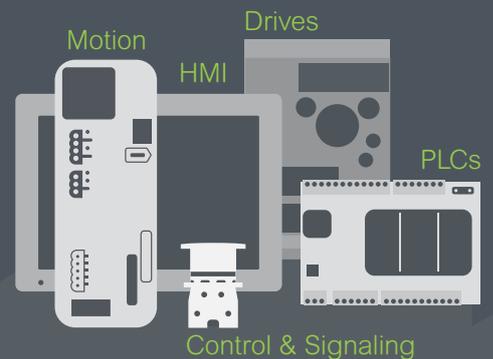




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# Easy Altivar 610

## Variable speed drives

Drives for pumps and fans from 0.75 to 160 kW

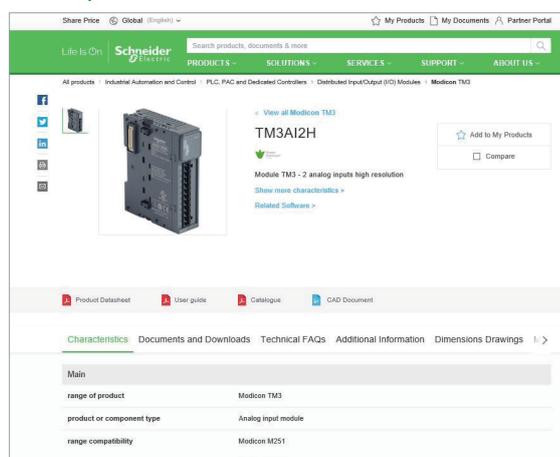
# Quick access to product information

## Get technical information about your product

References

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

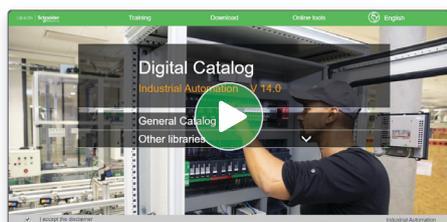
References	Modicon TM3 analog input modules	Number and type of channels	Input range	Output range	Resolution	Input terminal (terminal pitch)	Reference	Weight (kg)
TM3AI2H	TM3AI2H	2 voltage/current inputs	-10...+10 VDC 0...+10 VDC 0...20 mA, 4...20 mA	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2H01	0,124
		4 voltage/current inputs	-10...+10 VDC 0...+10 VDC 0...20 mA, 4...20 mA	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2H02	0,124
TM3AI2C	TM3AI2C	4 thermocouples (T) or temperature inputs (C)	Thermocouples (T): I, J, K, S, E, T, N, E, C, I Temperature inputs (C): RTD (Pt100, Ni1000, Pt1000, Pt100)	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2C01	0,124
		4 thermocouples (T) or temperature inputs (C)	Thermocouples (T): I, J, K, S, E, T, N, E, C, I Temperature inputs (C): RTD (Pt100, Ni1000, Pt1000, Pt100)	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2C02	0,124
TM3AI2D	TM3AI2D	4 thermocouples (T) or temperature inputs (C)	Thermocouples (T): I, J, K, S, E, T, N, E, C, I Temperature inputs (C): RTD (Pt100, Ni1000, Pt1000, Pt100)	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2D01	0,124
		4 thermocouples (T) or temperature inputs (C)	Thermocouples (T): I, J, K, S, E, T, N, E, C, I Temperature inputs (C): RTD (Pt100, Ni1000, Pt1000, Pt100)	10 000 or 10 000 + sign	10 bits	50mm, 2	TM3AI2D02	0,124



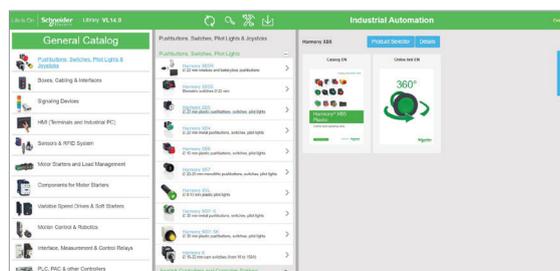
Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

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# Altivar

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Variable speed drives and soft starters

**Altivar** variable speed drives and soft starters deliver top performance in motor control applications across machines, processes, and buildings. With built-in intelligence, these smart connected devices gather and share data to improve operational efficiency, safety, and reliability.

