

Altivar 32 variable speed drives

for three-phase motors from 0.25 hp (0.18 kW) to 20 hp (15 kW)

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Introduction

The **Altivar™ 32 variable speed drive** from Schneider Electric provides high performance and improved connectivity, while reducing panel space, improving uptime and maximizing machine through-put. Its extra-slim, book-style design allows side-by-side mounting, as well as the direct attachment of a self-protected disconnect. The Altivar 32 can be mounted in smaller spaces, minimizing wiring, and reducing machine costs.

The Altivar 32 features embedded Bluetooth™ technology, which enables monitoring, viewing and performing machine diagnostics, while keeping cabinet doors safely closed. It also has an onboard HMI and navigation wheel for easy adjustments, and includes an on-board RJ45 connector. This RJ45 port can be used for Modbus™ or CANopen networks, or to connect a remote LCD graphic display. The Altivar 32 drive offers built-in functions that meet the demands of multiple applications:

- Integrated safety functions are certified to safety standards (SIL 2 according to standard IEC 61508) comparable with performance level "d" (PL d) according to ISO/EN 13849-1/-2.
- The Altivar Logic function offers simple control system functions (such as Boolean, arithmetical operations, comparators) that can reduce panel space and wiring costs by eliminating the need for external relays, timers and counters.

Optional communication cards allow the Altivar 32 drive to integrate seamlessly into main control system architectures.

The Altivar 32 drive includes various motor control profiles for three-phase asynchronous motors. It also features a control profile for permanent magnet synchronous motors. Compact and highly energy efficient, PM motors are particularly suitable for conveying applications and other equipment with gear boxes. Using a PM motor often eliminates the need for a gear box. This improves efficiency, reduces space required and eliminates the maintenance associated with gear boxes.



Example with six 45 mm wide
ATV32 drives mounted
side-by-side



Altivar 32 with top
mounted GV self-
protected disconnect



Synergy between
Altivar 32 and Lexium
32 servo drive ⁽¹⁾

Reduced mounting space, with simplified setup and use

The Altivar 32 drive simplifies setup and use with:

- Compatible HMI and configuration tools for Altivar 32 variable speed drives and Lexium™ 32 servo drives
 - SoMove™ PC setup software for
 - Remote display terminals
 - Simple Loader and Multi-Loader configuration tools
- Built-in Bluetooth link
- Easy-fit communication cards in cassette format
- Option for connection to the CANopen machine bus
- Side-by-side mounting with no derating. For mounting in shallow cabinets, the control module can be rotated 90 degrees.
- Quick connect for a TeSys™ GV2 self-protected disconnect
- Labeled terminals
- Synergy with Lexium 32 servo drives for controlling applications involving asynchronous and synchronous motors (common tools and options, same shape and dimensions)

The Altivar 32 drive is also compatible with SoMachine™, the software solution for OEMs. This solution can be used to develop, configure and setup an entire machine in a single software environment.



Conveying application



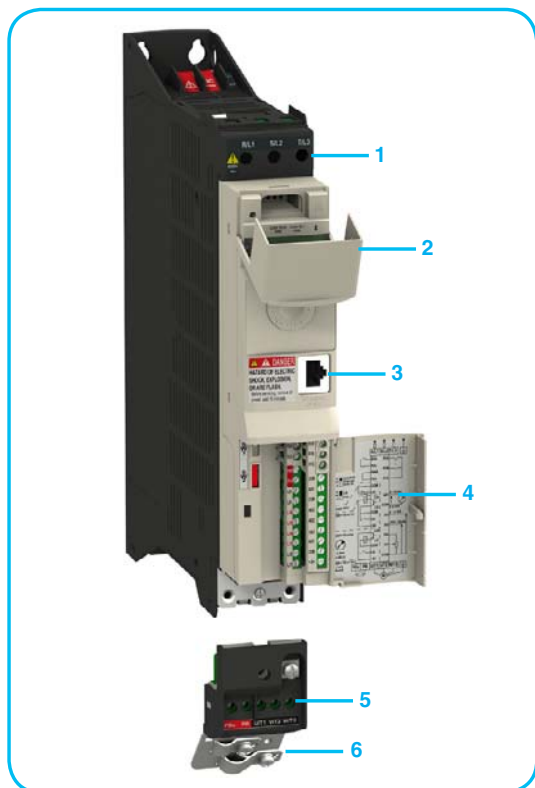
CANopen communication card with RJ45 connectors



CANopen communication card with SUB-D connector



CANopen communication card with connection via terminals



Frame A and B

Applications

The Altivar 32 drive incorporates functions suitable for the most common applications, including:

- Material handling (smart conveyors, diverters and gapping machines)
- Packing and packaging machines (bagging, labeling, sealing and boxing, plus wrappers and palletizers)
- Special machines (mixers, kneaders, filling machines, and extruders)
- Pump, compressor and fan applications requiring a smart drive
- Hoisting, pick and place
- Wood-working machinery (saws, gummars, planers, etc.)
- Metal processing (bending presses, welding machines, cutting machines, etc.)

Product

The Altivar 32 range of variable speed drives covers three-phase motor power ratings from 0.25 hp to 20 hp (0.18 kW to 15 kW) with two power supply ratings:

- 200 V to 240 V single-phase, three-phase output, 0.25 hp to 3 hp (0.18 kW to 2.2 kW) (ATV32H●●●M2)
- 380 V to 500 V three-phase, 0.5 hp to 20 hp (0.37 kW to 15 kW) (ATV32H●●●N4)

The Altivar 32 drive integrates Modbus and CANopen as standard communication protocols. Both can be accessed via the RJ45 connector on the front of the drive.

To simplify connection of the Altivar 32 drive to the CANopen machine bus, three communication card options are available with different connectors:

- CANopen daisy chain card with two RJ 45 connectors
- CANopen card with 9-way SUB-D connector
- CANopen card with 5-way terminal block

See pages 29 & 30.

In addition to Modbus and CANopen as standard protocols, the Altivar 32 drive can be connected to industrial communication networks by adding one of the following optional communication cards:

- Modbus/TCP - Ethernet/IP
- PROFIBUS DP V1
- DeviceNet
- EtherCAT

See pages 31 & 32.

Description

- 1 Power terminals
- 2 Protective cover to prevent access to the power terminals when closed
- 3 RJ45 communication port for access to integrated protocols: Modbus serial link and CANopen machine bus
- 4 Protective cover for access to the control terminals (also includes a label with a wiring diagram)
- 5 Removable motor power terminal block (allows quick disconnect and re-connect of motor cables during maintenance operations)
- 6 EMC mounting plate (integral part of the motor power terminal block). This plate is supplied with a cable guide support, which can be used if required.



GV2/Altivar 32 direct mounting

Product (continued)

External accessories and options

External accessories and options are available with the Altivar 32 drive. The type of external accessories and options depends on the drive rating.

Accessories

- Bracket for direct mounting of a GV2 self-protecting disconnect to the Altivar 32 Frame A or B. (see page 19)
- Adaptor for mounting the control module at 90°, for mounting the power module on its side, for Frame A and B, allowing side mounting the Altivar 32 for accommodating shallow cabinets.
- Daisy chain DC bus cordsets for daisy chain connection of the DC bus
See page 19.

External options

- Braking resistors
- Line chokes
- Motor chokes
- Additional EMC filters
See pages 23 to 26.

HMI and configuration tools

On-board Human/Machine Interface

The 4-digit display **1** displays drive states, detected faults and parameter values. The navigation button **2** is used to navigate through the menus, modify values and change the motor speed in local mode.

HMI terminals

The Altivar 32 drive can be connected to a remote display terminal **4** or a remote graphic display terminal **3**, which are available as options. The remote display terminal can be mounted on an enclosure door with IP 54 or IP 65 degree of protection. It provides access to the same functions as the Human/Machine Interface.

The remote graphic display terminal, with its text display in the user's language, provides a user-friendly interface for configuration, debugging or maintenance. It can also be mounted on an enclosure door with IP 54 or IP 65 degree of protection. See page 20.

SoMove setup software for PCs

SoMove setup software is used to configure, adjust, debug (using the Oscilloscope function) and maintain the Altivar 32 drive in the same way as for other Schneider Electric drives and starters.

It can be used with a direct cable connection or a Bluetooth wireless connection. See page 22.

Simple Loader and Multi-Loader configuration tools

The Simple Loader tool **6** enables the configuration from one powered-up drive to be duplicated on another powered-up drive.

The Multi-Loader tool **5** enables configurations from a PC or drive to be copied and duplicated on another drive; the drives do not need to be powered up when using the Multi-Loader tool.

See page 22.

Electromagnetic compatibility (EMC)

The built-in EMC filters in ATV32H●●●M2 and ATV32H●●●N4 drives, and compliance with EMC requirements simplify installation and help ensure these devices meet the criteria for the CE mark. This enables compliance with standard IEC 61800-3, category C2 for a maximum motor cable length of 32.8 feet (10 meters). This filter can be disconnected by removing a jumper, if EMC filtering is undesirable.

Other filters are available as an option and can be installed by the customer to reduce the level of emissions from Altivar 32 drives.

See page 26.



Description of the multiple ATV 32 HMI and configuration tools



SoMove setup software



Example of an application requiring the use of safety functions



A scrolling sign is an example of an application that can use Altivar Logic.

Functions

The Altivar 32 variable speed drive has six logic inputs, a dedicated Safe Torque Off (STO) input, three analog inputs, one logic output, one analog output, one form C relay output and one NO relay output, plus an on-board RJ45 port.

Application functions

The Altivar 32 drive includes over 150 functions, such as:

- Configurations: standard or customizable
- Settings: factory or OEM
- Application-specific functions (conveying, cutting, hoisting, etc.)
- The adjustable switching frequency reduces motor noise and temperature rise.
- Multiple Human/Machine Interfaces (HMIs) and dialog or configuration tools
- Menu parameter setting, using the “My Menu” function to obtain an application specific Human/Machine Interface (HMI)
- Uploads and downloads of application and drive software, with power on or off

Safety functions

The Altivar 32 drive software includes three safety functions that help machines meet safety requirements, whether or not they are used in conjunction with a Preventa™ safety module:

- STO: Safe Torque Off
- SLS: Safely Limited Speed
- SS1: Safe Stop 1

These safety functions are configured via the SoMove setup software (see page 22).

