

- TeSys U starter-controllers

- TeSys T motor management system

- Lexium 32 servo drives

(3) Check the manufacturer's specification.

Compatibility of SoMove software with specific devices

| Device | Range | Version of software on the device |
|-------------------------|-------------------------|-----------------------------------|
| Variable speed drive | ATV 12, ATV 312, ATV 32 | ≥ 1.0 |
| | ATV 31 | ≥ 1.1 |
| | ATV 61, ATV 71 | ≥ 1.6 |
| Starter | ATS 22 | ≥ 1.0 |
| Starter-controller | TeSys U | ≥ 1.0 |
| Motor management system | TeSys T | ≥ 1.0 |
| Servo drive | Lexium 32 | ≥ 1.0 |

Environments

SoMove operates in the following PC environments and configurations:

- Microsoft Windows® 7 Professional (1)
- Microsoft Windows® XP Professional SP3
- Microsoft Windows® Vista Business SP2
- Pentium IV (or equivalent), 1 GHz, hard disk with 1 GB available space, 1 GB of RAM (minimum configuration)

(1) Please contact our Customer Care Centre.

Presentation

The resistor enables the Altivar 312 drive to operate while braking to a standstill or during slowdown braking, by dissipating the braking energy.

Two types of resistor are available:

- Enclosed model (IP 20 casing) designed to comply with the EMC standard and protected by a temperature-controlled switch or thermal overload relay.

This model enables maximum transient braking torque.

The resistors are designed to be mounted on the outside of the enclosure, but should not inhibit natural cooling. Air inlets and outlets must not be obstructed in any way. The air must be free of dust, corrosive gas and condensation.

- Non-protected model (IP 00) for lower power ratings only.

Applications

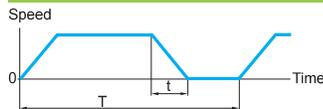
Machines with high inertia, driving loads and machines with fast cycles.

General characteristics

| Type of braking resistor | | | VW3 A7 723 to VW3 A7 725 | VW3 A7 701 to VW3 A7 705 |
|--|-----------------------------|----|---|--|
| Ambient air temperature around the device | Operation | °C | 40 | 0...+ 50 |
| | Storage | °C | - 25...+ 70 | |
| Degree of protection of the casing | | | IP 00 | IP 20 |
| Thermal protection | | | None | Via temperature-controlled switch or via the drive |
| Temperature controlled switch (1) | Tripping temperature | °C | – | 120 |
| | Max. voltage - max. current | | – | 250 V ~ - 1 A |
| | Min. voltage - min. current | | – | 24 V --- - 0.1 A |
| | Maximum switch resistance | mΩ | – | 60 |
| Operating factor for the dynamic brake transistors | | | The average power that can be dissipated at 40°C from the resistor into the casing is determined for a load factor during braking that corresponds to most common applications. The dynamic brake transistor is sized so that it can tolerate: - The nominal motor power continuously - 150% of the nominal motor power for 60 s | |

(1) The switch must be connected in the sequence (use for signalling or in line contactor control).

Load factor and determining the nominal power



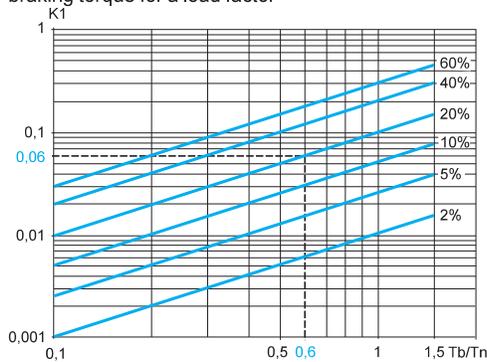
Load factor: $\frac{t}{T}$

t : braking time in s

T : cycle time in s

Chart 1

Graph of the average power as a function of the braking torque for a load factor



Example:

Motor power $P_m = 4$ kW
 Motor efficiency $\eta = 0.85$
 Braking torque $T_b = 0.6 T_n$
 Braking time $t = 10$ s
 Cycle time $T = 50$ s
 Load factor $f_m = \frac{t}{T} = 20\%$

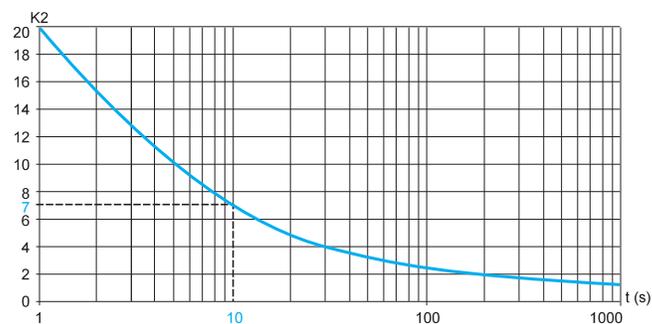
Use chart 1 to determine coefficient K_1 corresponding to a braking torque of $0.6 T_n$ and a load factor of 20%:
 $K_1 = 0.06$

The average power that can be dissipated at 40°C from the resistor into the casing is determined for a load factor during braking that corresponds to most common applications. This load factor is defined in the table above.

For a specific application (example: handling), the nominal power of the resistor must be redefined incorporating the new load factor.

Chart 2

Permissible resistor overload as a function of time (characteristic curve)



Use chart 2 to determine coefficient K_2 corresponding to a braking time of 10 seconds.

$K_2 = 7$

The nominal power of the resistor (P_n) must be greater than:

$$P_n = P_m \times K_1 \times \eta \left(1 + \frac{1}{K_2 \times f_m} \right) = 4.10^3 \times 0.06 \times 0.8 \left(1 + \frac{1}{7 \times 0.2} \right) = 350 \text{ W}$$