## Explore our offer

- [Altivar](#) Process
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- [Altivar](#) Soft Starters

# General contents

## Easy Altivar 610 variable speed drives

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Water & wastewater

#### Introduction to the offer: applications

The Easy Altivar 610 drive is an IP20 frequency inverter for three-phase asynchronous motors, specially designed for standard applications in the following market segments and domains:

#### Market segments



Water & wastewater



Oil & gas

#### Domains



Process & machine management



Building management



Oil & gas

#### 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



Circulating pumps for building management



ATV610U07N4...U75N4



ATV610D11N4...D15N4



ATV610D18N4...D22N4



ATV610D30N4...D45N4



ATV610D55N4...D90N4



ATV610C11N4...C16N4



### Presentation of the offer

The Easy Altivar 610 offer covers motor power ratings from 0.75 to 160 kW/1.04 to 222 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: -15...+60 °C/+5...+140 °F, 45...60 °C/113...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
  - Mechanical class 3S3 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 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 operating modes

The Easy Altivar 610 offer covers motor power ratings from 0.75...160 kW/1...216 HP for three-phase voltages between 380 and 460 V.

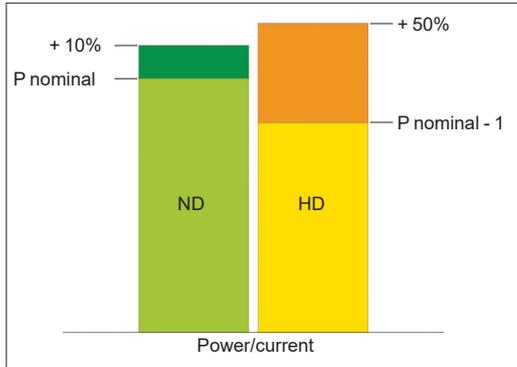
Three-phase power supply	Motor power	Degree of protection	Reference
380...460 V	0.75 kW...160 kW 1...216 HP	IP20	ATV610U07N4...C16N4

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.



Normal duty and Heavy duty modes

#### 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.

##### 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.

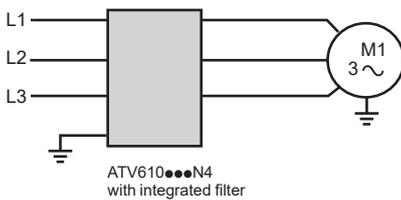
Maximum length of shielded cable (1) according to IEC/EN 61800-3, category C3: 50 m/164 ft (for all ratings).

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.



Easy Altivar 610 drive with integrated EMC filter

# 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 9](#)), 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 10](#))
- 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 10](#))

#### Options

Easy Altivar 610 integrates a certain number of I/O as standard (see [page 11](#)).

The following options can be added:

- Modules:
  - Extended I/O module (see [page 11](#)):
    - 2 analog inputs configurable as voltage, current, or probe
    - 6 discrete inputs
    - 2 discrete outputs
  - Extended relay module (see [page 11](#)):
    - 3 relay NO discrete outputs
  - Communication module (see [page 13](#)):
    - Profibus DP V1 bus
- Passive filters (see [page 14](#))
- Output filters:
  - dv/dt filters (see [page 15](#))

