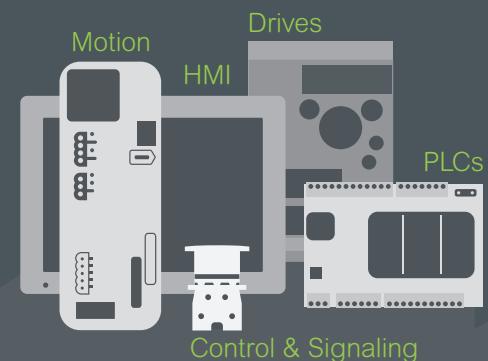




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# Easy Altivar 610

## Variable speed drives

Drives for pumps and fans from 0.75 to 250 kW



# Quick access to product information

## Get technical information about your product

**References**

**Modicon TM3**  
I/O expansion modules for Modicon controllers  
Analog I/O modules

Modicon TM3 analog input modules Number and type of channels	Input range	Resolution	Input terminals	Reference	Weight kg
2 voltageinput	-10...+10 VDC ±10 VDC 0...20 mA	—	16 bits or 20 bits (16 bits for analog inputs)	Screw Spring	0.115 0.154
4 voltageinput	-10...+10 VDC ±10 VDC 0...20 mA	—	12 bits or 11 bits or 8 bits 16 bits or 15 bits (12 bits for analog inputs)	Screw Spring	0.110 0.157
4 temperature input (2)	- Thermocouples (B, E, J, K, T, S, R, N, E, C), - RTD (Pt100, Pt1000), - Analog (0...20 mA)	—	16 bits or 15 bits or 12 bits or 8 bits (10 bits for analog inputs)	Screw Spring	0.110 0.157 0.100 0.090
4 differential temperature inputs	—	—	16 bits or 15 bits or 12 bits or 8 bits (10 bits for analog inputs)	Screw Spring	0.110 0.157 0.100 0.090
8 voltageinput	-10...+10 VDC	—	17 bits or 16 bits	Screw	0.110

TM3A01 TM3A04  
TM3T04 TM3A18

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Main

range of product Modicon TM3

product or component type Analog input module

range compatibility Modicon M251  
Modicon M221  
Modicon M241

Each commercial reference presented in a catalog contains a hyperlink.  
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- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
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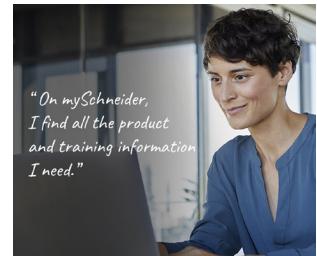
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# Altivar

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## Variable speed drives Easy Altivar 610 Market segments and domains



Water & wastewater



Oil & gas



Circulating pumps for building management

### Introduction to the offer: applications

The Easy Altivar 610 drive is an IP20 frequency inverter for three-phase asynchronous motors and synchronous motors (up to 250 kW/400 HP), specially designed for standard applications in the following market segments and domains:

#### ■ Market segments



Water & wastewater



Oil & gas

#### ■ Domains



Process & machine  
management



Building  
management

### Typical applications in the market segments

#### Water & wastewater

- Intake pump
- Booster pump
- Lifting pump
- Aeration blower

#### Oil & gas

- Circulating pump
- Drain pump
- Oil transfer pump

### Pump and fan applications in the domains

#### Process & machine management

- Air cooling system fan
- Circulating pump
- Cooling fan
- Draft fan
- Compressor
- Conveyor

#### Building management

- Fan
- Circulating pump

## Variable speed drives

### Easy Altivar 610

#### Offer presentation



#### Presentation of the offer

The Easy Altivar 610 offer covers motor power ratings from 0.75 to 250 kW/1 to 400 HP for three-phase voltages between 380 and 460 V.

Easy Altivar 610 drives can help improve equipment performance and reduce operating costs by optimizing energy consumption and user comfort.

A communication module is available for seamless integration into the main automation architectures.

Easy Altivar 610 drives feature various configurable I/O as standard to facilitate adaptation to specific applications.

They offer a plug & play solution whereby parameters are preset in the factory to the desired configuration to help save process control and operating time.

#### Rugged

Easy Altivar 610 drives are robust products designed to adapt to various levels of thermal stress and to harsh environments.

- Operating temperature (for continuous monitoring):
- Mounting in enclosure; mounted singly or side-by-side:
  - For ATV610U07N4...C16N4 and N4Z products: -15...+60 °C/+5...+140 °F, 45...60 °C/113...140 °F with derating
  - For size 7 products ATV610C22N4...C25N4: -10...+60 °C/+14...+140 °F, 40...60 °C/104...140 °F with derating
- Storage and transport temperature: -40...+70 °C /-104...+158 °F
- Operating altitude:
- 0...1,000 m/0...3,281 ft without derating
- 1,000...4,800m/3,281 ft...15,748 ft with derating of 1% per 100 m/328 ft
- Chemical class 3C3 conforming to IEC/EN 60721
- Dust pollution resistance class 3S3 conforming to IEC/EN 60721
- ATV610C22N4...C25N4 drives are certified as chemical class 3C2 and mechanical class 3S2 conforming to IEC/EN 60721
- Electronic cards with protective coating
- Protection to suit requirements:
  - IP20 for mounting in enclosure
  - IP40 on the top of the product (with top cover)
  - IP43 for remote display terminal

#### Electromagnetic compatibility (EMC)

Compliance with electromagnetic compatibility requirements has been incorporated into the design of the drive, which simplifies installation and provides an economical means of helping to ensure equipment meets CE marking requirements.