Note: To set up the safety functions, please refer to the “Safety Integrated functions” manual.

Altivar Logic

The integrated control system functions featuring Altivar Logic can be used to perform simple operations, eliminating the mounting space, wiring and installation of external relays, timers and counters.

Altivar Logic is programmed via the SoMove setup software (see page 22) and provides access to the following functions:

- Arithmetical operations, Boolean operators, counters and timers
- Programming of up to 50 functions by an automated sequence
- Access to the drive’s internal variables

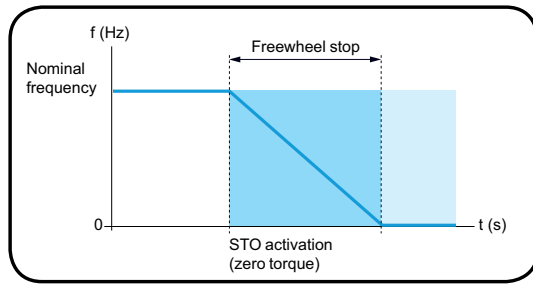
Motor control profiles for asynchronous and synchronous motors

The Altivar 32 drive features different motor control profiles:

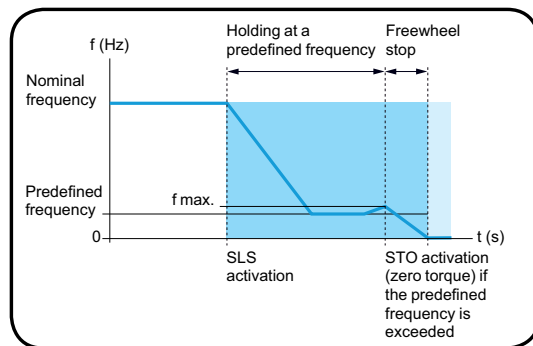
- For asynchronous motors:
 - Two voltage/frequency ratios: Volts/Hz and 5-point Volts/Hz
 - Sensorless flux vector control ratio
 - Quadratic ratio for pump and fan loads
 - Energy saving ratio
- For synchronous motors:
 - Permanent Magnet motor control profile

Examples of use (functions/applications)

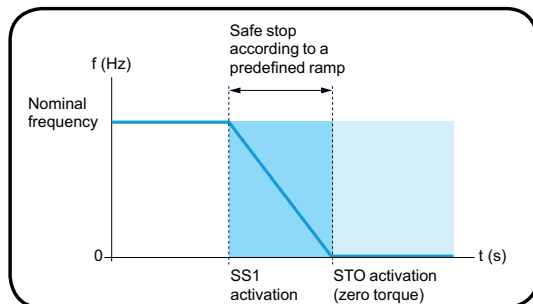
Functions	Applications				
	Handling	Conveying	Packing	Wood-working machinery	Metal processing
Safety functions					
Communication buses and networks					
Fast response time					
Control profile for synchronous motors					
Application-specific functions					
		Typical use for Altivar 32			Typical use for Lexium™ 32



Activation of the STO safety function



Activation of the SLS safety function



Activation of the SS1 safety function

Functions (continued)

Integrated safety functions⁽¹⁾

The Altivar 32 drive includes three safety functions:

- STO: Safe Torque Off
- SLS: Safely Limited Speed
- SS1: Safe Stop 1

These functions allow you to develop applications oriented to the protection of man and machine and are configured with SoMove software. These integrated safety functions provide the following benefits:

- Additional standards-compliant safety functions
- Replacement of external safety equipment
- Reduced wiring efforts and space requirements
- Reduced costs

The Altivar 32 drive is compliant with normative requirements to implement the safety functions. These three integrated functions are certified in accordance with IEC 61800-5-2 Ed.1 "Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional". IEC 61800-5-2 as a product standard, sets out safety-related considerations of Power Drive Systems Safety Related "PDS(SR)s" in terms of the framework of IEC 61508 series Ed.2 of standards. Compliance with IEC 61800-5-2 standard, for the following described safety functions, will facilitate the incorporation of a PDS(SR) (Power Drive System with safety-related functions) into a safety-related control system using the principles of IEC 61508, or the ISO 13849-1, as well as the IEC 62061 for process-systems and machinery.

The defined safety functions are:

- SIL 2/SIL 3 capability in compliance with IEC 61800-5-2 and IEC 61508 series Ed. 2
- Performance Level "d" and "e" in compliance with ISO 13849-1
- Compliant with Category 3 and 4 of European standard ISO 13849-1 (EN 954-1)

These integration functions make it possible to:

- Simplify setup of machines which require a complex safety device
- Improve performance during maintenance by reducing machine or installation downtime

The functional safety certificate can be printed from SoMove after configuration.

Note: A higher level of compliance is possible with the addition of external Preventa safety modules⁽²⁾.

Safe Torque Off (STO) safety function⁽¹⁾

The STO integrated safety function causes a motor freewheel stop by eliminating the torque on the motor shaft. This function brings the motor into a no torque condition so it is relevant in terms of safety – since no torque is available at the motor level. Power modules are inhibited, and the motor coasts down or is prohibited from starting.

Safely Limited Speed (SLS) safety function⁽¹⁾

The SLS integrated safety function slows down and then holds the motor at a predefined frequency. If this predefined frequency cannot be held above a certain value, for example in the case of a driving load, the STO function is activated.

Safe Stop 1 (SS1) safety function⁽¹⁾

The SS1 integrated safety function causes a category 1 safe stop. This stop occurs in the following sequence:

- The motor is stopped according to a predefined deceleration ramp.
- The deceleration is monitored to ensure that the motor has stopped or that the frequency has been reached.
- The STO function is activated after standstill has been reached.

Setting up the integrated safety functions⁽¹⁾

The functions are connected directly to the drive's logic inputs and can be configured using the SoMove setup software (see page 22).

(1) For addition information please refer to the Altivar 32 Safety Functions Manual, document number S1A45606_01 which is available through the button to the left.
 (2) Please refer to the Altivar 32 Safety Integrated Functions Manual.

Functions (continued)

Embedded Altivar Logic

The Altivar 32 drive can be used to control a simple process and replace the functions performed by external relays, timers and counters. Eliminating these external devices can reduce cost by minimizing panel space requirements, eliminating components and wiring, and reduce installation time.

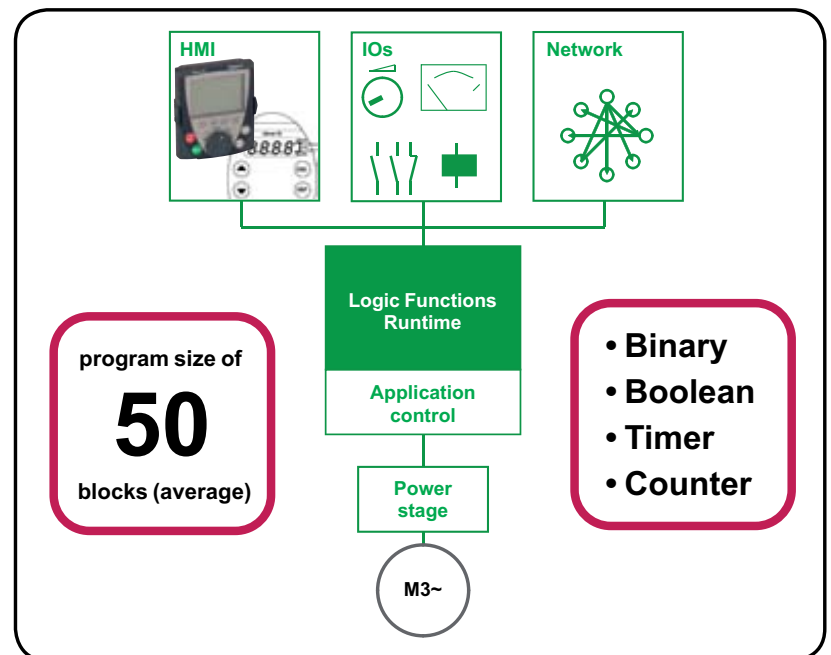
Using integrated software function blocks, the Altivar 32 drive can:

- Perform simple control system functions (Boolean, arithmetical operations, timers, counters, comparators, etc.)
- Execute small automated sequences
- Customize the drive to the machine application

The Altivar Logic function is programmed with the SoMove software.

Altivar Logic can interact with:

- The drive core control
- The drive I/O
- Communication networks
- The drive HMI



Electrical specifications

Voltage and hp range		200 -15% to 240 +10%, single-phase input, three-phase output, 0.25 hp to 3 hp 380 -15% to 480 +15%, three-phase input, three-phase output, 0.5 hp to 20 hp
Frequency input range	Hz	47.5 to 63
Frequency output range	Hz	0.1 to 599
Switching frequency range	kHz	2 to 16 adjustable
Speed range		1 to 100 for asynchronous motors
Motor protection		Class 10 electronic overload protection
Motor control profiles		For asynchronous motors: sensorless flux vector, volts/hertz, 5 point volts/hertz, quadratic volts/hertz motor control For synchronous motors in open loop: permanent magnet motor control
Transient over current		150% nominal for 60 s, 200% nominal for 2 s
Embedded functions		150 functions, safety functionality, Altivar logic functions
EMC filter		Integrated Class 2 EMC filter for radiated and conducted emissions, IEC 61800-3 (environments 1 and 2, category C2)
Communication		Embedded Bluetooth for SoMove PC software. Embedded RJ45 port for Modbus, CANopen, Simple loader, Multi-Loader, SoMove PC software or remote keypad connection
User interface		On board 4 digit, 7 segment LED display with navigation wheel and ESC key. Option for remote keypads
Compliance		RoHS, WEEE (Waste Electrical and Electronic Equipment) CE marked according to the European low voltage (2006/95/EC) and EMC (2004/108/EC) directives.
Certifications		UL 508C, CSA, C-Tick, NOM, GOST, CE, UL File E116875 ISO/EN 13849 -1/-2 category 3 (PLd) EN 954-1 category 1 and IEC/EN 61508 SIL 1 stopping category 0 per IEC/EN 60204-1 without additional components EN 954-1 category 3 and IEC/EN 61508 SIL 2 stopping category 0 per IEC/EN 60204-1 with Preventa safety module IEC 61800-5-1, Adjustable Speed electrical power drive systems IEC 61800-5-2, Ed.1 "Adjustable speed electrical power drive systems - Part 5-2: Safety requirements - Functional".