#### 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 16](#)).

PF140391C



Extended I/O module

# Variable speed drives

## Easy Altivar 610

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



ATV610U07N4



ATV610D18N4



ATV610C11N4

IP20 three-phase 380...460 V drives with integrated category C3 EMC filter										
Motor			Power supply to the power section				Easy Altivar 610			
Nominal power indicated on rating plate (1)	kW	HP	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						
ND: Normal duty (3)										
HD: Heavy duty (4)										
	kW	HP	A	A	kVA	kA	A	A		kg/lb
ND	0.75	1	3.1	2.6	2.1	5	2.2	2.4	ATV610U07N4	3.135/6.911
HD	0.37	0.5	1.7	1.4	1.1	5	1.5	2.3		
ND	1.5	2	5.7	4.8	3.8	5	4.0	4.4	ATV610U15N4	3.135/6.911
HD	0.75	1	3.1	2.6	2.1	5	2.2	3.3		
ND	2.2	3	7.8	6.5	5.2	5	5.6	6.2	ATV610U22N4	3.135/6.911
HD	1.5	2	5.6	4.6	3.7	5	4.0	6.0		
ND	3	–	10.1	8.4	6.7	5	7.2	7.9	ATV610U30N4	3.135/6.911
HD	2.2	3	7.6	6.4	5.1	5	5.6	8.4		
ND	4	5	8.8	7.9	6.3	5	9.3	10.2	ATV610U40N4	4.045/8.918
HD	3	–	7.2	6.2	4.9	5	7.2	10.8		
ND	5.5	7.5	11.6	10.5	8.4	22	12.7	14.0	ATV610U55N4	4.575/10.086
HD	4	5	8.9	7.9	6.3	22	9.3	14.0		
ND	7.5	10	14.7	12.8	10.2	22	15.8	17.4	ATV610U75N4	4.575/10.086
HD	5.5	7.5	11.3	10.2	8.1	22	12.7	19.1		
ND	11	15	22.0	19.6	15.6	22	23.5	25.9	ATV610D11N4	7.730/17.042
HD	7.5	10	16.4	14.6	11.6	22	16.5	24.8		
ND	15	20	29.4	26.0	20.7	22	31.7	34.9	ATV610D15N4	7.730/17.042
HD	11	15	23.0	20.8	16.6	22	23.5	35.3		
ND	18.5	25	37.2	33.5	26.7	22	39.2	43.1	ATV610D18N4	13.500/29.762
HD	15	20	31.6	28.3	22.6	22	31.7	47.6		
ND	22	30	41.9	36.2	28.8	22	46.3	50.9	ATV610D22N4	13.500/29.762
HD	18.5	25	36.0	31.6	25.2	22	39.2	58.8		
ND	30	40	62.5	55.8	44.5	22	61.5	67.7	ATV610D30N4	25.500/56.218
HD	22	30	49.7	42.5	33.8	22	46.3	69.5		
ND	37	50	76.6	68.3	54.4	22	74.5	82.0	ATV610D37N4	25.500/56.218
HD	30	40	65.8	56.8	45.2	22	59.6	89.4		
ND	45	60	92.9	82.7	65.9	22	88	97	ATV610D45N4	25.500/56.218
HD	37	50	80.5	69.6	55.4	22	74.5	112		
ND	55	75	111.5	99.7	79.5	22	120	132	ATV610D55N4	53.000/116.845
HD	45	60	95.9	84.0	66.9	22	88	132		
ND	75	100	147.9	130.2	103.7	22	145	160	ATV610D75N4	53.000/116.845
HD	55	75	115.8	101.7	81.0	22	106	159		
ND	90	125	177.8	159.9	127.4	50	173	190	ATV610D90N4	53.000/116.845
HD	75	100	155.8	138.1	110.0	50	145	218		
ND	110	149	201.0	175.7	140.0	50	211	232	ATV610C11N4	85.500/188.495
HD	90	125	170.0	149.1	118.8	50	173	260		
ND	132	178	237.0	203.8	162.4	50	250	275	ATV610C13N4	85.500/188.495
HD	110	149	201.0	174.2	138.7	50	211	317		
ND	160	216	284.0	249.5	198.8	50	302	332	ATV610C16N4	85.500/188.495
HD	132	178	237.0	205.9	164.0	50	250	375		

(1) These values are given for a nominal switching frequency of 4 kHz up to **ATV610D45N4**, or 2.5 kHz for **ATV610D55N4...C16N4** for use in continuous operation.

The switching frequency is adjustable from 2...12 kHz up to **ATV610D45N4**, or from 1...8 kHz for **ATV610D55N4...C16N4**. 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