Variable speed drives

Altivar 312

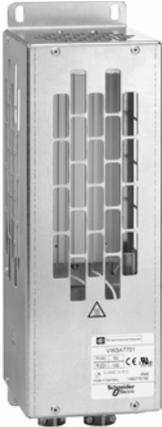
Option: braking resistors

531231



VW3 A7 723

105659



VW3 A7 701

| For drives | Minimum resistor value (1) Ω | Ohmic value Ω | Average power available at | | Reference | Weight kg |
|--|------------------------------------|------------------|----------------------------|------|------------|--------------|
| | | | 40°C (2) | 50°C | | |
| | | | W | W | | |
| Non-protected braking resistors | | | | | | |
| ATV 312H018M2...H075M2 | 40 | 100 | 32 | 28 | VW3 A7 723 | 0.600 |
| ATV 312HU11M2, HU15M2 | 27 | | | | | |
| ATV 312H018M3...H075M3 | 40 | | | | | |
| ATV 312HU11M3, HU15M3 | 27 | | | | | |
| ATV 312H037N4...H075N4 | 80 | | | | | |
| ATV 312HU11N4...HU22N4 | 54 | | | | | |
| ATV 312H075S6 | 96 | | | | | |
| ATV 312HU15S6, HU22S6 | 64 | | | | | |
| ATV 312HU30N4 | 55 | 100 | 40 | 35 | VW3 A7 725 | 0.850 |
| ATV 312HU40N4 | 36 | | | | | |
| ATV 312HU40S6 | 44 | | | | | |
| ATV 312HU22M2, ATV 312HU22M3 | 25 | 68 | 32 | 28 | VW3 A7 724 | 0.600 |
| ATV 312HU30M3 | 16 | | | | | |
| Protected braking resistors | | | | | | |
| ATV 312H018M2...H075M2 | 40 | 100 | 58 | 50 | VW3 A7 701 | 2.000 |
| ATV 312HU11M2, HU15M2 | 27 | | | | | |
| ATV 312H018M3...H075M3 | 40 | | | | | |
| ATV 312HU11M3, HU15M3 | 27 | | | | | |
| ATV 312H037N4...H075N4 | 80 | | | | | |
| ATV 312HU11N4...HU22N4 | 54 | | | | | |
| ATV 312HU22M2, ATV 312HU22M3 | 25 | 60 | 115 | 100 | VW3 A7 702 | 2.400 |
| ATV 312HU30M3 | 16 | | | | | |
| ATV 312HU30N4 | 55 | 100 | 58 | 50 | VW3 A7 701 | 2.000 |
| ATV 312HU40N4 | 36 | | | | | |
| ATV 312HU55N4 | 29 | 60 | 115 | 100 | VW3 A7 702 | 2.400 |
| ATV 312HU75N4 | 19 | | | | | |
| ATV 312HU55S6 | 34 | | | | | |
| ATV 312HU75S6 | 23 | | | | | |
| ATV 312HU40M3 | 16 | 28 | 231 | 200 | VW3 A7 703 | 3.500 |
| ATV 312HD11N4, HD15N4 | 20 | | | | | |
| ATV 312HD11S6, HD15S6 | 24 | | | | | |
| ATV 312HU55M3, HU75M3 | 8 | 15 | 1154 | 1000 | VW3 A7 704 | 11.000 |
| ATV 312HD11M3, HD15M3 | 5 | 10 (3) | 1154 | 1000 | VW3 A7 705 | 11.000 |

(1) Depends on the drive rating.

(2) Power that can be dissipated by the resistor at the maximum temperature of 115°C, corresponding to a maximum temperature rise of 75°C in a 40°C environment.

(3) Ohmic value obtained as a function of the connection described in the resistor operating instructions.

Presentation

Line chokes provide improved protection against overvoltages on the line supply and reduce harmonic distortion of the current produced by the drive.

The recommended chokes limit the line current.

They have been developed in line with standard IEC 61800-5-1 (VDE 0160 level 1 high-energy overvoltages on the line supply).

The inductance values are defined for a voltage drop between 3% and 5% of the nominal line voltage. Values higher than this will cause loss of torque.

The use of line chokes is recommended in particular for ATV 312H●●●M2, ATV 312H●●●M3 and ATV 312H●●●N4 drives under the following circumstances:

- Line supply with significant disturbance from other equipment (interference, overvoltages)
- Line supply with voltage imbalance between phases > 1.8% of nominal voltage
- Drive supplied by a line with very low impedance (in the vicinity of a power transformer 10 times more powerful than the drive rating)
- Installation of a large number of frequency inverters on the same line
- Reduction of overloads on the cos φ correction capacitors, if the installation includes a power factor correction unit

The use of line chokes is mandatory for ATV 312H●●●S6 drives.

The prospective short-circuit current at the drive connection point must not exceed the maximum value indicated in the reference tables. The use of chokes allows connection to the following line supplies:

- Max. Isc 22 kA for 200/240 V
- Max. Isc 65 kA for 380/500 V and 525/600V

Characteristics

| Type of line choke | | VZ1 L004 M010 | VZ1 L007 UM50 | VZ1 L018 UM20 | VW3 A4 551 | VW3 A4 552 | VW3 A4 553 | VW3 A4 554 | VW3 A4 555 | |
|-------------------------|-----------|---|------------------|------------------|---------------|---------------|---------------|---------------|---------------|--|
| Conformity to standards | | IEC 61800-5-1 (VDE 0160 level 1 high-energy overvoltages on the line supply) | | | | | | | | |
| Voltage drop | | Between 3% and 5% of the nominal line voltage. Values higher than this will cause loss of torque. | | | | | | | | |
| Degree of protection | Choke | IP 00 | | | | | | | | |
| | Terminals | IP 20 | | | | | | IP 10 | | |
| Inductance value | mH | 10 | 5 | 2 | 10 | 4 | 2 | 1 | 0.5 | |
| Nominal current | A | 4 | 7 | 18 | 4 | 10 | 16 | 30 | 60 | |
| Losses | W | 17 | 20 | 30 | 45 | 65 | 75 | 90 | 80 | |