Environmental specifications

Temperature ratings		14 to 122 °F (-10 to +50 °C) operational without de-rating, up to 140 °F(60 °C) with de-rating
Altitude ratings		Up to 3300 ft (1000 meters) without de-rating, de-rate nominal current by 1% for each additional 330 ft (100 m) up to 10,000 ft (3000 m)
Humidity		up to 95% non-condensing, IEC 60068-2-3
Pollution degree		2 conforming to EN/IEC 61800-5-1. Conformal coating per IEC 60721-3-3 classes 3C2 and 3S2.
Degree of protection		IP20 conforming to EN/IEC 61800-5-1
Vibration resistance		1 gn (f=13...200 hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f=3...13 hz) conforming to EN/IEC 60068-2-6
Shock resistance		15 gn for 11 ms conforming to EN/IEC 60068-2-27
Noise level		43 dB conforming to 86/188/EEC

I/O & Control specifications

Terminal	Function	Type	Specifications
STO	STO (Safe Torque Off) safety function input	I	24 Vdc; Impedance: 1.5 k Ω
P24	Terminal point for external power supply for control circuit/internal power supply for STO	I/O	+24 Vdc <ul style="list-style-type: none"> ■ Tolerance: -15 to +20% ■ Current: 1.1 A max.
+24	Logic input power supply	O	+24 Vdc <ul style="list-style-type: none"> ■ Tolerance: -15 to +20% ■ Current: 100 mA
LI1 LI2 LI3 LI4	Logic inputs	I	Four programmable logic inputs configurable as sink or source using SW1 switch <ul style="list-style-type: none"> ■ + 24 V power supply (max. 30 V) ■ State 0 if < 5 V, state 1 if > 11 V (in source mode) ■ State 0 if > 19 V, state 1 if < 13 V (in sink mode) ■ Response time: 8 ms at stop
LI5 LI6	Logic inputs	I	If programmed as logic inputs, same characteristics as LI1 to LI4 <ul style="list-style-type: none"> ■ LI5 can be programmed as pulse input 20 kpps (pulse per second) ■ LI6 can be used as PTC using SW2 switch ■ Trip threshold 3 kΩ, reset threshold 1.8 kΩ ■ Short-circuit detection threshold < 50 Ω
COM	Analog I/O common	I/O	0 V
A11	Analog input voltage	I	Analog input: 0 +10 V <ul style="list-style-type: none"> ■ Impedance: 30 kΩ ■ Resolution: 10 bits converter ■ Precision: <ul style="list-style-type: none"> □ \pm0.5% in 50/60 Hz for 77 °F (25 °C) □ \pm0.2% in 50/60 Hz for 14 °F (-10 °C) to 140 °F (60 °C) at $\Delta \theta = 140$ °F (60° C) ■ Linearity: \pm 0.2% (max. \pm 0.5%), of max. value ■ Sampling time: 2 ms
10 V	Power supply for speed reference potentiometer	O	+10 Vdc <ul style="list-style-type: none"> ■ Tolerance: 0 to +10% ■ Current: 10 mA max
A12	Analog input voltage	I	Bipolar analog input 0 \pm 10 V (maximum voltage \pm 30 V) The + or - polarity of the voltage on A12 affects the direction of the setpoint and therefore the direction of operation. <ul style="list-style-type: none"> ■ Impedance: 30 kΩ ■ Resolution: 10 bits ■ Precision: <ul style="list-style-type: none"> □ \pm0.5% in 50/60 Hz for 77 °F (25 °C) □ \pm0.2% in 50/60 Hz for 14 °F (-10 °C) to 140 °F (60 °C) at $\Delta \theta = 140$ °F (60° C) ■ Linearity: \pm 0.2% (max. \pm 0.5%), of max. value ■ Sampling time: 2 ms
A13	Analog input current	I	Analog input 0–20 mA (or 4–20 mA, X–20 mA, 20–Y mA). X and Y can be programmed from 0 mA to 20 mA <ul style="list-style-type: none"> ■ Impedance: 250 Ω ■ Resolution: 10 bits ■ Precision: <ul style="list-style-type: none"> □ \pm0.5% in 50/60 Hz for 77 °F (25 °C) □ \pm0.2% in 50/60 Hz for 14 °F (-10 °C) to 140 °F (60 °C) at $\Delta \theta = 140$ °F (60° C) ■ Linearity: \pm 0.2% (max. \pm 0.5%), of max. value ■ Sampling time: 2 ms
COM	Analog I/O common	I/O	0 V
COM	Analog I/O common	I/O	0 V
COM	Analog I/O common	I/O	0 V

I/O & Control specifications (continued)

Terminal	Function	Type	Specifications
AO1	Voltage or current analog output (collector)	○	<p>Analog output 0 to 10 V, min. load impedance 470 Ω or Analog output 0 to 20 mA, max. load impedance 800 Ω</p> <ul style="list-style-type: none"> ■ Resolution: 10 bits ■ Precision: <ul style="list-style-type: none"> □ ± 1% in 50/60Hz for 77 °F (25 °C) ± 50 °F (10 °C) □ ± 2% in 50/60Hz for 14 °F (-10 °C) to 140 °F (60° C) ■ Linearity: ± 0.3% ■ Sampling time: 2 ms
LO+ LO-	Logic output	○	<p>Open collector output configurable as sink or source using SW1 switch</p> <ul style="list-style-type: none"> ■ Refresh time: 2 ms ■ Maximum current: 100 mA ■ Maximum voltage: 30 V
R1A	N.O. contact of the relay	○	<ul style="list-style-type: none"> ■ Min. switching capacity: 5 mA for 24 V $\overline{\text{---}}$ ■ Max. switching capacity on resistive load: ($\cos \varphi = 1$) 3 A for 250 V \sim and 4 A for 30 V $\overline{\text{---}}$ ■ Max. switching capacity on inductive load: ($\cos \varphi = 0.4$, L/R = 7 ms): 2 A for 250 V \sim, 30 V $\overline{\text{---}}$ ■ Refresh time: 2 ms ■ Service life: 100,000 operations at max. switching power
R1B	N.O. contact of the relay	○	
R1C	Common point contact of programmable relay R1	○	
R2A R2C	NO contact of programmable relay R2	○	<ul style="list-style-type: none"> ■ Min. switching capacity: 5 mA for 24 V $\overline{\text{---}}$ ■ Max. switching capacity on resistive load: ($\cos \varphi = 1$) 5 A for 250 V \sim and 30 V $\overline{\text{---}}$ ■ Max. switching capacity on inductive load: ($\cos \varphi = 0.4$, L/R = 7 ms): 2 A for 250 V \sim, 30 V $\overline{\text{---}}$ ■ Refresh time: 2 ms ■ Service life: <ul style="list-style-type: none"> □ 100,000 operations at max. switching power □ 1,000,000 operations with 500 mA current to inductive load 58 Vac or 30 Vdc
RJ45 port	Communication port	-	<p>It is used to connect:</p> <ul style="list-style-type: none"> ■ a PC using SoMove software ■ a graphic or LED keypad ■ Modbus or CANopen network ■ Configuration loader tools

Short Circuit Current Ratings

Altivar 32 AC Drive Short Circuit Ratings								Containment Short Circuit Current Ratings ⁽²⁾					
								with circuit breaker		with GVpP		with fuses	
Input Voltage 60 Hz	kW	HP	Part number	Input AIC rating: kA ⁽¹⁾	Minimum inductance mH	Line reactor part number	Output Interrupt rating: kA	Power-Pact ⁽³⁾	SCCR (kA)	GV2P/3P Type E ⁽⁴⁾	SCCR (kA)	Fuse (A) 600 V Class J ⁽⁶⁾	SCCR (kA)
208/230 1 phase	0.18	0.25	ATV32H018M2	1	2.5	RL00402	100	H●L36015	65	GV2P08	65	7	100
	0.37	0.5	ATV32H037M2	1	2.5	RL00802	100	H●L36015	65	GV2P10	65	15	100
	0.55	0.75	ATV32H055M2	1	2.5	RL00802	100	H●L36015	65	GV2P14	65	25	100
	0.75	1	ATV32H075M2	1	2.5	RL01202	100	H●L36015	65	GV3P13 ⁽⁵⁾	65	25	100
	1.1	1.5	ATV32HU11M2	1	0.8	RL01201	100	H●L36020	65	GV3P18 ⁽⁵⁾	65	25	100
	1.5	2	ATV32HU15M2	1	0.8	RL01201	100	H●L36030	65	GV3P25 ⁽⁵⁾	65	40	100
	2.2	3	ATV32HU22M2	1	0.8	RL01801	100	H●L36035	65	GV3P25 ⁽⁵⁾	65	45	100
480 3 phase	0.37	0.5	ATV32H037N4	5	12	RL00201	100	H●L36015	65	GV2P07	65	6	100
	0.55	0.75	ATV32H055N4	5	12	RL00201	100	H●L36015	65	GV2P07	65	6	100
	0.75	1	ATV32H075N4	5	12	RL00201	100	H●L36015	65	GV2P08	65	6	100
	1.1	1.5	ATV32HU11N4	5	6.5	RL00402	100	H●L36015	65	GV2P08	65	12	100
	1.5	2	ATV32HU15N4	5	6.5	RL00402	100	H●L36015	65	GV2P10	65	12	100
	2.2	3	ATV32HU22N4	5	5	RL00803	100	H●L36015	65	GV2P14	65	15	100
	3	4	ATV32HU30N4	5	3	RL00802	100	H●L36015	65	GV2P14	65	17.5	100
	4	5	ATV32HU40N4	5	3	RL00802	100	H●L36015	65	GV3P13 ⁽⁵⁾	65	25	100
	5.5	7.5	ATV32HU55N4	22	2.5	RL01202	100	H●L36020	65	GV3P18	65	40	100
	7.5	10	ATV32HU75N4	22	1.5	RL01802	100	H●L36030	65	GV3P25	65	40	100
	11	15	ATV32HD11N4	22	1.2	RL02502	100	H●L36040	65	GV3P32	65	60	100
	15	20	ATV32HD15N4	22	0.8	RL03502	100	H●L36050	65	GV3P40	65	70	100

(1) This column shows the maximum input available interrupt current (AIC) rating the Altivar 32 drive can be installed on without adding impedance to the drive. Electrical distribution systems with a higher AIC capability will cause higher input currents in the front end of the drive. Install at least the minimum inductance shown when using an Altivar 32 drive on a system with a higher AIC value shown in this column. Without any additional impedance the column with the Input AIC ratings are the Short Circuit Current Ratings (SCCR) with the listed circuit breakers, GV*P products, and fuses.