Supply voltage 380...460 V 50/60Hz without keypad



ATV610U07N4Z



ATV610D11N4Z



ATV610D18N4Z

IP20 three-phase 380...460 V drives with integrated category C3 EMC filter										
Motor			Power supply to the power section				Easy Altivar 610			Weight
Nominal power indicated on rating plate (1)	kW	HP	Max. input current (2)		Apparent power	Max. prospective line Isc	Maximum continuous current (1)	Maximum transient current for 60 s	Reference	
			380 V	460 V						460 V
ND: Normal duty (3)										
HD: Heavy duty (4)										
	kW	HP	A	A	kVA	kA	A	A	kg/lb	
ND	0.75	1	3.1	2.6	2.1	5	2.2	2.4	ATV610U07N4Z	2.985/6.581
HD	0.37	0.5	1.7	1.4	1.1	5	1.5	2.3		
ND	1.5	2	5.7	4.8	3.8	5	4.0	4.4	ATV610U15N4Z	2.985/6.581
HD	0.75	1	3.1	2.6	2.1	5	2.2	3.3		
ND	2.2	3	7.8	6.5	5.2	5	5.6	6.2	ATV610U22N4Z	2.985/6.581
HD	1.5	2	5.6	4.6	3.7	5	4.0	6.0		
ND	3	–	10.1	8.4	6.7	5	7.2	7.9	ATV610U30N4Z	2.985/6.581
HD	2.2	3	7.6	6.4	5.1	5	5.6	8.4		
ND	4	5	8.8	7.9	6.3	5	9.3	10.2	ATV610U40N4Z	3.885/8.565
HD	3	–	7.2	6.2	4.9	5	7.2	10.8		
ND	5.5	7.5	11.6	10.5	8.4	22	12.7	14.0	ATV610U55N4Z	4.415/9.733
HD	4	5	8.9	7.9	6.3	22	9.3	14.0		
ND	7.5	10	14.7	12.8	10.2	22	15.8	17.4	ATV610U75N4Z	4.415/9.733
HD	5.5	7.5	11.3	10.2	8.1	22	12.7	19.1		
ND	11	15	22.0	19.6	15.6	22	23.5	25.9	ATV610D11N4Z	7.540/16.623
HD	7.5	10	16.4	14.6	11.6	22	16.5	24.8		
ND	15	20	29.4	26.0	20.7	22	31.7	34.9	ATV610D15N4Z	7.540/16.623
HD	11	15	23.0	20.8	16.6	22	23.5	35.3		
ND	18.5	25	37.2	33.5	26.7	22	39.2	43.1	ATV610D18N4Z	13.300/29.321
HD	15	20	31.6	28.3	22.6	22	31.7	47.6		
ND	22	30	41.9	36.2	28.8	22	46.3	50.9	ATV610D22N4Z	13.300/29.321
HD	18.5	25	36.0	31.6	25.2	22	39.2	58.8		
ND	30	40	62.5	55.8	44.5	22	61.5	67.7	ATV610D30N4Z	25.295/55.766
HD	22	30	49.7	42.5	33.8	22	46.3	69.5		
ND	37	50	76.6	68.3	54.4	22	74.5	82.0	ATV610D37N4Z	25.295/55.766
HD	30	40	65.8	56.8	45.2	22	59.6	89.4		
ND	45	60	92.9	82.7	65.9	22	88	97	ATV610D45N4Z	25.295/55.766
HD	37	50	80.5	69.6	55.4	22	74.5	112		
ND	55	75	111.5	99.7	79.5	22	120	132	ATV610D55N4Z	52.045/114.740
HD	45	60	95.9	84.0	66.9	22	88	132		
ND	75	100	147.9	130.2	103.7	22	145	160	ATV610D75N4	52.045/114.740
HD	55	75	115.8	101.7	81.0	22	106	159		
ND	90	125	177.8	159.9	127.4	50	173	190	ATV610D90N4Z	52.045/114.740
HD	75	100	155.8	138.1	110.0	50	145	218		
ND	110	149	201.0	175.7	140.0	50	211	232	ATV610C11N4Z	85.445/188.374
HD	90	125	170.0	149.1	118.8	50	173	260		
ND	132	178	237.0	203.8	162.4	50	250	275	ATV610C13N4Z	85.445/188.374
HD	110	149	201.0	174.2	138.7	50	211	317		
ND	160	216	284.0	249.5	198.8	50	302	332	ATV610C16N4Z	85.445/188.374
HD	132	178	237.0	205.9	164.0	50	250	375		

(1) These values are given for a nominal switching frequency of 4 kHz up to **ATV610D45N4Z**, or 2.5 kHz for **ATV610D55N4Z...C16N4Z** for use in continuous operation.  
The switching frequency is adjustable from 2...12 kHz up to **ATV610D45N4Z**, or from 1...8 kHz for **ATV610D55N4Z...C16N4Z**. 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 [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).