Easy Altivar 610 drives have a category C3 EMC filter (see page 4).

#### Installation and maintenance

Easy Altivar 610 drives are ergonomically designed to adapt to any type of installation:

- Products, systems, or integrated in iMCC
- IP20
- Easy installation of products and systems:
  - Cable entry equipped with Romex cable glands to maintain an EMC connection for the power and control cable
  - Color code for connections to the display terminal and control terminals
  - Asynchronous motors and synchronous motors (up to 160 kW/216 HP) drive in open loop for 0.1...500 Hz output frequency
- Lower maintenance costs:
  - Fans can be replaced in less than 5 minutes
  - No maintenance tool required
  - Limited number of parts

#### Green product

Easy Altivar 610 drives have been designed to have a smaller carbon footprint: the Green Premium product label, Schneider Electric's eco-mark, indicates compliance with international environmental standards such as:

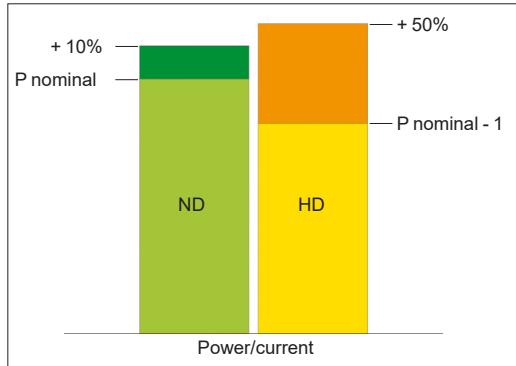
- RoHS according to European Directive 2011/65 and the Commission Delegated Directive (EU) 2015/863
- REACH according to EU regulation 1907/2006
- IEC 62635: The end-of-life instructions comply with the latest recycling rules, 85% of the product components can be recycled.



# Variable speed drives

## Easy Altivar 610

### Operating modes and integrated functions



Normal duty and Heavy duty modes

#### Normal duty and Heavy duty operating modes

The Easy Altivar 610 offer covers motor power ratings from 0.75...250 kW/1...400 HP for three-phase voltages between 380 and 460 V.

Three-phase power supply	Motor power	Degree of protection	Reference
380...460 V	0.75 kW...250 kW 1...400 HP	IP20	ATV610U07N4...C25N4

Easy Altivar 610 variable speed drives are designed for use in two operating modes that can optimize the drive nominal rating according to the system constraints.

These two modes are:

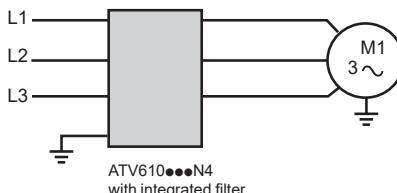
- Normal duty (ND): Dedicated mode for applications requiring a slight overload (up to 110% for 60 s or 120% for 20 s) with a motor power no higher than the drive nominal power
- Heavy duty (HD): Dedicated mode for applications requiring a significant overload (up to 150% for 60 s) with a motor power no higher than the drive nominal power derated by one rating

These two operating modes make the Easy Altivar 610 range suitable for use in variable and constant torque applications, such as pump, fan, compressor, and conveyor.

#### Integrated functions

##### Integrated DC chokes

Above 4 kW/5 HP, Easy Altivar 610 variable speed drives are supplied with an integrated DC choke to reduce harmonic distortion.



Easy Altivar 610 drive with integrated EMC filter

##### Integrated EMC filters

Easy Altivar 610 drives have integrated radio interference input filters in accordance with the EMC standard for variable speed electrical power drive "products" IEC/EN 61800-3, edition 2, category C3 in environment 1 or 2, and to comply with the European EMC (electromagnetic compatibility) directive.

Maximum length of shielded cable (1) according to IEC/EN 61800-3, category C3: 50 m/164 ft (for all ratings).

The integrated EMC filter creates leakage current to ground. It is possible to reduce the leakage current by removing the filter capacitors (see the diagrams on our website or refer to the [Installation Manual](#)). In this configuration, the product does not meet the EMC requirements according to standard IEC 61800-3.

##### Communication protocol

The Modbus serial link allows the connection of configuration and runtime tools via two integrated ports.

(1) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating. If motors are connected in parallel, it is the total length of all cables that should be taken into account.

# Variable speed drives

## Easy Altivar 610

Configuration and runtime tools, accessories, and options

### Configuration and runtime tools

Easy Altivar 610 drives can be supplied with a plain text display terminal (see [page 10](#)), offering the following functions:

- Drive control, adjustment, and configuration
- Display of current values (motor, I/O, etc.)
- Configuration storage and download
- Duplication of one drive configuration on another drive
- Remote use by means of appropriate accessories (see [page 11](#))
- Read/write values

### Accessories and options

#### Accessories

Easy Altivar 610 drives are designed to take complementary accessories to increase their functionality.