Variable speed drives

Altivar 312

Option: line chokes

803967



VW3 A4 55

Line chokes

| Altivar 312 | Line current | | | | Choke Reference | Weight | | | |
|--|---------------|---------------|---------------|---------------|-----------------|--------|---|---|----|
| | without choke | | with choke | | | | | | |
| | U min. (1) | U max. (1) | U min. (1) | U max. (1) | A | A | A | A | kg |
| Single-phase supply voltage: 200...240 V 50/60 Hz | | | | | | | | | |
| ATV 312H018M2 | 3.0 | 2.5 | 2.1 | 1.8 | VZ1 L004M010 | 0.630 | | | |
| ATV 312H037M2 | 5.3 | 4.4 | 3.9 | 3.3 | | | | | |
| ATV 312H055M2 | 6.8 | 5.8 | 5.2 | 4.3 | VZ1 L007UM50 | 0.880 | | | |
| ATV 312H075M2 | 8.9 | 7.5 | 7.0 | 5.9 | | | | | |
| ATV 312HU11M2 | 12.1 | 10.2 | 10.2 | 8.6 | VZ1 L018UM20 | 1.990 | | | |
| ATV 312HU15M2 | 15.8 | 13.3 | 13.4 | 11.4 | | | | | |
| ATV 312HU22M2 | 21.9 | 18.4 | 19.2 | 16.1 | | | | | |
| Three-phase supply voltage: 200...240 V 50/60 Hz | | | | | | | | | |
| ATV 312H018M3 | 2.1 | 1.9 | 1 | 0.9 | VW3 A4 551 | 1.500 | | | |
| ATV 312H037M3 | 3.8 | 3.3 | 1.9 | 1.6 | | | | | |
| ATV 312H055M3 | 4.9 | 4.2 | 2.5 | 2.2 | | | | | |
| ATV 312H075M3 | 6.4 | 5.6 | 3.3 | 2.9 | | | | | |
| ATV 312HU11M3 | 8.5 | 7.4 | 4.8 | 4.2 | VW3 A4 552 | 3.000 | | | |
| ATV 312HU15M3 | 11.1 | 9.6 | 6.4 | 5.6 | | | | | |
| ATV 312HU22M3 | 14.9 | 13 | 9.2 | 8 | VW3 A4 553 | 3.500 | | | |
| ATV 312HU30M3 | 19.1 | 16.6 | 12.3 | 10.7 | | | | | |
| ATV 312HU40M3 | 24.2 | 21.1 | 16.1 | 14 | VW3 A4 554 | 6.000 | | | |
| ATV 312HU55M3 | 36.8 | 32 | 21.7 | 19 | | | | | |
| ATV 312HU75M3 | 46.8 | 40.9 | 29 | 25.2 | | | | | |
| ATV 312HD11M3 | 63.5 | 55.6 | 41.6 | 36.5 | VW3 A4 555 | 11.000 | | | |
| ATV 312HD15M3 | 82.1 | 71.9 | 55.7 | 48.6 | | | | | |
| Three-phase supply voltage: 380...500 V 50/60 Hz | | | | | | | | | |
| ATV 312H037N4 | 2.2 | 1.7 | 1.1 | 0.9 | VW3 A4 551 | 1.500 | | | |
| ATV 312H055N4 | 2.8 | 2.2 | 1.4 | 1.2 | | | | | |
| ATV 312H075N4 | 3.6 | 2.7 | 1.8 | 1.5 | | | | | |
| ATV 312HU11N4 | 4.9 | 3.7 | 2.6 | 2 | | | | | |
| ATV 312HU15N4 | 6.4 | 4.8 | 3.4 | 2.6 | | | | | |
| ATV 312HU22N4 | 8.9 | 6.7 | 5 | 4.1 | VW3 A4 552 | 3.000 | | | |
| ATV 312HU30N4 | 10.9 | 8.3 | 6.5 | 5.2 | | | | | |
| ATV 312HU40N4 | 13.9 | 10.6 | 8.5 | 6.6 | | | | | |
| ATV 312HU55N4 | 21.9 | 16.5 | 11.7 | 9.3 | VW3 A4 553 | 3.500 | | | |
| ATV 312HU75N4 | 27.7 | 21 | 15.4 | 12.1 | | | | | |
| ATV 312HD11N4 | 37.2 | 28.4 | 22.5 | 18.1 | VW3 A4 554 | 6.000 | | | |
| ATV 312HD15N4 | 48.2 | 36.8 | 29.6 | 23.3 | | | | | |
| Three-phase supply voltage: 525...600 V 50/60 Hz | | | | | | | | | |
| ATV 312H075S6 (2) | - | - | 1.4 | 1.4 | VW3 A4 551 | 1.500 | | | |
| ATV 312HU15S6 (2) | - | - | 2.4 | 2.3 | | | | | |
| ATV 312HU22S6 (2) | - | - | 3.8 | 3.6 | | | | | |
| ATV 312HU40S6 (2) | - | - | 6 | 5.8 | VW3 A4 552 | 3.000 | | | |
| ATV 312HU55S6 (2) | - | - | 7.8 | 7.5 | | | | | |
| ATV 312HU75S6 (2) | - | - | 11 | 10.7 | VW3 A4 553 | 3.500 | | | |
| ATV 312HD11S6 (2) | - | - | 15 | 14.4 | | | | | |
| ATV 312HD15S6 (2) | - | - | 21.1 | 20.6 | VW3 A4 554 | 6.000 | | | |

(1) Nominal supply voltage:

| For drives | Nominal voltage | |
|--------------------------------|-----------------|--------|
| | U min. | U max. |
| ATV 312H●●●M2 ATV 312H●●●M3 | 200 | 240 |
| ATV 312H●●●N4 ATV 312H●●●S6 | 380 | 500 |
| | 525 | 600 |

(2) Line choke mandatory for ATV 312H●●●S6 drives.

Presentation

Integrated filters

Altivar 312 drives, apart from ATV 312H●●●M3 and ATV312H●●●S6, have integrated radio interference input filters to comply with the EMC standard for variable speed electrical power drive "products" IEC 61800-3, categories C2 or C3, and to comply with the European EMC (electromagnetic compatibility) directive.

Additional EMC input filters

Additional EMC input filters (1) enable drives to meet more stringent requirements: they are designed to reduce conducted emissions on the line supply below the limits of standard IEC 61800-3 category C1 or C2 (see page 45).

These additional EMC filters can be mounted beside or under the drive. They act as a support for the drives and are attached to them via tapped holes.

Use according to the type of line supply

Additional EMC filters can only be used on TN (neutral connection) and TT (neutral to earth) type systems.

Standard IEC 61800-3, appendix D2.1, states that on IT systems (isolated or impedance earthed neutral), filters can cause permanent insulation monitors to operate in a random manner.

The effectiveness of additional filters on this type of system depends on the type of impedance between neutral and earth, and therefore cannot be predicted. If a machine has to be installed on an IT system, one solution is to insert an isolation transformer and connect the machine locally on a TN or TT system.

Characteristics

| | | | |
|---|------------------------------|----|--|
| Conformity to standards | | | EN 133200 |
| Degree of protection | | | IP 21 and IP 41 on upper part |
| Maximum relative humidity | | | 95% non-condensing, no dripping water conforming to IEC 60068-2-3 |
| Ambient air temperature around the device | Operation | °C | - 10...+ 60 |
| | Storage | °C | - 25...+ 70 |
| Maximum operating altitude | Without derating | m | 1000 (above this, derate the current by 1% for every additional 100 m) |
| Vibration resistance | Conforming to IEC 60068-2-6 | | 1.5 mm peak to peak from 3 to 13 Hz 1 gn peak from 13 to 150 Hz |
| Shock resistance | Conforming to IEC 60068-2-27 | | 15 gn for 11 ms |
| Maximum nominal voltage | 50/60 Hz single-phase | V | 240 + 10% |
| | 50/60 Hz three-phase | V | 240 + 10% 500 + 10% |

(1) Not available for ATV 312H●●●S6 drives

Variable speed drives

Altivar 312

Option: additional EMC input filters

105586



VW3 A31405

Additional EMC input filters

| For drives | | Filter | | | | | | Reference | Weight |
|---|--------------------------------------|-------------|--------|------------|-----------------|--|------------|-----------|--------|
| Reference | Maximum length of shielded cable (1) | In (2) | II (3) | Losses (4) | IEC 61800-3 (5) | | | | |
| | Category C2 | Category C1 | A | mA | W | | | | |
| | m | m | A | mA | W | | | kg | |
| Single-phase supply voltage: 200...240 V 50/60 Hz | | | | | | | | | |
| ATV 312H018M2 ATV 312H037M2 ATV 312H055M2 ATV 312H075M2 | 50 | 20 | 9 | 100 | 3.7 | | VW3 A31401 | 0.600 | |
| ATV 312HU11M2 ATV 312HU15M2 | 50 | 20 | 16 | 150 | 6.9 | | VW3 A31403 | 0.775 | |
| ATV 312HU22M2 | 50 | 20 | 22 | 80 | 7.5 | | VW3 A31405 | 1.130 | |
| Three-phase supply voltage: 200...240 V 50/60 Hz | | | | | | | | | |
| ATV 312H018M3 ATV 312H037M3 ATV 312H055M3 ATV 312H075M3 | 5 | – | 7 | 7 | 2.6 | | VW3 A31402 | 0.650 | |
| ATV 312HU11M3 ATV 312HU15M3 ATV 312HU22M3 | 5 | – | 15 | 15 | 9.9 | | VW3 A31404 | 1.000 | |
| ATV 312HU30M3 ATV 312HU40M3 | 5 | – | 25 | 35 | 15.8 | | VW3 A31406 | 1.650 | |
| ATV 312HU55M3 ATV 312HU75M3 | 5 | – | 47 | 45 | 19.3 | | VW3 A31407 | 3.150 | |
| ATV 312HD11M3 ATV 312HD15M3 | 5 | – | 83 | 15 | 35.2 | | VW3 A31408 | 5.300 | |
| Three-phase supply voltage: 380...500 V 50/60 Hz | | | | | | | | | |
| ATV 312H037N4 ATV 312H055N4 ATV 312H075N4 ATV 312HU11N4 ATV 312HU15N4 | 50 | 20 | 15 | 15 | 9.9 | | VW3 A31404 | 1.000 | |
| ATV 312HU22N4 ATV 312HU30N4 ATV 312HU40N4 | 50 | 20 | 25 | 35 | 15.8 | | VW3 A31406 | 1.650 | |
| ATV 312HU55N4 ATV 312HU75N4 | 50 | 20 | 47 | 45 | 19.3 | | VW3 A31407 | 3.150 | |
| ATV 312HD11N4 ATV 312HD15N4 | 50 | 20 | 49 | 45 | 27.4 | | VW3 A31409 | 4.750 | |