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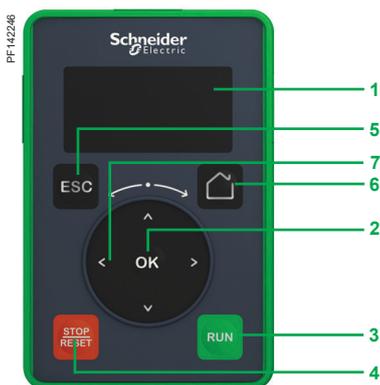
VW3A9704

#### 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	IP20			



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



Plain text display terminal

#### 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

#### 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  $\varnothing 22$  mm tool, as used for a pushbutton, allows the unit to be mounted without needing a cut-out in the enclosure ( $\varnothing 22.5$  mm/ $\varnothing 0.89$  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
<b>Basic keypad door mounting kit</b> Order with remote-mounting cordset VW3A1104R●●●	–	43	<a href="#">VW3A1114</a>	–
<b>Tightening tool</b> for remote mounting kit	–	–	<a href="#">ZB5AZ905</a>	0.016/ 0.035
<b>Remote-mounting cordset</b> equipped with 2 RJ45 connectors	1/ 3.28	–	<a href="#">VW3A1104R10</a>	0.050/ 0.110
	3/ 9.84	–	<a href="#">VW3A1104R30</a>	0.150/ 0.331
	5/ 16.40	–	<a href="#">VW3A1104R50</a>	0.250/ 0.551
	10/ 32.81	–	<a href="#">VW3A1104R100</a>	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  $\overline{DC}$  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

##### References

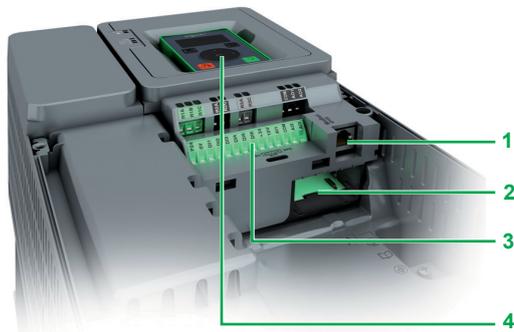
Description	I/O type				Reference	Weight kg/ lb
	Discrete inputs	Discrete outputs	Analog inputs	Relay outputs		
Extended I/O module	6	2	2 (1)	–	VW3A3203	–
Extended relay module	–	–	–	3 (2)	VW3A3204	–

(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.

PF 142250



### 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

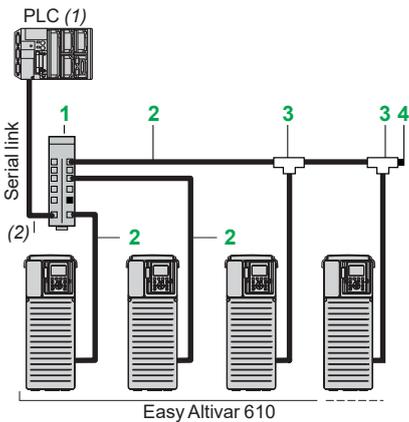
Easy Altivar 610 drives integrate the Modbus serial link communication protocol as standard. The detailed specifications for serial communication ports and the Modbus protocol are available on our website.

#### Description

- 1** RJ45 serial port
- 2** Slot A for extended I/O or communication modules
- 3** Fixed screw terminal blocks for 24 V  $\overline{\text{---}}$  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>	–	<b>LU9GC3</b>	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	<b>VW3A8306TF03</b>	0.190/ 0.419
With 1 m/3.28 ft integrated cable	<b>3</b>	1/ 3.28	<b>VW3A8306TF10</b>	0.210/ 0.463
<b>Modbus line terminator (3)</b> For RJ45 connector	<b>4</b>	–	<b>VW3A8306RC</b>	0.010/ 0.022
<b>Cordsets</b> equipped with 2 RJ45 connectors	<b>2</b>	0.3/ 0.98	<b>VW3A8306R03</b>	0.025/ 0.055
		1/ 3.28	<b>VW3A8306R10</b>	0.060/ 0.132
		3/ 9.84	<b>VW3A8306R30</b>	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.



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.

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.