- Plain text display terminal:
- Kit for mounting on enclosure door (see [page 11](#))

#### Options

Easy Altivar 610 integrates a certain number of I/O as standard (see [page 12](#)).

The following options can be added:

- Modules:
  - Extended I/O module (see [page 12](#)):
    - 2 analog inputs configurable as voltage, current, or probe
    - 6 discrete inputs
    - 2 discrete outputs
  - Extended relay module (see [page 12](#)):
    - 3 relay NO discrete outputs
  - Communication module (see [page 14](#)):
    - Profibus DP V1 bus
- Passive filters (see [page 15](#))
- Output filters:
  - dv/dt filters (see [page 16](#))

#### Motor starters

Schneider Electric offers combinations of circuit breakers and contactors to be able to use Easy Altivar 610 drives in optimum conditions (see [page 17](#)).



Extended I/O module



## References (continued)

## Variable speed drives

### Easy Altivar 610

Supply voltage 380...460 V 50/60Hz with keypad

ATV610C11N4\_JP\_Default



ATV610C11N4

ATV610\_C22N4\_Default



ATV610C22N4

### IP20 three-phase 380...460 V drives with integrated category C3 EMC filter (continued)

Motor Nominal power indicated on rating plate (1)	Power supply to the power section						Easy Altivar 610		
	Max. input current (2)		Apparent power	Max. prospective line Isc	Maximum continuous current (1)	Maximum transient current for 60 s	Reference	Weight	
	380 V	460 V	460 V						
<i>ND: Normal duty (3)</i>									
<i>HD: Heavy duty (4)</i>									
kW	HP	A	A	kVA	kA	A	A	kg/lb	
ND 45	60	92.9	82.7	65.9	22	88	97	ATV610D45N4	25.5/
<i>HD</i> 37	50	80.5	69.6	55.4	22	74.5	112		56.2
ND 55	75	111.5	99.7	79.5	22	120	132	ATV610D55N4	53/
<i>HD</i> 45	60	95.9	84	66.9	22	88	132		117
ND 75	100	147.9	130.2	103.7	22	145	160	ATV610D75N4	53/
<i>HD</i> 55	75	115.8	101.7	81	22	106	159		117
ND 90	125	177.8	159.9	127.4	50	173	190	ATV610D90N4	53/
<i>HD</i> 75	100	155.8	138.1	110	50	145	218		117
ND 110	150	201	175.7	140	50	211	232	ATV610C11N4	85.5/
<i>HD</i> 90	125	170	149.1	118.8	50	173	260		188.5
ND 132	200	237	203.8	162.4	50	250	275	ATV610C13N4	85.5/
<i>HD</i> 110	150	201	174.2	138.7	50	211	317		188.5
ND 160	250	284	249.5	198.8	50	302	332	ATV610C16N4	85.5/
<i>HD</i> 132	200	237	205.9	164	50	250	375		188.5
ND 220	350	397	341	272	50	427	470	ATV610C22N4	173/
<i>HD</i> 160	250	296	258	206	50	302	453		381
ND 250	400	451	383	305	50	481	529	ATV610C25N4	173/
<i>HD</i> 200	300	365	313	249	50	370	555		381

(1) These values are given for a nominal switching frequency of 4 kHz up to **ATV610D45N4**, or 2.5 kHz for **ATV610D55N4...C25N4** for use in continuous operation.

The switching frequency is adjustable from 2...12 kHz up to **ATV610D45N4**, or from 1...8 kHz for **ATV610D55N4...C25N4**.

Above 2.5 or 4 kHz (depending on the rating), the drive will automatically reduce the switching frequency in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current (see the derating curves in the *Installation Manual*).

(2) Typical value for the indicated motor power and for the maximum prospective line Isc.

(3) Values given for applications requiring a slight overload (up to 110% for 60 s or 120% for 20 s).

(4) Values given for applications requiring a slight overload (up to 150% for 60 s).



# Variable speed drives

Easy Altivar 610  
Mounting accessories

PF140289



VW3A9704

### Accessories for mounting of variable speed drives

#### IP conformity kit

For use with variable speed drives	IP rating	Power		Reference
		kW	HP	
ATV610C11N4...C16N4	IP21	110...160	149...216	<a href="#">VW3A9704</a>
ATV610C11N4Z...C16N4Z	IP21			
ATV610C22N4...C25N4	IP21	220...250	350...400	<a href="#">VW3A9704</a>

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Plain text display terminal mounted on the front of an ATV610U07N4 drive

#### Plain text display terminal

The plain text display terminal is supplied with ATV610●●●N4 drives. It can also be ordered as a spare part.