(1) The filter selection tables give the maximum lengths for shielded cables connecting motors to drives for a switching frequency of 2 to 16 kHz. These maximum lengths are given as examples only, as they vary depending on the stray capacitance of the motors and the cables used. If motors are connected in parallel, the sum of the cable lengths must be taken into account.

(2) In: nominal filter current.

(3) II: maximum earth leakage current at 50 Hz.

(4) Via heat dissipation, at the nominal filter current (In).

(5) Standard IEC 61800-3: EMC immunity and conducted and radiated EMC emissions:

- Category C1: public power supply (residential)

- Category C2: industrial power supply

Variable speed drives

Altivar 312

Options: output filters, motor chokes and ferrite suppressors

Presentation

Output filters and motor chokes can be inserted between the Altivar 312 drive and the motor to:

- Limit the dv/dt at the motor terminals (500 to 1500 V/ μ s), for cables longer than 50 m
- Filter interference caused by opening a contactor placed between the filter and the motor
- Reduce the motor earth leakage current

The output filter range comprises LR filter cells.

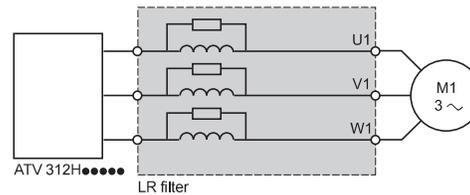
Ferrite suppressors are necessary on ATV 312H●●●M2 and ATV 312H018M3...HU22M3 drives when an output contactor is used.

LR filter cell

This cell comprises 3 high-frequency chokes and 3 resistors.

The LR filter cell is particularly suitable for:

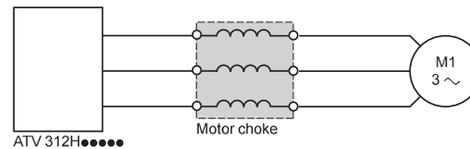
- Reducing the dv/dt at the motor terminals
- Using long motor cables (see characteristics table page 47)



Motor choke

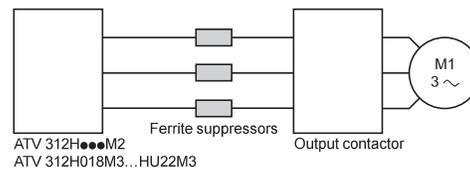
The motor choke is particularly suitable for:

- Reducing overvoltages at the motor terminals (see length of motor cable in characteristics table page 47)
- Minimizing the current wave, thus reducing motor noise



Ferrite suppressors for downstream contactor opening

Ferrite suppressors for downstream contactor opening are inserted on the motor cable between ATV 312H●●●M2 or ATV 312H018M3...HU22M3 drives and the output contactor.



| Characteristics (1) | | | | | |
|---------------------------|-------------------|---------------------|-------|---------------------|------------|
| | | LR filter cells (2) | | Motor chokes | |
| | | VW3 A5845 | | VW3 A4 552...A4 555 | VW3 A4 556 |
| Drive switching frequency | kHz | 0.5...4 | | 4 | |
| Length of motor cable | Shielded cables | m | ≤ 100 | ≤ 100 | |
| | Unshielded cables | m | ≤ 200 | ≤ 200 | |
| Degree of protection | | IP 20 | | IP 20 | IP 00 |

| References | | | | | |
|-----------------|--|--------|-----------------|------------|--------|
| LR filter cells | | | | | |
| Designation | For drives | Losses | Nominal current | Reference | Weight |
| | | W | A | | |
| | | | | | kg |
| LR filter cells | ATV 312H018M2...HU15M2 ATV 312H018M3...HU15M3 ATV 312H037N4...HU40N4 ATV 312H075S6...HU55S6 | 150 | 10 | VW3 A58451 | 7.400 |
| | ATV 312HU22M2 ATV 312HU22M3, HU30M3 ATV 312HU55N4 ATV 312HU75S6 | 180 | 16 | VW3 A58452 | 7.400 |
| | ATV 312HU40M3...HU75M3 ATV 312HU75N4...HD15N4 ATV 312HD11S6, HD15S6 | 220 | 33 | VW3 A58453 | 12.500 |

| Motor chokes | | | | | |
|--------------|--|--------|-----------------|------------|--------|
| Designation | For drives | Losses | Nominal current | Reference | Weight |
| | | W | A | | |
| | | | | | kg |
| Motor chokes | ATV 312HU22N4...HU40N4 ATV 312HU40S6, HU55S6 | 65 | 10 | VW3 A4 552 | 3.000 |
| | ATV 312HU22M2 ATV 312HU22M3, HU30M3 ATV 312HU55N4 ATV 312HU75S6 | 75 | 16 | VW3 A4 553 | 3.500 |
| | ATV 312HU40M3...HU75M3 ATV 312HU75N4, HD11N4 ATV 312HD11S6, HD15S6 | 90 | 30 | VW3 A4 554 | 6.000 |
| | ATV 312HD15N4 | 80 | 60 | VW3 A4 555 | 11.000 |
| | ATV 312HD11M3, HD15M3 | – | 100 | VW3 A4 556 | 16.000 |

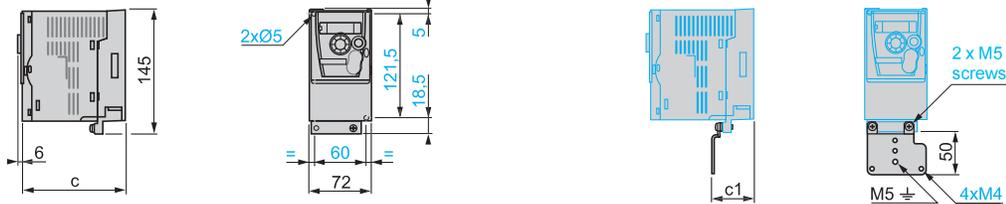
| Ferrite suppressors for downstream contactor opening | | | | | |
|--|--|-----------------|----------------|--------|--|
| Designation | For drives | Sold in lots of | Unit reference | Weight | |
| | | | | kg | |
| Ferrite suppressors for downstream contactor opening | ATV 312H018M2 | 3 | VW3 A31451 | 0.300 | |
| | ATV 312H037M2 ATV 312H018M3, H037M3 | 3 | VW3 A31452 | 0.200 | |
| | ATV 312H055M2...HU22M2 ATV 312H055M3...HU22M3 | 3 | VW3 A31453 | 0.100 | |

(1) Filter performance is ensured if the cable lengths between the motor and the drive, given in the above table, are not exceeded. For an application with several motors connected in parallel, the cable length must include all cabling. If a cable longer than that recommended is used, the filters may overheat.
(2) For other LR filter configurations, please consult your Customer Care Centre.