(2) The Altivar 32 drive has a 100kA interrupt rating on the output of the drive. In addition to providing a rating based on shorting the output of the drive, these short circuit current ratings have been obtained by shorting components internal to the Altivar 32. These ratings allow proper coordination of short circuit protection. The amp rating of the short circuit protection devices in the table are maximum values. Smaller amp sizes may be used. Integral solid state short circuit protection in the drive does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any local codes. Ratings apply to an Altivar 32 drive mounted in a non-ventilated Type 1, 3R, 4(X) or 12 rated enclosure. Minimum enclosure volume is 3.375 times the drive volume. The listed line reactor minimum inductance is required to get these higher ratings.

(3) Circuit Breaker part number designations: ● = short circuit current rating. For 208 / 230 V range, use: ● = D for 25kA, G for 65kA, J for 65kA, L for 65kA. For 480 V range, use: ● = D for 18kA, G for 35kA, J for 65kA, L for 65kA.

(4) 480 V ratings are for Wye connected electrical distribution systems. GV2P●● self protected manual combination starter must be used with GV2GH7 insulating barrier to meet UL 508 Type E rating. GV3P●● self protected manual combination starter must be used with GV3G66 + GVAM11 insulating barrier to meet UL 508 Type E rating.

(5) GV2P products detailed below can be used in place of the GV3P products for obtaining the ratings listed in the Input AIC ratings column. GV2P16 for GV3P13, GV2P20 for GV3P18, GV2P22 for GV3P25.

(6) Fuse type can be fast acting or time delay Class J, or Class CC.

Altivar 32

variable speed drives

Selection Table



ATV32H018M2 to H075M2
ATV32H037N4 to HU15N4



ATV32HU11M2 to HU22M2
ATV32HU22N4 to HU40N4



ATV32HU55N4, HU75N4
EMC plate not mounted



ATV32HD11N4, HD15N4
EMC plate not mounted

Selection Table

Motor		Line Supply				Altivar™ 32						
Power indicated on rating plate		Max. line current ^{(1), (2)}		Apparent power	Max. prospective line (Isc) ⁽³⁾	Max. continuous output current (In) ⁽⁴⁾	Maximum transient current for 60 s	Power dissipated at maximum output current (In) ⁽⁴⁾	Part number	Frame size	Weight	
		at U1	at U2	at U2		at U2		W			lbs	kg
HP	kW	A	A	kVA	kA	A	A	W			lbs	kg
Single-phase supply voltage: 200 to 240 V 50/60 Hz, with integrated EMC filter^{(2), (5), (6)}												
0.18	0.25	3.4	2.8	0.7	1	1.5	2.3	25	ATV32H018M2	A	3.5	1.59
0.37	0.5	6	5	1.2	1	3.3	5	38	ATV32H037M2	A	3.63	1.65
0.55	0.75	7.9	6.7	1.6	1	3.7	5.6	42	ATV32H055M2	A	3.63	1.65
0.75	1	10.1	8.5	2	1	4.8	7.2	51	ATV32H075M2	A	3.63	1.65
1.1	1.5	13.6	11.5	2.8	1	6.9	10.4	64	ATV32HU11M2	B	4.30	1.95
1.5	2	17.6	14.8	3.6	1	8	12	81	ATV32HU15M2	B	4.30	1.95
2.2	3	23.9	20.1	4.8	1	11	16.5	102	ATV32HU22M2	B	4.55	2.1
Three-phase supply voltage: 380 to 500 V 50/60 Hz, with integrated EMC filter^{(2), (5), (6)}												
0.37	0.5	2.1	1.6	1.4	5	1.5	2.3	27	ATV32H037N4	A	3.57	1.62
0.55	0.75	2.8	2.2	1.9	5	1.9	2.9	31	ATV32H055N4	A	3.78	1.72
0.75	1	3.6	2.7	2.3	5	2.3	3.5	37	ATV32H075N4	A	3.78	1.72
1.1	1.5	5	3.8	3.3	5	3	4.5	50	ATV32HU11N4	A	3.76	1.71
1.5	2	6.5	4.9	4.2	5	4.1	6.2	63	ATV32HU15N4	A	3.76	1.71
2.2	3	8.7	6.6	5.7	5	5.5	8.3	78	ATV32HU22N4	B	5.11	2.32
3	–	11.1	8.4	7.3	5	7.1	10.7	100	ATV32HU30N4	B	4.68	2.12
4	5	13.7	10.5	9.1	5	9.5	14.3	125	ATV32HU40N4	B	4.8	2.18
5.5	7.5	20.7	14.5	17.9	22	14.3	21.5	233	ATV32HU55N4	C	9.72	4.41
7.5	10	26.5	18.7	22.9	22	17	25.5	263	ATV32HU75N4	C	9.72	4.41
11	15	36.6	25.6	31.7	22	27.7	41.6	403	ATV32HD11N4	D	15.4	7.0
15	20	47.3	33.3	41	22	33	49.5	480	ATV32HD15N4	D	15.4	7.0

- (1) Typical value for a 4-pole motor and a maximum switching frequency of 4 kHz, with no line choke for max. prospective line Isc.
 (2) Nominal supply voltage, min. U1, max. U2: 200 (U1) to 240 V (U2), 380 (U1) to 500 V (U2).
 (3) If line Isc (available short circuit current) is greater than the values in the table, add line chokes (see page 24).
 (4) 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 the derating curves by following the Altivar 32 Installation Manual which can be local.
 (5) Drives supplied with category C2 integrated EMC filter. This filter can be disconnected if the product is used in isolated or impedance grounded neutral electrical distribution systems.
 (6) Connection in compliance with EMC standards:
 - ATV32H●●●M2, ATV32H037N4 to HU40N4 drives are supplied with an EMC plate. This is an integral part of the power terminals; these 2 components cannot be separated.
 - ATV32HU55N4 to HD15N4 drives are supplied with an EMC plate, for assembly by the customer.