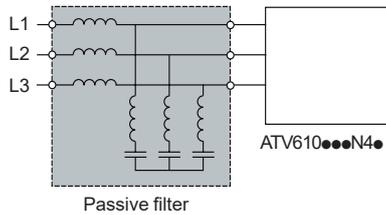
However, regardless of the protocol, it is possible to configure how the drive responds to a detected communication interruption as follows:

- 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	<a href="#">VW3A3607</a>	0.140/ 0.309
<b>IP20 straight connectors (1)</b> for Profibus module (SUB-D connection)	<a href="#">LU9AD7</a>	–

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



Easy Altivar 610 drive with passive filter

### Presentation

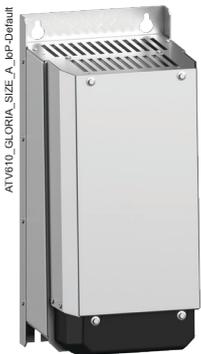
Passive filters are used to obtain total harmonic distortion of less than 10%. Reactive power increases at no load or low load. To help reduce this reactive power, the filter capacitors can be disconnected (see the diagrams on [our website](#)). Passive filters provide IP20 protection.

### 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 A	Quantity required per drive	Reference	Weight kg/ lb
kW	HP					
<b>THDi &lt; 10%</b>						
0.75	1	ATV610U07N4●	1.7	1	VW3A46098A	7.000/ 15.432
1.5	2	ATV610U15N4●	3.4	1	VW3A46099A	10.000/ 22.046
2.2	3	ATV610U22N4●	6.2	1	VW3A46100A	14.000/ 30.865
3	–	ATV610U30N4●				
4	5	ATV610U40N4●	10	1	VW3A46101A	10.000/ 22.046
5.5	7.5	ATV610U55N4●	13	1	VW3A46102A	10.000/ 22.046
7.5	10	ATV610U75N4●	16	1	VW3A46103A	15.000/ 33.069
11	15	ATV610D11N4●	24	1	VW3A46104A	20.000/ 44.092
15	20	ATV610D15N4●	32	1	VW3A46105A	22.000/ 48.502
18.5	25	ATV610D18N4●	38	1	VW3A46106A	25.000/ 55.116
22	30	ATV610D22N4●	45	1	VW3A46107A	29.000/ 63.934
30	40	ATV610D30N4●	60	1	VW3A46108A	37.000/ 81.571
37	50	ATV610D37N4●	75	1	VW3A46109A	43.000/ 94.799
45	60	ATV610D45N4●	90	1	VW3A46110A	47.000/ 103.617
55	75	ATV610D55N4●	110	1	VW3A46111A	50.000/ 110.231
75	100	ATV610D75N4●	150	1	VW3A46112A	86.000/ 189.597
90	125	ATV610D90N4●	180	1	VW3A46113A	92.000/ 202.825
110	149	ATV610C11N4●	210	1	VW3A46114A	100/ 220
132	178	ATV610C13N4●	260	1	VW3A46115A	125/ 276
160	216	ATV610C16N4●	320	1	VW3A46116A	135/ 298

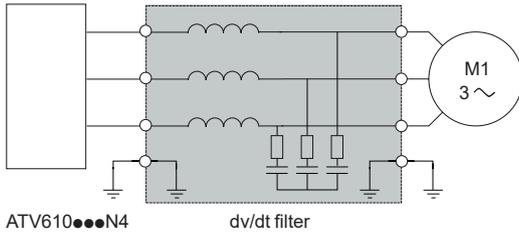


Passive filter VW3A46106A

### 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



ATV610●●●N4 dv/dt filter

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 ~ (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	m/ft	IP	A		kg/lb
<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

(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.