Drives

ATV 312H018M2...H075M2, ATV 312H018M3...H075M3

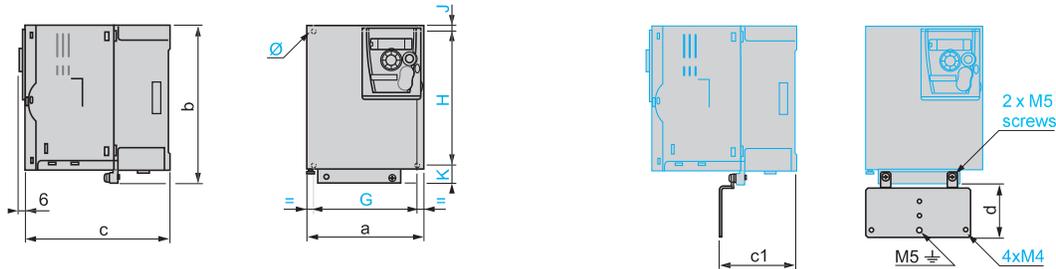
EMC mounting plate (supplied with the drive)



| ATV 312 | c | c1 |
|----------------|-----|------|
| H018M2, H037M2 | 132 | 61.5 |
| H055M2, H075M2 | 142 | 61.5 |
| H018M3, H037M3 | 122 | 51.5 |
| H055M3, H075M3 | 132 | 51.5 |

ATV 312HU11M2...HU22M2, ATV 312HU11M3...HU40M3, ATV 312H037N4...HU40N4, ATV 312H075S6...HU40S6

EMC mounting plate (supplied with the drive)

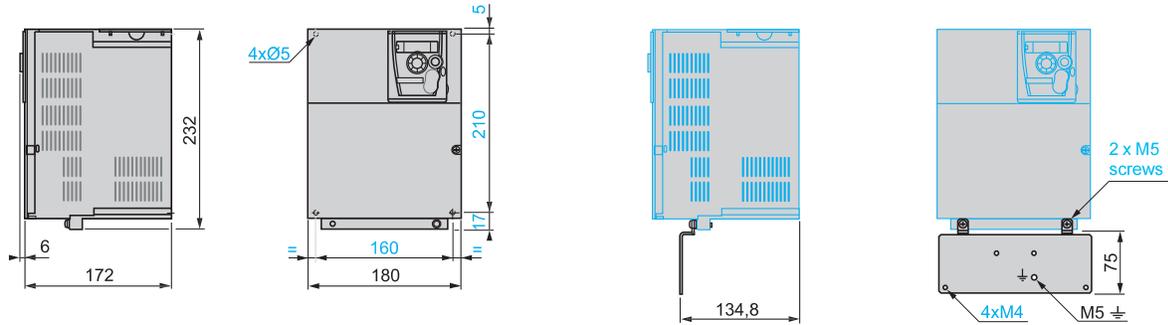


| ATV 312 | a | b | c | c1 | d | G | H | J | K | Ø |
|-----------------|-----|-----|-----|------|----|-----|-------|-----|------|------|
| HU11M3, HU15M3 | 105 | 143 | 132 | 67.3 | 49 | 93 | 121.5 | 5 | 16.5 | 2xØ5 |
| HU11M2, HU15M2 | 107 | 143 | 152 | 67.3 | 49 | 93 | 121.5 | 5 | 16.5 | 2xØ5 |
| HU22M3 | | | | | | | | | | |
| H037N4...HU15N4 | | | | | | | | | | |
| H075S6, HU15S6 | | | | | | | | | | |
| HU22M2 | 142 | 184 | 152 | 88.8 | 48 | 126 | 157 | 6.5 | 20.5 | 4xØ5 |
| HU30M3, HU40M3 | | | | | | | | | | |
| HU22N4...HU40N4 | | | | | | | | | | |
| HU22S6, HU40S6 | | | | | | | | | | |

Drives (continued)

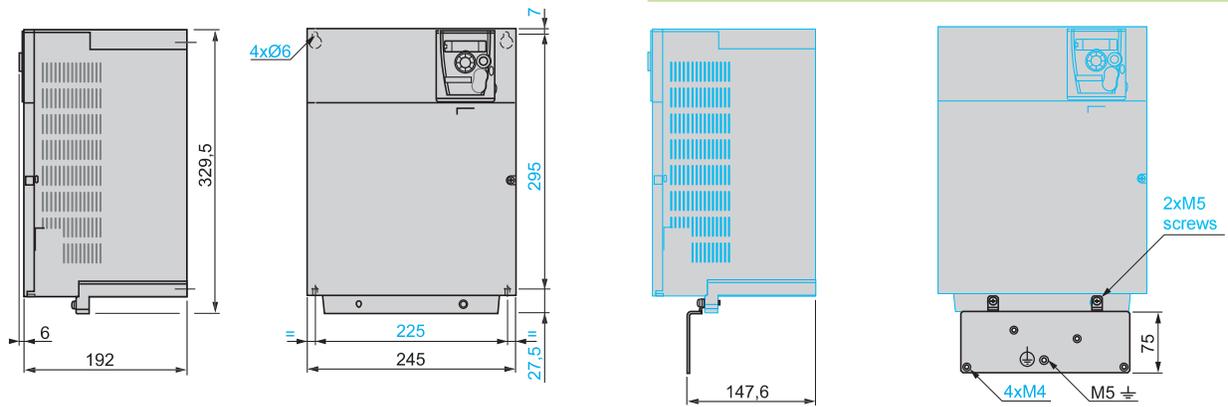
ATV 312HU55M3, HU75M3, ATV 312HU55N4, HU75N4, ATV 312HU55S6, HU75S6

EMC mounting plate (supplied with the drive)



ATV 312HD11M3, HD15M3, ATV 312HD11N4, HD15N4, ATV 312HD11S6, HD15S6

EMC mounting plate (supplied with the drive)

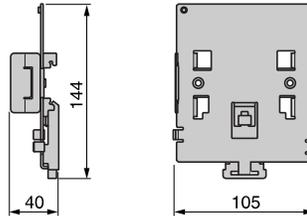
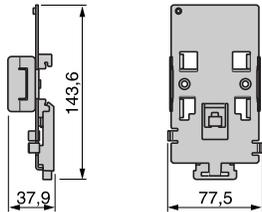