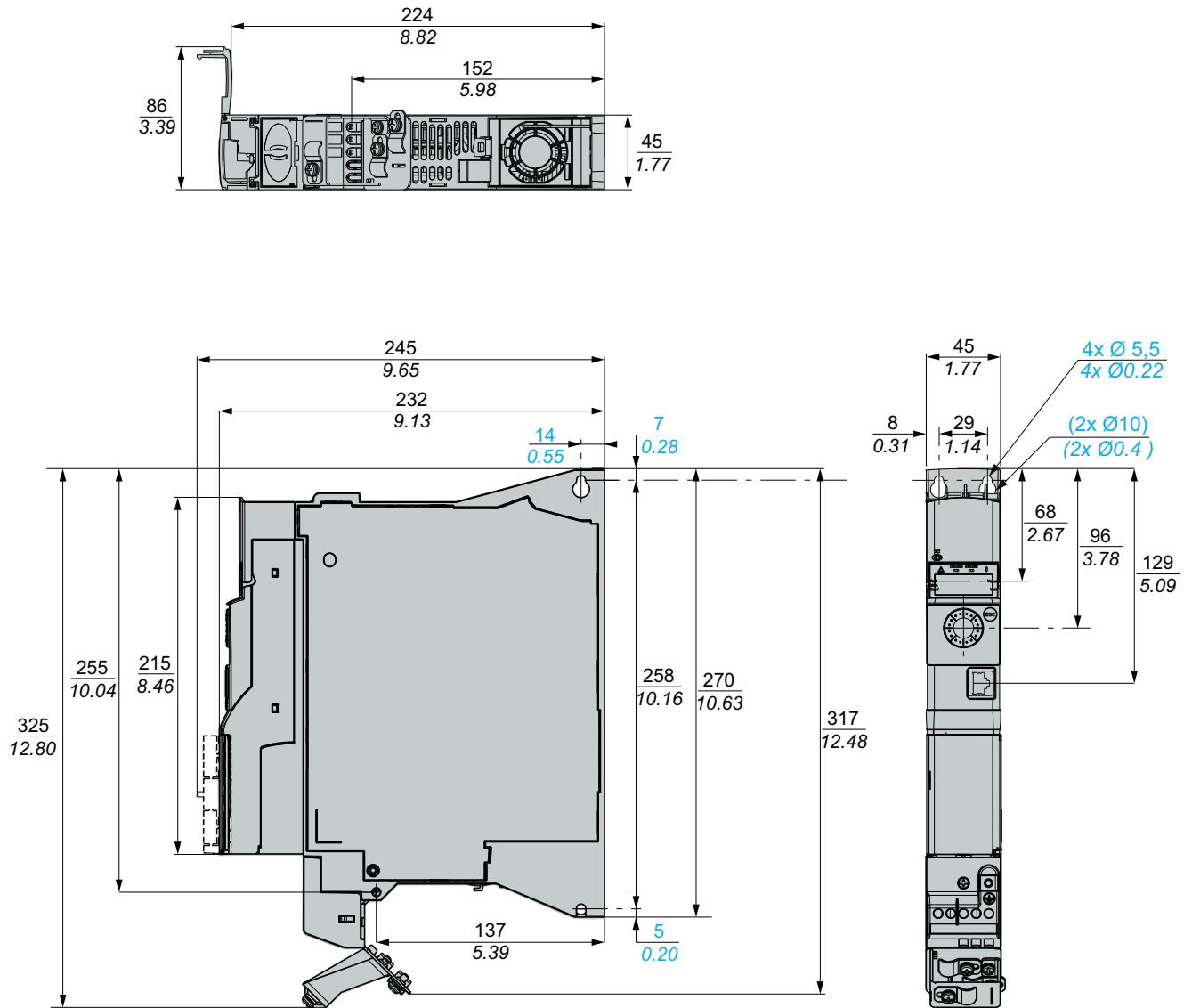
Altivar 32

variable speed drives

Dimensions

Frame size A

Frame size A, ATV32H018M2...ATV32H075M2 and ATV32H037N4...ATV32HU15N4



Dimensions: $\frac{\text{mm}}{\text{in.}}$

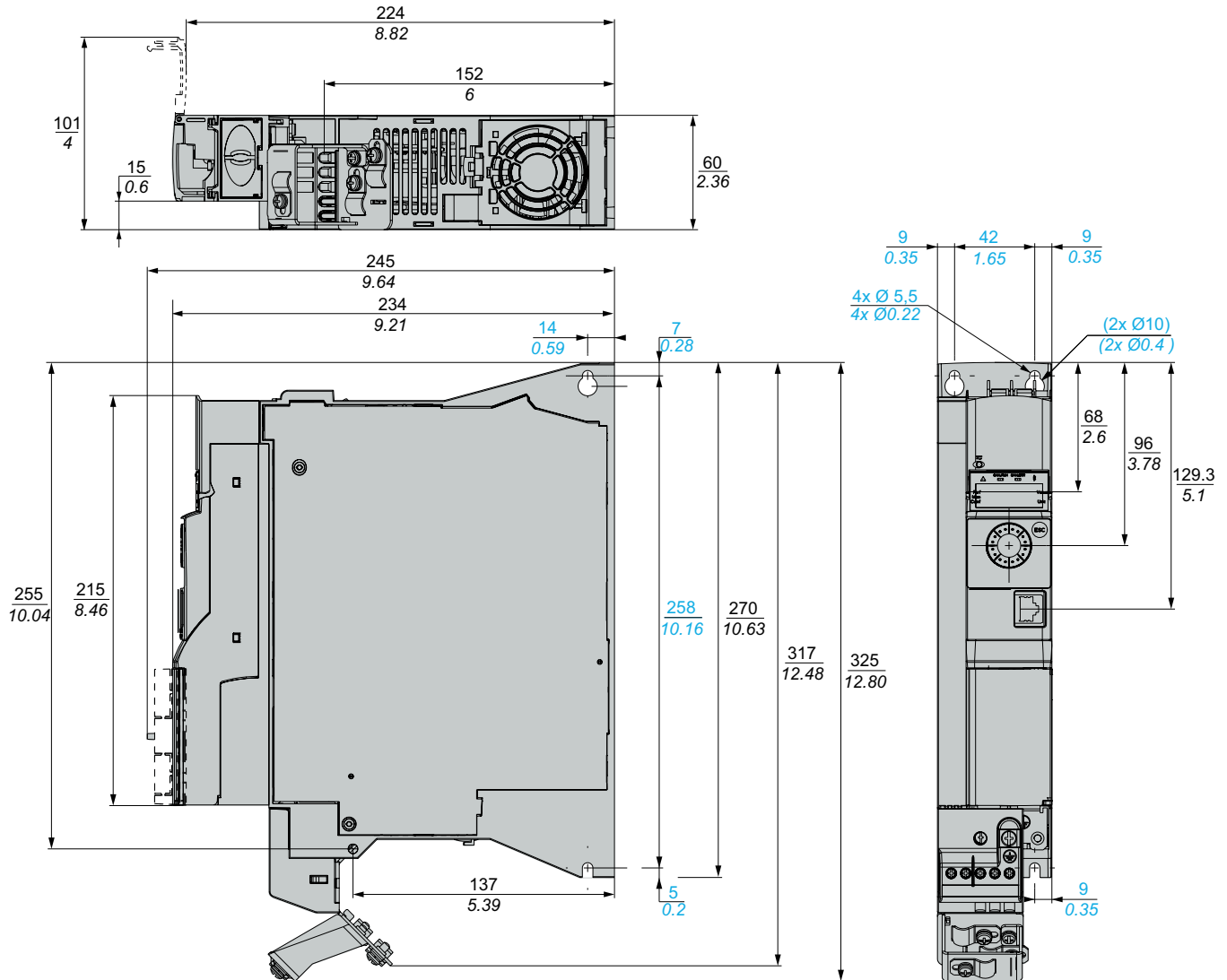
Altivar 32

variable speed drives

Dimensions

Frame size B

Frame size B, ATV32HU11M2... ATV32HU22M2 and ATV32HU22N4... ATV32HU40N4



Dimensions: $\frac{\text{mm}}{\text{in.}}$

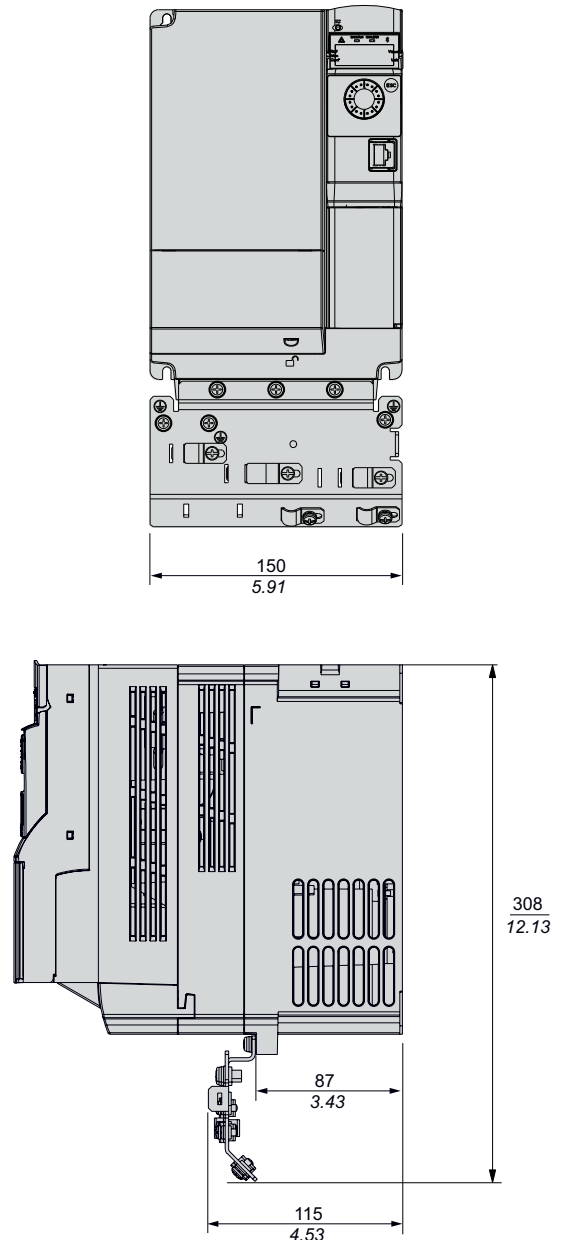
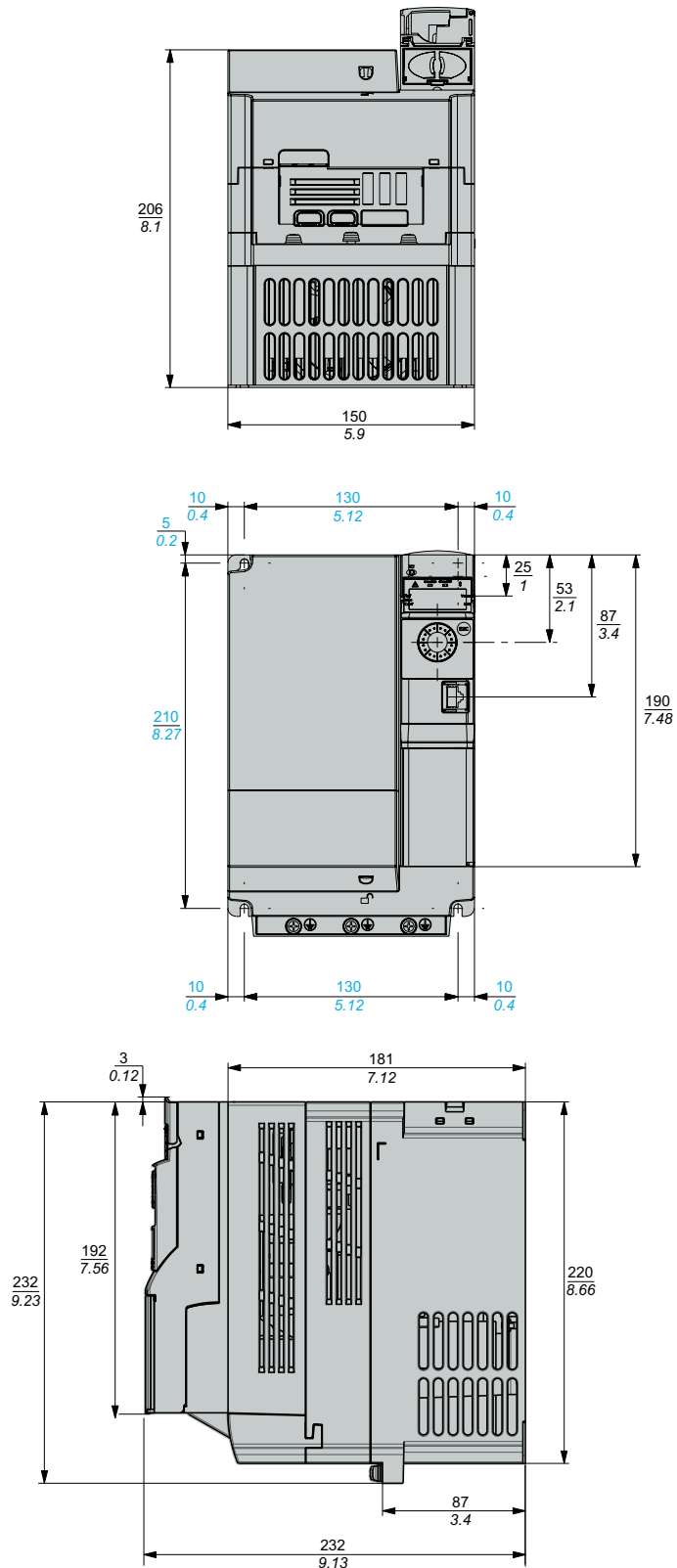
Altivar 32 variable speed drives