This terminal can be:

- Connected and mounted on the front of the drive
- Connected and mounted on an enclosure door using a remote-mounting accessory

This terminal is used to:

- Control, adjust, and configure the drive
- Display current values (motor, I/O, and process data)
- Store and download configurations (several configuration files can be stored in the memory)
- Duplicate the configuration of one powered-up drive on another powered-up drive

Other features:

- Displaying the device - via Web server and password; a display terminal is required to log in to the Web server for the first time
- Realtime clock providing data acquisition and event time-stamping functions
- 2 lines
- Languages (Chinese, English, French, German, Italian, Spanish)
- White backlit LCD screen
- Operating range: -15...50 °C/+5...122 °F
- IP21 protection
- Removable, easy plug-in with RJ45 port



Plain text display terminal

#### Description

The front of the display terminal comprises:

- 1 LCD backlight screen
- 2 OK button: saves the current value (ENT)
- 3 RUN button: local control of motor run command
- 4 STOP/RESET button: local control of motor stop command/clearing detected errors
- 5 ESC button: aborts a value, parameter, or menu to return to the previous selection
- 6 Home: root menu
- 7 Turn ±: navigation dial, increases or decreases the value, goes to the next or previous line

#### References

Description	Reference	Weight kg/lb
Plain text display terminal	VW3A1113	0.200/ 0.441



PF142222  
 Remote mounting kit for mounting plain text display terminal on enclosure door (front panel)



PF142251  
 Remote mounting kit for mounting plain text display terminal on enclosure door (rear panel)

### Door mounting kit for plain text display terminal

Remote mounting kit for mounting on an enclosure door with IP43 degree of protection as standard

#### Description

The kit comprises:

- Tightening tool (also sold separately under the reference ZB5AZ905)
- 1 Mounting plate
- 2 RJ45 port for the plain text display terminal
- 3 Seal
- 4 Fixing nut
- 5 RJ45 port for connecting the remote-mounting cordset

Cordsets should be ordered separately depending on the length required.

Drilling a hole with a standard Ø 22 mm tool, as used for a pushbutton, allows the unit to be mounted without needing a cut-out in the enclosure (Ø 22.5 mm/Ø 0.89 in. drill hole).

An anti-rotation function is provided that works as follows: when the kit is locked tightly on the panel by the nut, the gasket on the back cannot rotate.

#### References

Description	Length m/ ft	IP degree of protection	Reference	Weight kg/ lb
Basic keypad door mounting kit Order with remote-mounting cordset VW3A1104R●●	—	43	VW3A1114	—
Tightening tool for remote mounting kit	—	—	ZB5AZ905	0.016/ 0.035
Remote-mounting cordset equipped with 2 RJ45 connectors	1/ 3.28	—	VW3A1104R10	0.050/ 0.110
	3/ 9.84	—	VW3A1104R30	0.150/ 0.331
	5/ 16.40	—	VW3A1104R50	0.250/ 0.551
	10/ 32.81	—	VW3A1104R100	0.500/ 1.102



### Integrated I/O and I/O option modules

#### Presentation

Easy Altivar 610 integrates the following types of I/O as standard:

- 3 analog inputs 0...10 V/0...20 mA (software-configurable as voltage, current, temperature probe, and water level sensor)
- 6 digital inputs 24 V DC (2 of which can be programmed as pulse inputs)
- 2 analog outputs 0...10 V/0...20 mA (software-configurable as voltage or current)
- 3 relay outputs (configurable relay logic)

By installing I/O option modules, Easy Altivar 610 drives can meet the needs of applications that manage additional sensors or specific sensors.

Two I/O option modules are available:

- Extended I/O module
- Extended relay module

These I/O modules and the communication modules insert into slot A **1** on Easy Altivar 610 drives.

#### Extended I/O module

- 2 differential analog inputs configurable via software as current (0-20 mA/4-20 mA) or probe (PTC, PT100, or 2-wire or 3-wire PT1000) inputs
- 14-bit resolution
- 6 x 24 V --- positive or negative discrete inputs
- Sampling: 1 ms max.
- 2 assignable discrete outputs

#### Extended relay module

- 3 relay outputs with NO contacts
- 1 fixed screw terminal block



Extended I/O module VW3A3203



Extended relay module VW3A3204

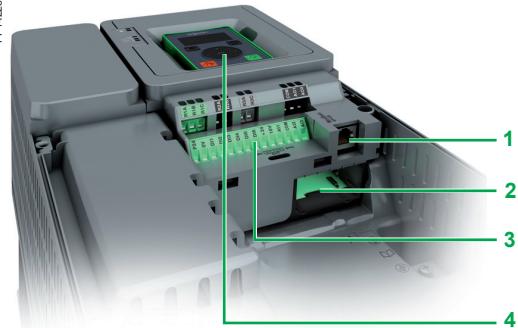
Description	I/O type				Reference	Weight kg/lb
	Discrete inputs	Discrete outputs	Analog inputs	Relay outputs		
Extended I/O module	6	2	2 (1)	—	VW3A3203	—
Extended relay module	—	—	—	3 (2)	VW3A3204	—

(1) Differential analog inputs configurable via software as current (0-20 mA/4-20 mA) or probe (PTC, PT100, or 2-wire or 3-wire PT1000) inputs.

When configured as PTC probe inputs, they must never be used to protect an ATEX motor in applications in explosive atmospheres. Please refer to the [Altivar Process ATV600, ATV900, and Modular ATEX guide](#).

(2) NO contacts.