Accessories

Plates for mounting on rail

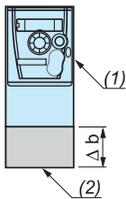
VW3 A9 804

VW3 A9 805



UL Type 1 conformity kits

VW3 A31 811...817



| VW3 | Δ b |
|-------------------|-----|
| A31 811...A31 815 | 68 |
| A31 816 | 96 |
| A31 817 | 99 |

- (1) Drive
(2) VW3 A31 811...817 kit

Options

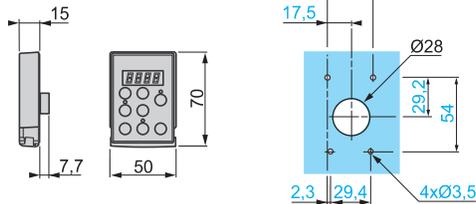
IP 54 remote display terminal

VW3 A1 006

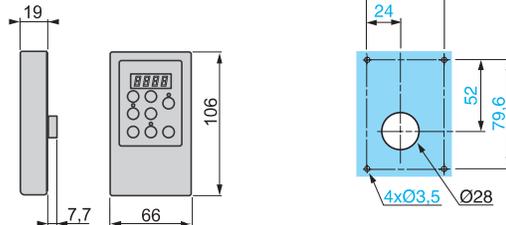
IP 65 remote display terminal

VW3 A1 007

Cut-outs and drill holes



Cut-outs and drill holes

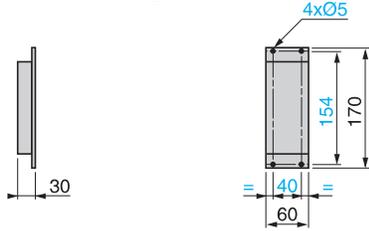


Options (continued)

Non-protected braking resistors

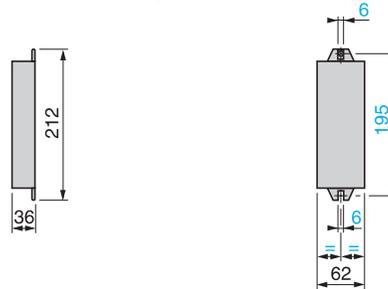
VW3 A7 723, 724

2-wire output, length 0.5 m



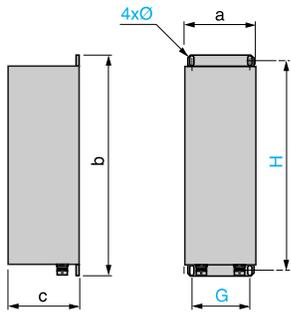
VW3 A7 725

2-wire output, length 0.5 m

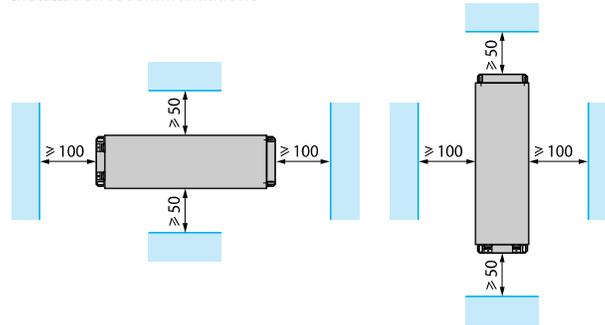


Protected braking resistors

VW3 A7 701...703



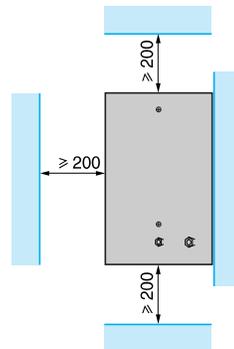
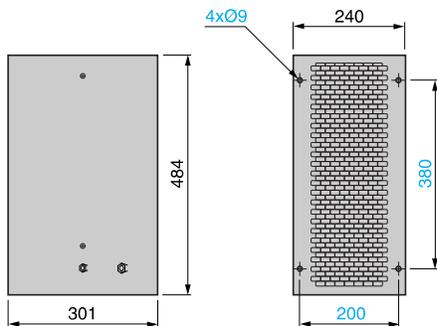
Installation recommendations



| VW3 | a | b | c | G | H | Ø |
|--------|-----|-----|-----|-----|-----|--------|
| A7 701 | 95 | 295 | 95 | 70 | 275 | 6 x 12 |
| A7 702 | 95 | 395 | 95 | 70 | 375 | 6 x 12 |
| A7 703 | 140 | 395 | 120 | 120 | 375 | 6 x 12 |

VW3 A7 704, 705

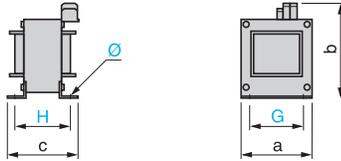
Installation recommendations



Options (continued)

Line chokes

VZ1 L004M010, L007UM50, L018UM20

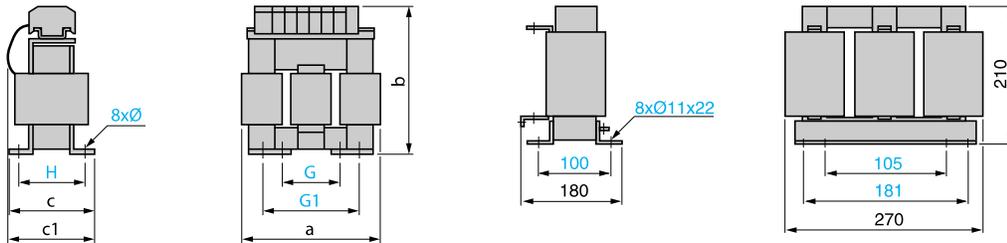


| VZ1 | a | b | c | G | H | Ø |
|----------|----|-----|-----|----|----|--------|
| L004M010 | 60 | 100 | 80 | 50 | 44 | 4 x 9 |
| L007UM50 | 60 | 100 | 95 | 50 | 60 | 4 x 9 |
| L018UM20 | 85 | 120 | 105 | 70 | 70 | 5 x 11 |

Line chokes and motor chokes

VW3 A4 551...555

VW3 A4 556

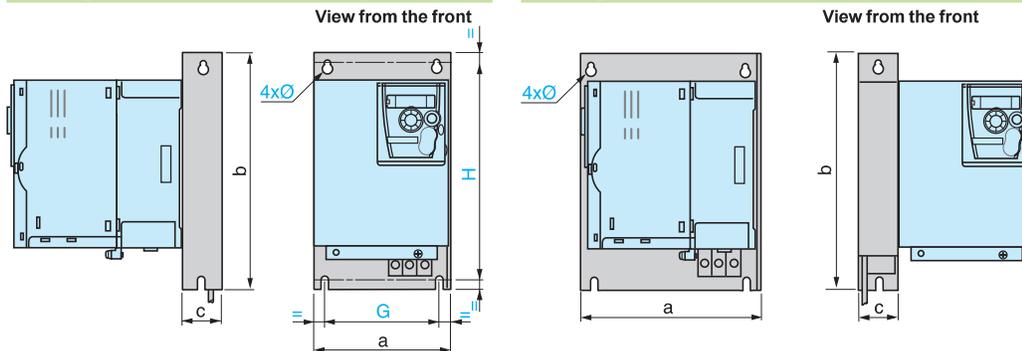


| VW3 | a | b | c | c1 | G | G1 | H | Ø |
|-------------|-----|-----|-----|-----|----|------|-----|--------|
| A4 551 | 100 | 135 | 55 | 60 | 40 | 60 | 42 | 6 x 9 |
| A4 552, 553 | 130 | 155 | 85 | 90 | 60 | 80.5 | 62 | 6 x 12 |
| A4 554 | 155 | 170 | 115 | 135 | 75 | 107 | 90 | 6 x 12 |
| A4 555 | 180 | 210 | 125 | 165 | 85 | 122 | 105 | 6 x 12 |