Dimensions Frame size C

Frame size C, ATV32HU55N4 and ATV32HU75N4

without EMC plate

with EMC plate



Dimensions: $\frac{\text{mm}}{\text{in.}}$



GV2/ATV 32 direct mounting: GV2L08+ (VWA9921 + GV2AF4) + ATV 32H075N4



Example of GV2/Altivar 32 direct mounting in an enclosure: GV2 P self-protected disconnect + GV2GH7 line spacer + ATV 32HU15N4 drives



ATV32H●●●M2 connected with a Daisy Chain DC bus cordset VW3M7101R01

Accessories

Components for mounting GV2 circuit-breaker directly on an Altivar 32 drive

Description	For drives	Sold in lots of	Part number	Weight	
				lbs	kg
Bracket for GV2/Altivar 32 direct mounting Mechanical bracket for holding the GV2 self-protected disconnect in place when directly mounted on Altivar 32 drive. Requires a GV2 AF4 adaptor plate for electrical connection, to be ordered separately.	ATV32H●●●M2, ATV32H037N4 to HU40N4	10	VW3A9921	0.17	0.08
Adaptor plate Provides the electrical link between the GV2 self protected disconnect and Altivar 32. Requires a VW3A9921 bracket for direct mounting, to be ordered separately.	ATV 32H●●●M2 ATV 32H037N4 to HU40N4	10	GV2AF4	0.04	0.02
Incoming line insulator This insulator mounts on the line side of the GV2P for UL508 Type E applications.	for use on GV2P	10	GV2GH7	0.04	0.02

Mounting the control module at 90°

Description	For drives	Part number	Weight	
			lbs	kg
Adaptor for mounting the control module at 90° This is used to mount the power section on the side, keeping the control module visible and accessible. This allows the drive to be mounted in a shallow enclosure.	ATV 32H●●●M2 ATV 32H037N4 to HU40N4	VW3A9920	0.28	0.13

Daisy Chain connection of the DC bus ⁽¹⁾

The DC bus is connected in a Daisy Chain in the following cases:

- Drives powered by the AC supply with parallel connection of the DC bus in order to balance the loads during braking phases between the drives; used in addition to braking resistors (see page 23)
- Drives powered by the DC bus only

Requires the cordsets listed below:

Description	Use to connect		Length		Sold in lots of	Part number	Weight	
	From:	To:	ft	m			lbs	kg
Daisy chain DC bus cordsets ⁽¹⁾ Cable fitted with 2 connectors	LXM/ATV32H●●●M2 LXM/ATV32H037N4 to HU40N4	LXM/ATV32H●●●M2 LXM/ATV32H037N4 to HU40N4	0.33	0.1	5	VW3M7101R01	-	-
DC bus cable	ATV32H●●●M2 ATV32H●●●N4	LEX32●●●●M2 ⁽²⁾ LEX32●●●●N4 ⁽²⁾	49	15	-	VW3M7102R150	-	-
DC bus connectors ⁽³⁾	for use with VW3M7102R150 DC bus cable		-	-	10	VW3M2207	-	-

⁽¹⁾ Setting up several devices on the DC bus requires special precautions, please refer to the installation manual which is available on page 14.

⁽²⁾ Lexium™ 32 motion control offer. See page 4 and please refer to our "Lexium 32 motion control" catalog.

⁽³⁾ Requires crimping tool: Tyco Electronics, part number 18025.



Remote display terminal with cover off



Remote display terminal with cover in place



Remote graphic display terminal

Configuration tools

Remote display terminal

This terminal is used to mount a Human/Machine Interface of the Altivar 32 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 detected faults remotely

Its maximum operating temperature is 122 °F (50°C).

Features:

- **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 detected faults
- **4** Operating mode selection key MODE
- **5** Snap off cover allowing access to the motor local control keys

Description	Degree of protection	Length		Part number	Weight	
		ft	m		lbs	kg
Remote display terminals	IP 54	-	-	VW3A1006	0.55	0.25
A remote-mounting cordset VW3A1104R●● is also required	IP 65	-	-	VW3A1007	0.61	0.28
Remote-mounting cordsets fitted with 2 RJ45 connectors	-	3.3	1	VW3A1104R10	0.11	0.05
	-	9.8	3	VW3A1104R30	0.33	0.15

Remote graphic display terminal

This graphic display terminal, common to the Altivar 212, 312, 32, 61 and 71 variable speed drive product ranges, provides a user-friendly interface for configuration, debugging and maintenance. This drive can transfer and store up to 4 configurations for the Altivar 32, Altivar 61 and Altivar 71 drives. For portable use or mounted on an enclosure door, it can also be used to connect to multiple drives within the same Altivar family of Altivar 32, 61 or 71 drives (see page 21).

Its main functions are as follows:

- Graphic screen displays 8 lines of 24 characters of plain text.
- Navigation button provides quick and easy access to the drop-down menus.
- Supplied with six languages installed (Chinese, English, French, German, Italian and Spanish).

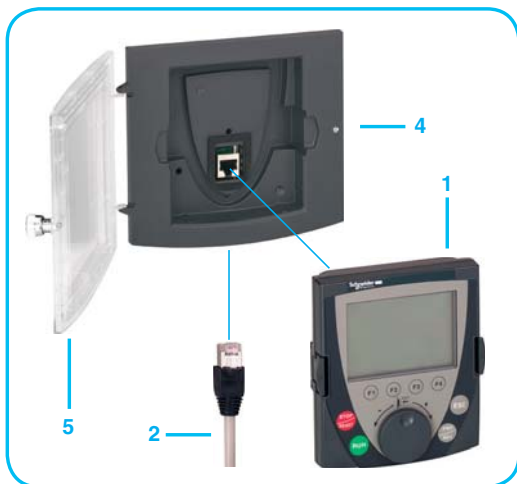
Its maximum operating temperature is 140 °F (60°C), and it features IP 54 protection; this can be increased to IP 65 when mounted on an enclosure door.

Features:

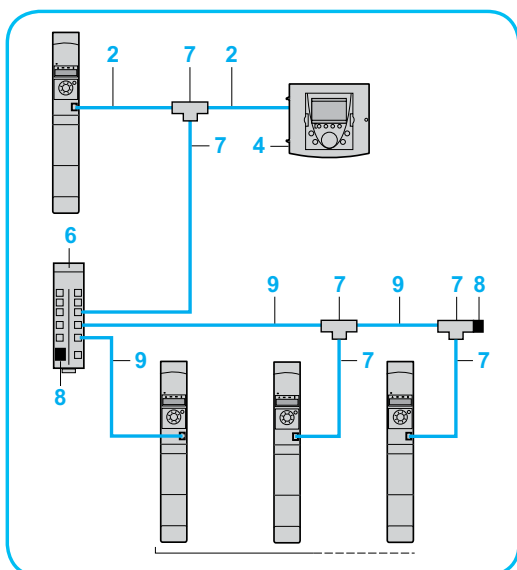
- **6** Graphic display:
 - 8 lines of 24 characters, 240 x 160 pixels, large digit display
- **7** Function keys (for use on the Altivar 61 and Altivar 71)
- **8** Navigation button:
 - Rotate ±: Goes to the next/previous line, increases/decreases the value
 - Press: Saves the current value (ENT)
 - ESC key: Aborts a value, a parameter or a menu to return to the previous selection
- **9** Motor local control keys:
 - RUN: Starts the motor
 - STOP/RESET : Stops the motor/resets drive detected faults
 - FWD/REV: Reverses the motor direction of rotation



Portable use of the portable graphic display terminal: 1 + 2 + 3



Using the graphic terminal on enclosure door: 1 + 2 + 4 (+ 5, for IP 65)



Example of connection via multidrop link

Configuration tools (continued)

Remote graphic display terminal (continued)

Description	Item number	Length		Part number	Weight	
		ft	m		lbs	kg
Remote graphic display terminal A remote-mounting cordset VW3A1104R●●● and an RJ45 adaptor VW3A1105 must be provided	1	-	-	VW3A1101	0.55	0.25
Remote-mounting cordsets fitted with 2 RJ45 connectors For remote mounting of the Altivar 71 drive and graphic display terminal VW3A1101	2	3.3	1	VW3A1104R10	0.11	0.05
		9.8	3	VW3A1104R30	0.33	0.15
		16.4	5	VW3A1104R50	0.55	0.25
		33	10	VW3A1104R100	1.1	0.5
Female/female RJ45 adaptor	3	-	-	VW3A1105	0.02	0.01
Remote mounting kit For mounting on enclosure door IP 54 degree of protection	4	-	-	VW3A1102	0.33	0.15
Door Used to increase the degree of protection for remote mounting kit VW3A1102 to IP 65 To be mounted on remote mounting kit VW3A1102	5	-	-	VW3A1103	0.09	0.04

Additional accessories for multidrop connection

Description	Item no.	Sold in lots of	Length		Part number	Weight	
			ft	m		lbs	kg
Modbus splitter box 10 RJ45 connectors and 1 screw terminal block	6	-	-	-	LU9GC3	1.1	0.5
Modbus T-junction boxes	7	-	-	-	VW3A8306TF03	-	-
	7	-	-	-	VW3A8306TF10	-	-
Modbus line terminator For RJ45 connector	8	2	-	-	VW3A8306RC	0.02	0.01
Cordsets for Modbus serial link equipped with 2 RJ45 connectors	9	-	1	0.3	VW3A8306R03	0.06	0.03
			3.3	1	VW3A8306R10	0.13	0.06
			9.8	3	VW3A8306R30	0.29	0.13

Example of connection via multidrop link

All the components described on this page enable a graphic display terminal to be connected to several drives via a multidrop link within the same Altivar family of Altivar 32, Altivar 61 or Altivar 71 drives. This multidrop link is connected to the RJ45 port on the Modbus/CANopen communication port. See the example at the left.