FF142250



### Integrated ports and communication protocol

#### Presentation

Easy Altivar 610 drives have two built-in RJ45 communication ports as standard:

- One port dedicated to field network operation for exchanging data with other devices via the Modbus serial link protocol **1**
- A second dedicated port for the multidrop connection of the following HMIs and configuration tools **4**:
- the plain text terminal
- a Harmony industrial HMI terminal

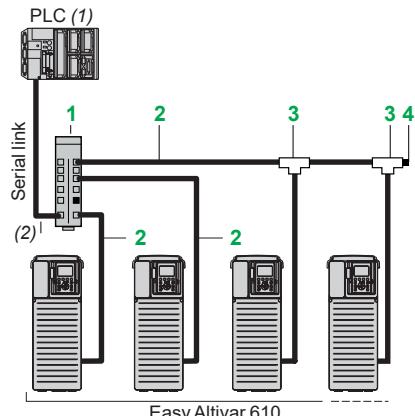
Easy Altivar 610 drives integrate the Modbus serial link communication protocol as standard. The detailed specifications for serial communication ports and the Modbus protocol are available on [our website](#).

#### Description

- 1** RJ45 serial port
- 2** Slot A for extended I/O or communication modules
- 3** Fixed screw terminal blocks for 24 V --- power supply and integrated I/O
- 4** RJ45 serial link for HMI (remote plain text terminal, Magelis terminal, etc.)

Easy Altivar 610 drives can take one communication module, or digital and analog I/O option module, or relay output module in slot A.

**Note:** The user manuals and description files (gsd) for devices on the communication buses and networks are available on [our website](#).



Example of serial link architecture

### Integrated serial port connection accessories

Description	Item	Length m/ ft	Unit reference	Weight kg/ lb
<b>Splitter box</b> 10 RJ45 connectors and 1 screw terminal block	<b>1</b>	—	<a href="#">LU9GC3</a>	0.500/ 1.102
<b>Modbus T-junction boxes</b> With 0.3 m/0.98 ft integrated cable	<b>3</b>	0.3/ 0.98	<a href="#">VW3A8306TF03</a>	0.190/ 0.419
With 1 m/3.28 ft integrated cable	<b>3</b>	1/ 3.28	<a href="#">VW3A8306TF10</a>	0.210/ 0.463
<b>Modbus line terminator (3)</b> For RJ45 connector R = 120 Ω C = 1 nF	<b>4</b>	—	<a href="#">VW3A8306RC</a>	0.010/ 0.022
<b>Cordsets</b> equipped with 2 RJ45 connectors	<b>2</b>	0.3/ 0.98	<a href="#">VW3A8306R03</a>	0.025/ 0.055
		1/ 3.28	<a href="#">VW3A8306R10</a>	0.060/ 0.132
		3/ 9.84	<a href="#">VW3A8306R30</a>	0.130/ 0.287

(1) Please refer to [our website](#).

(2) Cable dependent on the type of controller or PLC; please refer to the corresponding catalog on [our website](#).

(3) Order in lots of 2.

PF06130



PROFIBUS DP communication module VW3A3607

### PROFIBUS DP communication module

#### Presentation and functions

Easy Altivar 610 drives can also be connected to other industrial communication buses and networks using the communication module available as an option. This communication module is supplied in "cassette" format for ease of mounting/removal.

Dedicated communication module: PROFIBUS DP.

The PROFIBUS DP V1 module also supports the Profidrive and CiA402 profiles.

It is possible to maintain communication using a separate power supply for the control and power sections. Monitoring and diagnostics are possible via the network even if there is no power supply to the power section.

All drive functions can be accessed via the various communication networks:

- Configuration
- Adjustment
- Control
- Monitoring

Easy Altivar 610 drives offer a high degree of interfacing flexibility with the possibility of assigning, by configuration, the different control sources (I/O, communication networks, and HMI terminal) to control functions in order to meet the requirements of complex applications.

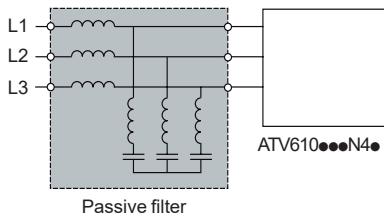
Communication is monitored according to the specific criteria for each protocol. However, regardless of the protocol, it is possible to configure how the drive responds to a detected communication interruption as follows:

- Define the type of stop when a communication interruption is detected
- Maintain the last command received
- Ignore the detected communication interruption

#### References

Description	Reference	Weight kg/ lb
<b>PROFIBUS DP communication module</b> Port: 1x 9-way female SUB-D connector Conforming to PROFIBUS DP V1 Profiles supported: ■ CiA 402 drive ■ Profidrive Offers several message handling modes based on DP V1	VW3A3607	0.140/ 0.309
<b>IP20 straight connectors (1)</b> for Profibus module (SUB-D connection)	LU9AD7	-

(1) Only straight connectors are compatible with Easy Altivar 610 drives.



Easy Altivar 610 drive with passive filter

### Presentation

Passive filters are used to obtain total harmonic distortion of less than 10%. Reactive power increases at no load or low load. To help reduce this reactive power, the filter capacitors can be disconnected (see the diagrams on [our website](#)). Passive filters provide IP20 protection.

### Applications

Reduction of current harmonics in order to use drives in the first environment (restricted distribution, domestic applications).