Additional EMC input filters

Mounting the filter under the drive

Mounting the filter next to the drive

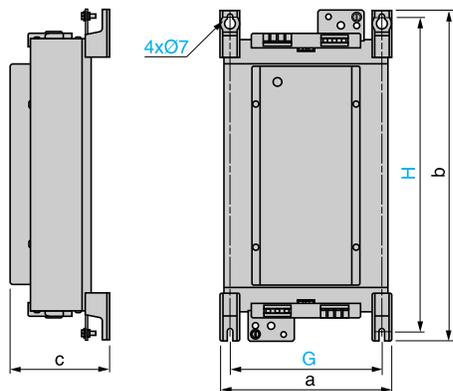


| VW3 | a | b | c | G | H | Ø |
|-------------|-----|-----|----|-----|-----|-----|
| A31401, 402 | 72 | 195 | 37 | 52 | 180 | 4.5 |
| A31403 | 107 | 195 | 35 | 85 | 180 | 4.5 |
| A31404 | 107 | 195 | 42 | 85 | 180 | 4.5 |
| A31405 | 140 | 235 | 35 | 120 | 215 | 4.5 |
| A31406 | 140 | 235 | 50 | 120 | 215 | 4.5 |
| A31407 | 180 | 305 | 60 | 140 | 285 | 5.5 |
| A31408 | 245 | 395 | 80 | 205 | 375 | 5.5 |
| A31409 | 245 | 395 | 60 | 205 | 375 | 5.5 |

Options (continued)

LR filter cells

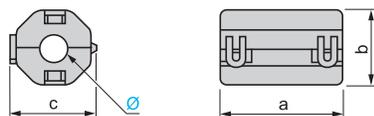
VW3 A58451...453



| VW3 | a | b | c | G | H |
|--------|-------|-------|-------|-----|-----|
| A58451 | 169.5 | 340 | 123 | 150 | 315 |
| A58452 | | | | | |
| A58453 | 239 | 467.5 | 139.5 | 212 | 444 |

Ferrite suppressors for downstream contactor opening

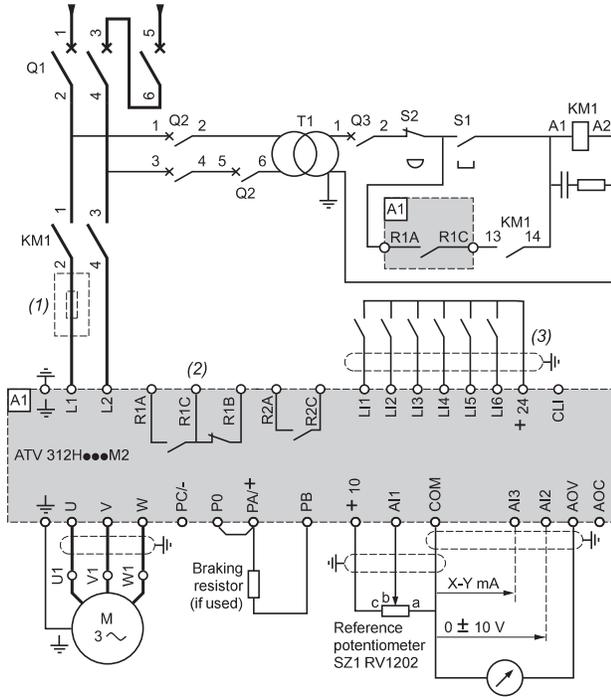
VW3 A31451...453



| VW3 | a | b | c | Ø |
|--------|------|------|------|----|
| A31451 | 33.5 | 33 | 33 | 13 |
| A31452 | 33 | 21.5 | 22.5 | 9 |
| A31453 | 30 | 19 | 19 | 6 |

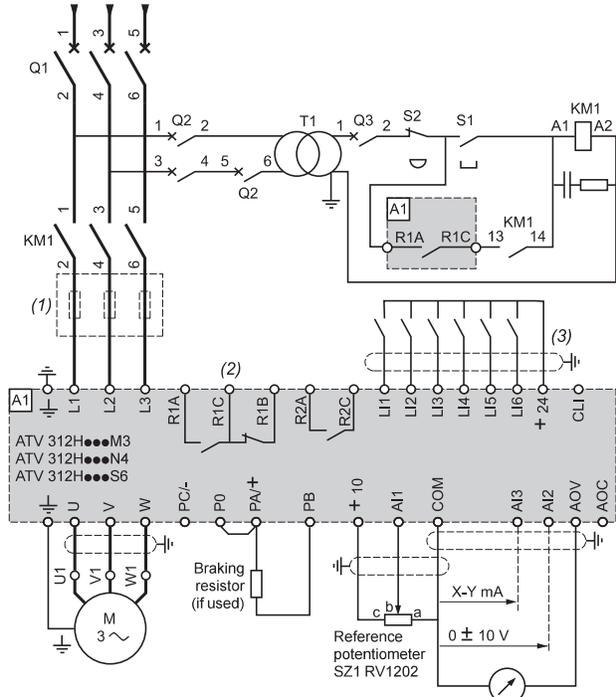
ATV 312H●●●M2

Single-phase power supply



ATV 312H●●●M3, ATV 312H●●●N4, ATV 312H●●●S6

Three-phase power supply



- (1) Line choke (single-phase or three-phase).
- (2) Fault relay contacts. Used for remote signalling of the drive status.
- (3) Connection of the common for the logic inputs depends on the position of the switch (see schemes below).

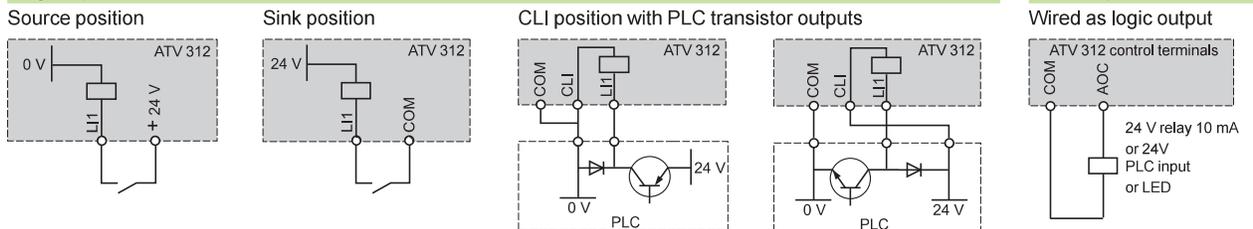
Note: All terminals are located at the bottom of the drive.
 Install interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

Compatible components (for a complete list of references, please refer to the "Motor starter solutions - Control and protection components" catalogue).