Configuration tools (continued)

SoMove setup software

This software enables the user to configure, set, debug and organize maintenance tasks for the Altivar 32. It can also be used to customize the integrated display terminal menus.



USB/RJ45 cordset



Modbus™-protocol-to-Bluetooth™ adaptor

Description	Part number	Weight	
		lbs	kg
SoMove setup software	Free Download	-	-
USB/RJ45 cordset equipped with a USB connector and an RJ45 connector For connecting a PC to the Altivar 32. Length: 8 ft (2.5 m)	TCSMCNAM3M002P	0.2	0.1
Modbus-protocol-to-Bluetooth adaptor Used to enable any non-Bluetooth device to communicate via Bluetooth wireless link ⁽²⁾ Equipped with: <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 	VW3A8114	0.3	0.2

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

(2) Required for the following devices:

- Altivar 12, 212, 312, 31, 61 and 71 drives
- Altistart 22 starters
- Lexium 32 servo drives

Simple Loader and Multi-Loader configuration tools

The Simple Loader tool enables one drive's configuration to be duplicated and transferred to another drive. It is connected through the drive's RJ45 communication port. The drive must be powered up to use the Simple Loader.

The Multi-Loader tool enables a number of configurations from a PC or drive to be copied, stored, and loaded onto other drives. The Altivar 32 does not need to be powered up when using the Multi-Loader tool.



Multi-Loader tool
(VWA8121)



Simple loader tool
(VWA8120)

Description	Part number	Weight	
		lbs	kg
Simple Loader configuration tool Supplied with a cordset fitted with 2 RJ45 connectors.	ATV32H●●●●● VW3A8120	-	-
Multi-Loader configuration tool Supplied with: <ul style="list-style-type: none"> ■ 1 cordset fitted with 2 RJ45 connectors ■ 1 cordset fitted with one type A USB connector and one mini B USB connector ■ 1 x SD memory card ■ 1 x female/female RJ 45 adaptor ■ 4 AA/LR6 1.5 V batteries ■ 1 anti-shock protection ■ 1 carrying case 	ATV32H●●●●● VW3A8121	-	-
Cordset for Multi-Loader tool For connecting the Multi-Loader tool to the Altivar 32 drive in its packaging. Fitted with a non-locking RJ45 connector with special mechanical catch on the drive end and an RJ45 connector on the Multi-Loader end.	ATV32H●●●●● in its packaging VW3A8126	-	-



Configuring an Altivar 32 in its packaging:
VW3 A8 121 + VW3 A8 126 cordset

Braking resistors

The braking resistor enables the Altivar 32 drive to manage motor braking to a standstill, and braking during motor deceleration, by dissipating braking energy. Braking resistors enable the Altivar 32 to generate maximum transient braking torque in the motor.

Depending on the environment, two types of resistors 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.
- Enclosed model (IP 65 casing) with an attached cord that can be cut to length and connected to the drive, for ATV32H●●●M2 and ATV32H037N4 to HU75N4 drives.

Note: To optimize the size of the braking resistor, the DC buses on Altivar 32 drives in the same application can be connected in parallel (see page 19).

For use with high inertia motor loads, generating motor loads and machines with fast cycle times.

For drives	Minimum value of the resistor to be connected	Ohmic value	Average power available at 122 °F (50°C) ⁽¹⁾	Length of connection cable		Part number	Weight	
				Ω	Ω		W	ft
IP 65 braking resistors								
ATV32H018M2 to H075M2	40	100	100	2.5	0.75	VW3A7608R07	0.9	0.41
ATV32H037 to H075N4	80	100	100	9.8	3	VW3A7608R30	1.68	0.76
ATV32HU11N4 to HU22N4	54	100	100	9.8	3	VW3A7608R30	1.68	0.76
ATV32HU11M2, HU15M2	27	72	100	2.5	0.75	VW3A7605R07	1.37	0.62
				9.8	3	VW3A7605R30	1.87	0.85
ATV32HU22M2	25	27	200	2.5	0.75	VW3A7603R07	2.05	0.93
				9.8	3	VW3A7603R30	2.65	1.2
ATV32HU30N4	54	72	200	2.5	0.75	VW3A7606R07	2.05	0.93
ATV32HU40N4	36	72	200	9.8	3	VW3A7606R30	2.65	1.2
ATV32HU55N4, HU75N4	27		400	2.5	0.75	VW3A7604R07	3.13	1.42
				9.8	3	VW3A7604R30	3.57	1.62
IP 20 braking resistors								
ATV32H018M2 to H075M2	40	100	50	-	-	VW3A7701	4.41	2
ATV32HU11M2, HU15M2	27							
ATV32H037N4 to H075N4	80							
ATV32HU11N4 to HU30N4	54							
ATV32HU40N4	36							
ATV32HU22M2	25	60	100	-	-	VW3A7701	5.29	2.4
ATV32HU55N4, HU75N4	27							
ATV32HD11N4, HD15N4	8	28	200	-	-	VW3A7701	7.72	3.5

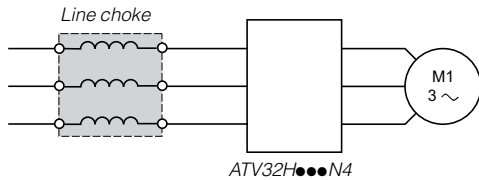
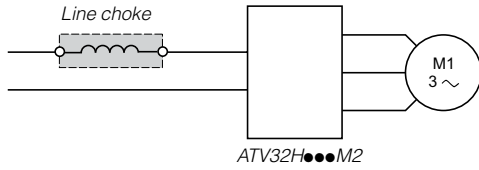


VW3A7608R●●



VW3A7701

(1) Load factor for resistors: the value of the average power that can be dissipated at 122°F (50°C) from the resistor into the casing is determined for a load factor during braking that corresponds to the majority of normal applications:
 - 2 s braking with a 0.6 T_n braking torque for a 40 s cycle
 - 0.8 s braking with a 1.5 T_n braking torque for a 40 s cycle



Line chokes

Line chokes, also known as line reactors, provide improved protection against overvoltages on the line supply, and can reduce harmonic distortion of the current produced by the drive. The recommended chokes also limit the line current.

The VZ1L series and VW3 series of chokes have been developed in accordance with international standard IEC 61800-5-1 (VDE 0160 level 1 high-energy overvoltages on the line supply). The RL series of chokes have been developed in accordance with UL and CSA standards.

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

The use of line chokes is recommended in particular 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
- If the installation includes a power factor correction unit

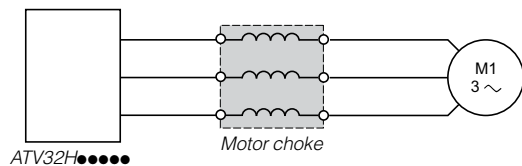
If the available short-circuit current at the point of connection to the drive exceeds the maximum value indicated in the reference tables on page 14, use chokes to provide thermal protection to the input of the drive. See page 13 for coordinated short circuit ratings.

For drives	Nominal voltage	
	U min.	U max.
ATV32H...M2	200	240
ATV32H...N4	380	500

Drive Part number	Line current without choke		Line current with choke		IEC part number	Weight		UL recognized CSA certified part number	Weight	
	U min. ⁽¹⁾	U max. ⁽¹⁾	U min. ⁽¹⁾	U max. ⁽¹⁾						
	A	A	A	A		lbs	kg		lbs	kg
Single-phase supply voltage: 200 to 240 V 50/60 Hz, Sized for 208 Vac										
ATV32H018M2	3	2.5	2.1	1.8	-	-	-	RL00402	7.05	3.2
ATV32H037M2	5.3	4.4	3.9	3.3	-	-	-	RL00802	7.05	3.2
ATV32H055M2	6.8	5.8	5.2	4.3	-	-	-	RL00802	7.05	3.2
ATV32H075M2	8.9	7.5	7	5.9	-	-	-	RL01202	9.04	4.1
ATV32HU11M2	12.1	10.2	10.2	8.6	VZ1L018UM20	4.39	1.99	RL01201	9.04	4.1
ATV32HU15M2	15.8	13.3	13.4	11.4				RL01801	9.04	4.1
ATV32HU22M2	21.9	18.4	19.2	16.1						
Three-phase supply voltage: 380 to 500 V 50/60 Hz, Sized for 460 Vac										
ATV32H037N4	2.2	1.7	1.1	0.9	VW3A4551	3.31	1.5	RL00201	3.97	1.8
ATV32H055N4	2.8	2.2	1.4	1.2						
ATV32H075N4	3.6	2.7	1.8	1.5						
ATV32HU11N4	4.9	3.7	2.6	2				RL00402	5.07	2.3
ATV32HU15N4	6.4	4.8	3.4	2.6						
ATV32HU22N4	8.9	6.7	5	4.1	VW3A4552	6.61	3	RL00803	11.02	5
ATV32HU30N4	10.9	8.3	6.5	5.2				RL00802	11.02	5
ATV32HU40N4	13.9	10.6	8.5	6.6						
ATV32HU55N4	21.9	16.5	11.7	9.3	VW3A4553	7.72	3.5	RL01202	18.08	8.2
ATV32HU75N4	27.7	21	15.4	12.1				RL01802	16.09	7.3
ATV32HD11N4	37.2	28.4	22.5	18.1	VW3A4554	13.23	6	RL02502	20.06	9.1
ATV32HD15N4	48.2	36.8	29.6	23.3				RL03502	30.86	14

(1) See nominal supply voltage table at the top of this page.