### Passive filters: 400 V 50 Hz three-phase supply

Motor rating	Corresponding Easy Altivar 610 drives	Filter Nominal input current	Quantity required per drive	Reference	Weight
					kg/ lb
<b>THDi &lt; 10%</b>					
0.75	1	ATV610U07N4•	1.7	1	VW3A46098A
1.5	2	ATV610U15N4•	3.4	1	VW3A46099A
2.2	3	ATV610U22N4•	6.2	1	VW3A46100A
3	—	ATV610U30N4•			
4	5	ATV610U40N4•	10	1	VW3A46101A
5.5	7.5	ATV610U55N4•	13	1	VW3A46102A
7.5	10	ATV610U75N4•	16	1	VW3A46103A
11	15	ATV610D11N4•	24	1	VW3A46104A
15	20	ATV610D15N4•	32	1	VW3A46105A
18.5	25	ATV610D18N4•	38	1	VW3A46106A
22	30	ATV610D22N4•	45	1	VW3A46107A
30	40	ATV610D30N4•	60	1	VW3A46108A
37	50	ATV610D37N4•	75	1	VW3A46109A
45	60	ATV610D45N4•	90	1	VW3A46110A
55	75	ATV610D55N4•	110	1	VW3A46111A
75	100	ATV610D75N4•	150	1	VW3A46112A
90	125	ATV610D90N4•	180	1	VW3A46113A
110	149	ATV610C11N4•	210	1	VW3A46114A
132	178	ATV610C13N4•	260	1	VW3A46115A
160	216	ATV610C16N4•	320	1	VW3A46116A
220	350	ATV610C22N4	380	1	VW3A46118A
250	400	ATV610C25N4	433		157/ 346

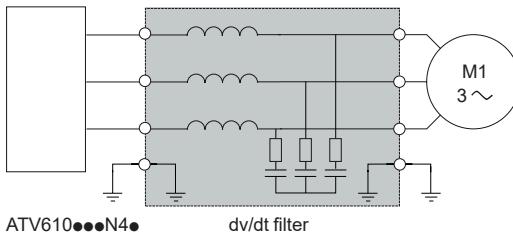


Passive filter VW3A46106A

### **Presentation**

#### **Easy Altivar 610 drives maximum motor cable lengths without dv/dt filters**

Easy Altivar 610 drive	Maximum cable length	Shielded cables	Unshielded cables
ATV610U07N4●...U55N4●	100 m/328 ft	150 m/492 ft	
ATV610U75N4●...D45N4●	100 m/328 ft	200 m/656 ft	
ATV610D55N4●...C16N4●	150 m/492 ft	200 m/656 ft	
ATV610C22N4, ATV610C25N4			



Easy Altivar 610 drive with dv/dt filter

To limit the impact of dv/dt filters and overvoltages at the motor side, it is recommended, for cables longer than 50 m/164 ft, that you check the motor insulation type and add an output filter if necessary.

Output filters are used to limit dv/dt at the motor terminals.

They are also used to:

- Limit overvoltages at the motor terminals to:  
□ 1,000 V at 400 V  $\sim$  (rms value)
- Filter interference caused by opening a contactor placed between the filter and the motor
- Reduce the motor ground leakage current

The performance of dv/dt filters will be affected if the maximum cable lengths are 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 dv/dt filters may overheat.

#### **dv/dt filters**

Corresponding drives	Maximum length of motor cable			Degree of protection	Nominal current	Unit reference	Weight
	Maximum switching frequency (1)	Shielded cable (2)	Unshielded cable (2)				
		kHz	m/ft				
<b>Three-phase supply voltage: 380...460 V</b>							
ATV610U07N4●...U22N4●	4	150/492	200/656	20	6	VW3A5301	11.000/ 24.251
ATV610U30N4●...U55N4●	4	150/492	200/656	20	15	VW3A5302	12.000/ 26.455
ATV610U75N4●...D15N4●	4	250/820	300/984	20	25	VW3A5303	12.000/ 26.455
ATV610D18N4●...D22N4●	4	250/820	300/984	20	50	VW3A5304	18.000/ 39.683
ATV610D30N4●...D45N4●	4	250/820	300/984	20	95	VW3A5305	19.000/ 41.888
ATV610D55N4●...D90N4●	2.5	300/984	350/1,148	00	180	VW3A5306	22.000/ 48.502
ATV610C11N4●...C16N4●	2.5	300/984	350/1,148	00	305	VW3A5307	40.000/ 88.185
ATV610C22N4	2.5	250/820	350/1,148	00	427	VW3A5106	58.000/ 127.868
ATV610C25N4	2.5	200/656	350/1,148	00	481	VW3A5107	93.000/ 205.23

(1) The filters are designed to operate in a switching frequency range of between 2 and 8 kHz.

(2) Values given depend on the nominal switching frequency of the drive. This frequency depends on the drive rating. These cable lengths are given as examples only as they can vary depending on the application. They correspond to motors conforming to IEC 6034-25 and NEMA MG1/31.2006.

## Combinations for customer assembly



### Applications

Circuit breaker/contactor/drive combinations help to ensure continuity of service in an installation. The type of circuit breaker/contactor coordination selected can help reduce maintenance costs in the event of a motor short-circuit on the drive input by minimizing the time required to make the necessary repairs and the cost of replacement equipment. The suggested combinations provide coordination according to the drive rating.

The drive controls the motor, provides a monitoring function against short-circuits between the drive and the motor, and helps protect the motor cable against overloads. Overload monitoring is provided by the drive's motor thermal monitoring function if this has been enabled. Otherwise, an external monitoring device such as a probe or thermal overload relay should be provided. The circuit breaker helps protect the drive's power cables against short-circuits.