EZC250N3125

+



LC1E120●●

+



ATV610D55N4

### Applications

Circuit breaker/contactors/drive combinations help to ensure continuity of service in an installation. The type of circuit breaker/contactors 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			Line contactor reference (3) (4)
		Global reference	Magnetic protection rating	Icu (1) Ics (2)	
kW HP			A	kA	
<b>Three-phase supply voltage: 380...460 V 50/60 Hz</b>					
0.75 1	ATV610U07N4●	GZ1LE08	4	>100 –	LC1E09●●●●
1.5 2	ATV610U15N4●	GZ1LE10	6,3	>100 –	
2.2 3	ATV610U22N4●	GZ1LE14	10	>100 –	
3 –	ATV610U30N4●	GZ1LE14	10	>100 –	
4 5.4	ATV610U40N4●	GZ1LE14	10	>100 –	
5.5 7.4	ATV610U55N4●	GZ1LE16	14	10 50%	LC1E12●●●●
7.5 10.1	ATV610U75N4●	GZ1LE20	18	10 50%	LC1E18●●●●
11 14.9	ATV610D11N4●	GZ1LE22	25	10 40%	LC1E25●●●●
15 20.3	ATV610D15N4●	GZ1LE32	32	10 40%	LC1E32●●●●
18.5 25	ATV610D18N4●	LV510303	40	25 100%	LC1E40●●
22 30	ATV610D22N4●	LV510304	50	25 100%	LC1E50●●
30 40	ATV610D30N4●	LV510305	63	25 100%	LC1E65●●
37 50	ATV610D37N4●	LV510306	80	25 100%	LC1E80●●
45 60	ATV610D45N4●	EZC100H3100	100	30 25%	LC1E120●●
55 75	ATV610D55N4●	EZC250N3125	125	25 50%	
75 100	ATV610D75N4●	EZC250N3150	150	25 50%	LC1E160●●
90 125	ATV610D90N4●	EZC250H2200	200	36 50%	LC1E200●●
110 149	ATV610C11N4●	EZC250H3225	225	36 50%	LC1E250●●
132 178	ATV610C13N4●	EZC250H3250	250	36 50%	
160 216	ATV610C16N4●	EZC400H3320N	320	50 100%	LC1E300●●

- (1) At 400/415 V.
- (2) Percentage of Icu, please check the actual power grid capacity before select the circuit breaker.
- (3) Composition of contactors:  
 LC1E09...E38: 3 poles + 1 NO auxiliary contact (replace ●● with 10) or 1 NC auxiliary contact (replace ●● with 01)  
 LC1E40...E160: 3 poles + 1 NO auxiliary contact and 1 NC auxiliary contact  
 LC1E200...LC1E300: 3 poles  
 To add auxiliary contacts or other accessories, please refer to the EasyPact TVS catalog.
- (4) Replace ●● with the control circuit voltage reference indicated in the table below:

	Volts ~	380	415	440
LC1E06...LC1E300	50 Hz	Q5	N5	R5
	60 Hz	Q6	–	R6
LC1E06...LCE95	50/60 Hz	Q7	–	–

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

## Variable speed drives

### Easy Altivar 610

#### ATV610●●●N4 drives



#### 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	320 x 853 x 390	12.48 x 33.54 x 15.35
With option VW3A9704	320 x 1159 x 390	12.48 x 45.63 x 15.35
ATV610C13N4	320 x 853 x 390	12.48 x 33.54 x 15.35
With option VW3A9704	320 x 1159 x 390	12.48 x 45.63 x 15.35
ATV610C16N4	320 x 853 x 390	12.48 x 33.54 x 15.35
With option VW3A9704	320 x 1159 x 390	12.48 x 45.63 x 15.35



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

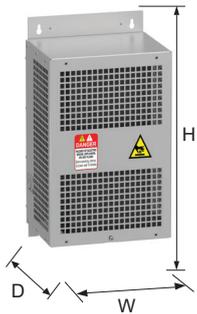
##### Overall dimensions

Reference	W x H x D	
	mm	in.
ATV610U07N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U15N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U22N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U30N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U40N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U55N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610U75N4Z	130 x 284 x 196	5.12 x 11.18 x 7.72
ATV610D11N4Z	155 x 345 x 225	6.10 x 13.58 x 8.86
ATV610D15N4Z	155 x 345 x 225	6.10 x 13.58 x 8.86
ATV610D18N4Z	195 x 480 x 225	7.68 x 18.90 x 8.86
ATV610D22N4Z	195 x 480 x 225	7.68 x 18.90 x 8.86
ATV610D30N4Z	212 x 600 x 262	8.35 x 23.62 x 10.31
ATV610D37N4Z	212 x 600 x 262	8.35 x 23.62 x 10.31
ATV610D45N4Z	212 x 600 x 262	8.35 x 23.62 x 10.31
ATV610D55N4Z	268 x 748 x 307	10.55 x 29.45 x 12.09
ATV610D75N4Z	268 x 748 x 307	10.55 x 29.45 x 12.09
ATV610D90N4Z	268 x 748 x 307	10.55 x 29.45 x 12.09
ATV610C11N4Z	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
ATV610C13N4Z	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
ATV610C16N4Z	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

# 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

### 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



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