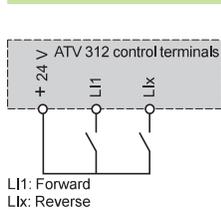
| Item no. | Designation |
|----------|---|
| KM1 | Line contactor LC1 ●●● + suppressor module LA4 DA2U (see page 58) |
| Q1 | GV2 L magnetic circuit-breaker or Compact NS circuit-breaker (see page 58) |
| Q2 | GV2 L magnetic circuit-breaker rated at twice the nominal primary current of T1 |
| Q3 | GB2 CB05 thermal magnetic circuit breaker |
| S1, S2 | XB4 B or XB5 A pushbuttons |
| T1 | 100 VA transformer 220 V secondary |

Examples of recommended schemes

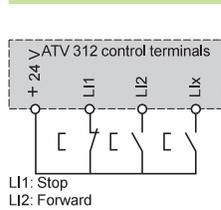
Logic input switches



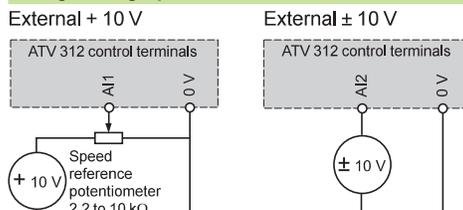
2-wire control



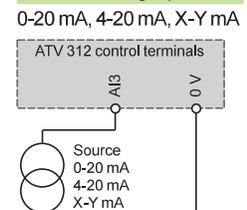
3-wire control



Voltage analog inputs



Current analog input



Presentation:
page 18

Characteristics:
page 20

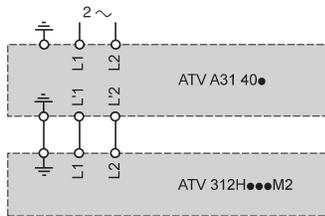
References:
page 26

Dimensions:
page 48

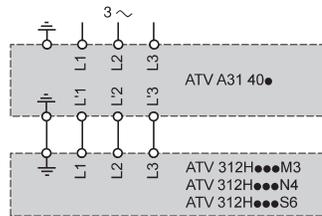
Functions:
page 60

Additional EMC input filters VW3 A31 40●

Single-phase power supply



Three-phase power supply

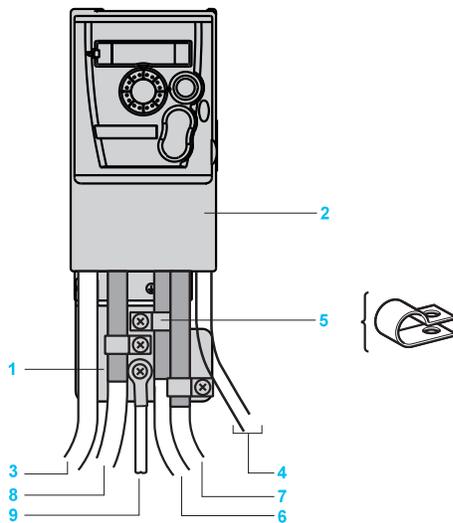


Connections ensuring conformity to EMC standards

Principle

- Earths between the drive, motor and cable shielding must have “high-frequency” equipotentiality.
- Use shielded cables with the shielding connected to earth throughout 360° at both ends for the motor cable, the braking resistor cable and the control-signal cables. Metal conduit or ducting can be used for part of the shielding length provided that there is no break in the continuity of the earth connection.
- Ensure maximum separation between the power supply cable and the motor cable.

Installation diagram



- 1 Steel plate to be mounted on the drive (earthed casing)
- 2 Altivar 312 drive
- 3 Unshielded power supply wires or cable
- 4 Unshielded wires or cable for the output of the fault relay contacts
- 5 Attach and earth the shielding of cables 6, 7 and 8 as close as possible to the drive:
 - Strip the cable to expose the shielding
 - Attach the cable to the plate 1, attaching the clamp on the stripped part of the shielding.
 The shielding must be clamped tightly enough to the metal sheet to ensure good contact. For cables 6, 7 and 8, the shielding must be connected to earth at both ends. The shielding must be continuous, and if intermediate terminals are used, they must be placed in EMC shielded metal boxes.
- 6 Shielded cable for connecting the motor
- 7 Shielded cable for connecting the control-signal wiring. For applications requiring several conductors, use cables with a small cross-section (0.5 mm²).
- 8 Shielded cable for connecting the braking resistor
- 9 PE cable (green-yellow)

Note: The HF equipotential earth connection between the drive, motor and cable shielding does not remove the need to connect the PE conductors (green-yellow) to the appropriate terminals on each device. If using an additional EMC input filter, it must be mounted under the drive and connected directly to the line supply via an unshielded cable. Link 3 on the drive is then via the filter output cable.

Operation on an IT system (isolated or impedance earthed neutral)

Use a permanent insulation monitor compatible with non-linear loads, such as the Schneider Electric XM200 (please consult our website www.schneider-electric.com or contact your Customer Care Center).

ATV 312H●●M2 and ATV 312H●●N4 drives have integrated EMC filters. For use on an IT system, these filters can be disconnected by removing their earth connection:

- For ATV 312H018M2...HU22M2 and H037N4...HU40N4 drives, remove a jumper to disconnect the filter.
- For ATV 312HU55N4...HD15N4 drives, move the wire with the cable tag to disconnect the filter.

Installation recommendations

Depending on the conditions in which the drive is to be used, its installation will require certain precautions and the use of appropriate accessories.

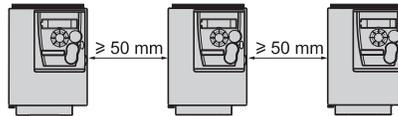
Install the unit vertically, at $\pm 10^\circ$:

- Do not place it close to heating elements
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit

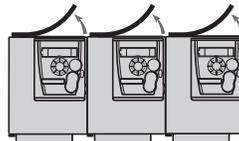


Mounting types

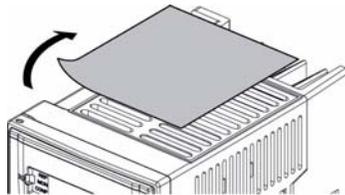
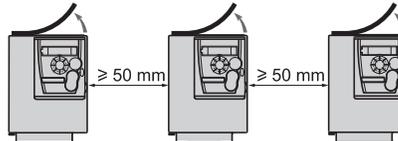
■ Type A mounting



■ Type B mounting



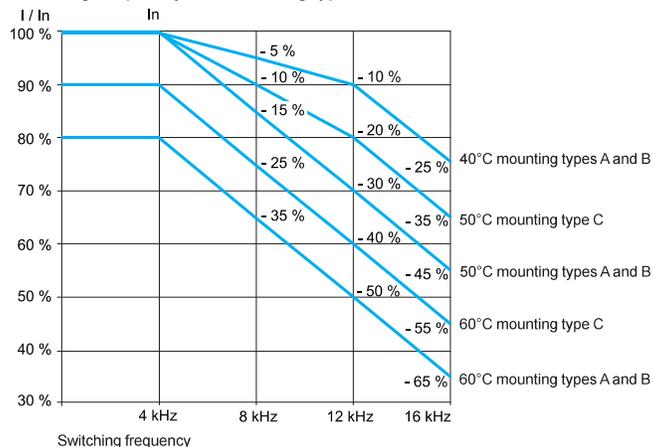
■ Type C mounting



Removing the protective cover

Removing the protective cover from the top of the drive (as shown opposite) changes the degree of protection to IP 20.

Derating curves for the nominal drive current (I_n) as a function of temperature, switching frequency and mounting type.



For intermediate temperatures (for example, 55°C), interpolate between 2 curves.