### IEC standard motor starters

Motor Power (1)	Drive reference	Circuit breaker		Ics (1)	Irm	Line contactor reference (2)
		Global reference	Magnetic protection rating			
kW	HP	A	kA	A		
<b>Three-phase supply voltage: 380...460 V 50/60 Hz</b>						
0,75	1	ATV610U07N4	GV2L08	4	5	51
1,5	2	ATV610U15N4	GV2L10	6,3	5	78
2,2	3	ATV610U22N4	GV2L14	10	5	138
3	—	ATV610U30N4	GV2L16	14	5	170
4	5	ATV610U40N4	GV2L16	14	5	170
5,5	7,5	ATV610U55N4	GV2L16	14	22	170
7,5	10	ATV610U75N4•	GV2L20	18	22	223
11	15	ATV610D11N4•	GV2L22	25	22	327
15	20	ATV610D15N4•	GV3L32	32	22	448
18,5	25	ATV610D18N4•	GV3L40	40	22	560
22	30	ATV610D22N4•	GV3L50	50	22	700
30	40	ATV610D30N4•	GV3L65	65	22	910
37	50	ATV610D37N4•	GV4L80	80	22	480
45	60	ATV610D45N4•	GV4L115	115	22	690
55	75	ATV610D55N4•	NSX160-MA150	150	22	1350
75	100	ATV610D75N4•	NSX160-MA150	150	22	1350
90	125	ATV610D90N4•	NSX250-MA220	220	50	1980
110	150	ATV610C11N4•	NSX250-MA220	220	50	1980
132	200	ATV610C13N4•	NSX400-1.3M320	320	50	4800
160	250	ATV610C16N4•	NSX400-1.3M320	320	50	4800
220	350	ATV610C22N4	NSX630-1.3M500	500	50	6500
250	400	ATV610C25N4	NSX630-1.3M500	500	50	6500

(1) At 400/415 V.

(2) Replace •• with the control voltage code indicated in the table below:

Basic reference	Power supply Volts ~	Control voltage code		
		380	415	440
LC1D09...LC1D150	50/60 Hz	Q7	N7	R7
LC1D80...LC1D115	50 Hz	Q5	N5	R5
	60 Hz	Q6	—	R6

For other voltages available between 24 V and 660 V, or a DC control circuit, please contact our Customer Care Center.

Coordination table between drives and fuses

Variable speed drives				Semi-conductor fuses		
Line current	Isc	Reference	Power	Nominal current	Type	
380 V	460 V					
			kA	kW	A	
3.1	2.6	5	ATV610U07N4•	0.75	8	gR
5.7	4.8	5	ATV610U15N4•	1.5	10	gR
7.8	6.5	5	ATV610U22N4•	2.2	12	gR
10.1	8.4	5	ATV610U30N4•	3	20	gR
8.8	7.9	5	ATV610U40N4•	4	16	gR
11.6	10.5	22	ATV610U55N4•	5.5	20	gR
14.7	12.8	22	ATV610U75N4•	7.5	25	gR
22	19.6	22	ATV610D11N4•	11	40	gR
29.4	26.0	22	ATV610D15N4•	15	50	gR
37.2	33.5	22	ATV610D18N4•	18.5	63	gR
41.9	36.2	22	ATV610D22N4•	22	80	gR
62.5	55.8	22	ATV610D30N4•	30	100	gR
76.6	68.3	22	ATV610D37N4•	37	125	gR
92.9	82.7	22	ATV610D45N4•	45	160	gR
111.5	99.7	22	ATV610D55N4•	55	160	gR
147.9	130.2	22	ATV610D75N4•	75	250	gR
177.8	159.9	50	ATV610D90N4•	90	250	gR
200	175.7	50	ATV610C11N4•	110	315	aR
236	203.8	50	ATV610C13N4•	132	350	aR
283	249.5	50	ATV610C16N4•	160	400	aR
397	341	50	ATV610C22N4	220	630	aR
451	383	50	ATV610C25N4	250	700	aR



## Variable speed drives 380...460 V IP20

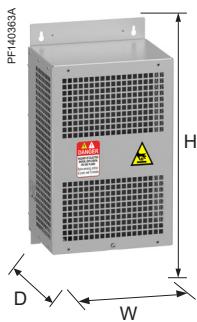
## Overall dimensions

Reference	W x H x D
	mm      in.
ATV610U07N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U15N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U22N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U30N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U40N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U55N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610U75N4●	145 x 297 x 203      5.71 x 11.69 x 7.99
ATV610D11N4●	171 x 360 x 233      6.73 x 14.17 x 9.17
ATV610D15N4●	171 x 360 x 233      6.73 x 14.17 x 9.17
ATV610D18N4●	211 x 495 x 232      8.31 x 19.50 x 9.13
ATV610D22N4●	211 x 495 x 232      8.31 x 19.50 x 9.13
ATV610D30N4●	226 x 613 x 271      8.90 x 24.10 x 10.67
ATV610D37N4●	226 x 613 x 271      8.90 x 24.10 x 10.67
ATV610D45N4●	226 x 613 x 271      8.90 x 24.10 x 10.67
ATV610D55N4●	290 x 762 x 323      11.42 x 30 x 12.72
ATV610D75N4●	290 x 762 x 323      11.42 x 30 x 12.72
ATV610D90N4●	290 x 762 x 323      11.42 x 30 x 12.72
ATV610C11N4●	300 x 850 x 375      11.81 x 33.46 x 14.76
	With option VW3A9704      300 x 1156 x 375      11.81 x 45.51 x 14.76
ATV610C13N4●	300 x 850 x 375      11.81 x 33.46 x 14.76
	With option VW3A9704      300 x 1156 x 375      11.81 x 45.51 x 14.76
ATV610C16N4●	300 x 850 x 375      11.81 x 33.46 x 14.76
	With option VW3A9704      300 x 1156 x 375      11.81 x 45.51 x 14.76
ATV610C22N4	440 x 1196 x 379      17.32 x 47.09 x 14.92
	With option VW3A9707      446 x 1579 x 379      17.56 x 62.17 x 14.92
ATV610C25N4	440 x 1196 x 379      17.32 x 47.09 x 14.92
	With option VW3A9707      446 x 1579 x 379      17.56 x 62.17 x 14.92

# Variable speed drives

## Easy Altivar 610

Options: dv/dt filters and passive filters

**dv/dt filters****Overall dimensions**

Reference	W x H x D	
	mm	in.
VW3A5301	295 x 535 x 215	11.61 x 21.06 x 8.47
VW3A5302	295 x 535 x 215	11.61 x 21.06 x 8.47
VW3A5303	295 x 535 x 215	11.61 x 21.06 x 8.47
VW3A5304	295 x 560 x 245	11.61 x 22.05 x 9.65
VW3A5305	295 x 610 x 245	11.61 x 24.02 x 9.65
VW3A5306	380 x 235 x 350	14.96 x 9.25 x 13.78
VW3A5307	360 x 420 x 270	14.17 x 16.54 x 10.63
VW3A5106	245 x 250 x 200	9.65 x 9.84 x 7.87
VW3A5107	320 x 250 x 220	12.60 x 9.84 x 8.66

**Passive filters****Overall dimensions**

Reference	W x H x D	
	mm	in.
VW3A46098A	160 x 360 x 185	6.3 x 14.17 x 7.28
VW3A46099A	160 x 360 x 185	6.3 x 14.17 x 7.28
VW3A46100A	180 x 425 x 206	7.09 x 16.73 x 8.11
VW3A46101A	185 x 390 x 190	7.28 x 15.35 x 7.48
VW3A46102A	185 x 390 x 190	7.28 x 15.35 x 7.48
VW3A46103A	185 x 390 x 190	7.28 x 15.35 x 7.48
VW3A46104A	250 x 455 x 230	9.84 x 17.91 x 9.06
VW3A46105A	250 x 455 x 230	9.84 x 17.91 x 9.06
VW3A46106A	250 x 455 x 230	9.84 x 17.91 x 9.06
VW3A46107A	250 x 455 x 230	9.84 x 17.91 x 9.06
VW3A46108A	280 x 520 x 248	11.02 x 20.47 x 9.76
VW3A46109A	280 x 520 x 248	11.02 x 20.47 x 9.76
VW3A46110A	280 x 520 x 248	11.02 x 20.47 x 9.76
VW3A46111A	280 x 520 x 248	11.02 x 20.47 x 9.76
VW3A46112A	450 x 700 x 385	17.72 x 27.56 x 15.16
VW3A46113A	450 x 700 x 385	17.72 x 27.56 x 15.16
VW3A46114A	450 x 700 x 385	17.72 x 27.56 x 15.16
VW3A46115A	450 x 700 x 385	17.72 x 27.56 x 15.16
VW3A46116A	450 x 700 x 385	17.72 x 27.56 x 15.16
VW3A46118A	650 x 505 x 1,120	25.59 x 19.88 x 44.09

<b>A</b>	
ATV610C11N4	7
	19
ATV610C11N4Z	8
	20
ATV610C13N4	7
	19
ATV610C13N4Z	8
	20
ATV610C16N4	7
	19
ATV610C16N4Z	8
	20
ATV610C22N4	7
	19
ATV610C25N4	7
	19
ATV610D11N4	6
	19
ATV610D11N4Z	8
	20
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ATV610D15N4Z	8
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GV4L115	17
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LC1D09R7	17
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LC1D115Q6	17
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LC1D150Q7	17
LC1D150R7	17
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LC1D40AQ7	17
LC1D40AR7	17
LC1D50AN7	17
LC1D50AQ7	17
LC1D50AR7	17
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VW3A1104R100	11
VW3A1104R30	11
VW3A1104R50	11
VW3A1113	10
VW3A1114	11
VW3A3203	12
VW3A3204	12
VW3A3607	14
VW3A46098A	15
VW3A46099A	15
VW3A46100A	15
VW3A46101A	15
VW3A46102A	15
VW3A46103A	15
VW3A46104A	15
VW3A46105A	15
VW3A46106A	15
VW3A46107A	15
VW3A46108A	15
VW3A46109A	15
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VW3A46111A	15
VW3A46112A	15
VW3A46113A	15
VW3A46114A	15
<b>Z</b>	
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