Motor chokes



Motor chokes, also known as load reactors can be inserted between the Altivar 32 drive and the motor to:

- Reduce the peak voltage in the motor and motor cable
- Limit dv/dt at motor terminals (500 to 1500 V/μs) for cables exceeding 164 ft. (50 m)
- Filter interference caused by opening of a contactor placed between the filter and the motor
- Reduce the motor ground leakage current and lower the chance of nuisance ground fault trips
- Smooth the motor current wave form to reduce motor noise

For drives	Losses		For cable length up to ⁽¹⁾				Nominal current A	IEC part number	Weight		UL recognized CSA certified part number	Weight	
	W		Shielded cable		Unshielded cable				lbs	kg		lbs	kg
			ft	m	ft	m							
Single-phase supply voltage: 200 to 240 V 50/60 Hz, Sized for 208 Vac													
ATV32H018M2	19.5	≤ 328.08	≤ 100	≤ 656.17	≤ 200	8	-	-	-	RL00802	8	3.6	
ATV32H037M2	19.5	≤ 328.08	≤ 100	≤ 656.17	≤ 200	8	-	-	-	RL00802	8	3.6	
ATV32H055M2	26	≤ 328.08	≤ 100	≤ 656.17	≤ 200	12	-	-	-	RL00802	8	3.6	
ATV32H075M2	26	≤ 328.08	≤ 100	≤ 656.17	≤ 200	12	-	-	-	RL00802	8	3.6	
ATV32HU11M2	36	≤ 328.08	≤ 100	≤ 656.17	≤ 200	18	-	-	-	RL00801	7	3.2	
ATV32HU15M2	36	≤ 328.08	≤ 100	≤ 656.17	≤ 200	18	-	-	-	RL01201	9	4.1	
ATV32HU22M2	75	≤ 328.08	≤ 100	≤ 656.17	≤ 200	16	VW3A4553	7.72	3.5	RL01801	9	4.1	
Three-phase supply voltage: 380 to 500 V 50/60 Hz, Sized for 460 Vac													
ATV32H037N4	11.3	≤ 328.08	≤ 100	≤ 656.17	≤ 200	3	-	-	-	RL00201	4	1.8	
ATV32H055N4	11.3	≤ 328.08	≤ 100	≤ 656.17	≤ 200	3	-	-	-	RL00201	4	1.8	
ATV32H075N4	11.3	≤ 328.08	≤ 100	≤ 656.17	≤ 200	3	-	-	-	RL00402	4	1.8	
ATV32HU11N4	20	≤ 328.08	≤ 100	≤ 656.17	≤ 200	6	-	-	-	RL00402	4	1.8	
ATV32HU15N4	20	≤ 328.08	≤ 100	≤ 656.17	≤ 200	6	-	-	-	RL00803	11	5	
ATV32HU22N4	65	≤ 328.08	≤ 100	≤ 656.17	≤ 200	10	VW3A4552	6.61	3	RL00803	11	5	
ATV32HU30N4	65	≤ 328.08	≤ 100	≤ 656.17	≤ 200	10	VW3A4552	6.61	3	RL00802	8	3.6	
ATV32HU40N4	65	≤ 328.08	≤ 100	≤ 656.17	≤ 200	10	VW3A4552	6.61	3	RL01202	10	4.5	
ATV32HU55N4	75	≤ 328.08	≤ 100	≤ 656.17	≤ 200	16	VW3A4553	7.72	3.5	RL01202	10	4.5	
ATV32HU75N4	90	≤ 328.08	≤ 100	≤ 656.17	≤ 200	30	VW3A4554	13.23	6	RL01802	12	5.4	
ATV32HD11N4	90	≤ 328.08	≤ 100	≤ 656.17	≤ 200	30	VW3A4554	13.23	6	RL03502	16	7.3	
ATV32HD15N4	80	≤ 328.08	≤ 100	≤ 656.17	≤ 200	60	VW3A4555	24.25	11	RL03502	16	7.3	

(1) For an application with several motors connected in parallel, the total motor cable lengths must be added together. If a cable longer than that recommended is used, the filters may overheat.

Motor Cable Installation Guidelines in Cable Trays or One Conduit

This information for the 230 Vac / 480 Vac Altivar 32 AC drives applies to products rated 5 HP and below operating at 4 kHz switching frequency. These guidelines are for the installation of the output power conductors for AC drive and motor installation where up to three un-shielded motor power cables are in one conduit or cable tray and cable lengths are up to 500 feet in length and inverter duty motors compliant to NEMA MG-1 Part 31 are specified. This type of installation is typical for baggage conveyance applications.

- **Number of conductors:** Use four conductors for each motor, one per phase and one ground wire for each motor.
- **Cable type:** Do not use mineral-impregnated cables. These cables increases likelihood of capacitive coupling between sets of motor cables.
- **Cable installation:** Do not install more than three sets of motor power cables (four wires per set) per conduit or cable tray.
Install the cables in a dry location as wet cables increase the likelihood of capacitive coupling between sets of motor cables.
- **Cable length:** The following table shows the recommended cable length with and without filters using un-shielded cable.

Altivar 32: 0.5 - 5 HP rating, installed with un-shielded cable. Maximum of 3 sets of motor power cables per conduit or cable tray	
Cable length: ft (m)	Filter requirements
Up to 300 (91)	no filter required
300 (91) to 500 (152)	dv/dt filter recommended



VW3A4422
+ ATV32HU11N4



VW3A4424
+ ATV32HU55N4



VW3A4422



VW3A4424

Additional filters

Integrated filters

The Altivar 32 drive has integrated radio interference input filters to comply with the EMC (Electromagnetic Compatibility) standard for variable speed electrical power drive products, including IEC 61800-3 category C2 and the European EMC Directive.

Additional EMC input filters

Additional EMC input filters enable the 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.

Mounting

Depending on the model, the additional EMC filters can be mounted beside or underneath the drive.

They act as a support for the drives and are attached to them via tapped holes.

Mounting the filter on the side of the drive:

ATV32H●●M2, ATV32H037N4 to HU40N4 drives

Additional EMC input filters

Mounting the filter underneath the drive:

ATV32HU55N4 to HD15N4 drives

Additional EMC input filters

Use according to the type of line supply

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

Standard IEC 61800-3, appendix D2.1, states that on IT systems – isolated or impedance grounded 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 ground, and therefore cannot be predicted.

In the case of a machine which needs to be installed on an IT network, the solution would be to insert an isolation transformer and place the machine locally on a TN or TT network.

The radio interference input filters integrated in Altivar 32 drives can easily be disconnected by means of a selector switch – without removing the drive.

For drives	Additional EMC input filter									
	Maximum length of shielded cable, IEC 61800-3 (1),(4)				In (2)	Losses (3)	Mounting the filter/ Altivar 32	Part number	Weight	
	Category C2		Category C1						lbs	kg
	ft	m	ft	m	A	W				
Single-phase supply voltage: 200 to 240 V 50/60 Hz										
ATV32H018M2, ATV32H037M2, ATV32H055M2, ATV32H075M2	164	50	65.6	20	10.1	3.7	On the side	VW3A4420	1.32	0.6
ATV32HU11M2, ATV32HU15M2	164	50	65.6	20	17.6	6.9	On the side	VW3A4421	1.71	0.775
ATV32HU22M2	164	50	65.6	20	23.9	7.5	On the side	VW3A4426	2.49	1.13
Three-phase supply voltage: 380 to 500 V 50/60 Hz										
ATV32H037N4, ATV32H055N4 ATV32H075N4, ATV32HU11N4 ATV32HU15N4	164	50	65.6	20	15	9.9	On the side	VW3A4422	1.98	0.9
ATV32HU22N4, ATV32HU30N4 ATV32HU40N4	164	50	65.6	20	25	15.8	On the side	VW3A4423	2.98	1.35
ATV32HU55N4, ATV32HU75N4	164	50	65.6	20	47	19.3	Underneath	VW3A4424	6.94	3.15
ATV32HD11N4, ATV32HD15N4	164	50	65.6	20	49	27.4	Underneath	VW3A4425	10.47	4.75

(1) The filter selection tables give the maximum lengths for shielded cables connecting motors to drives. 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, it is the sum of the cable lengths that should be taken into account.

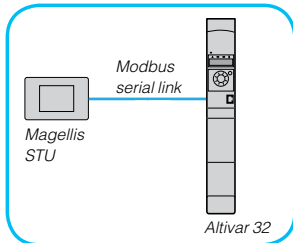
(2) In: nominal filter current.

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

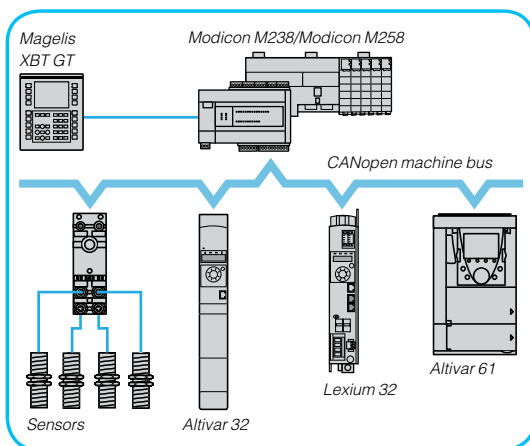
(4) Standard IEC 61800-3: EMC immunity and conducted and radiated EMC emissions:

- Category C1: public power supply (residential)

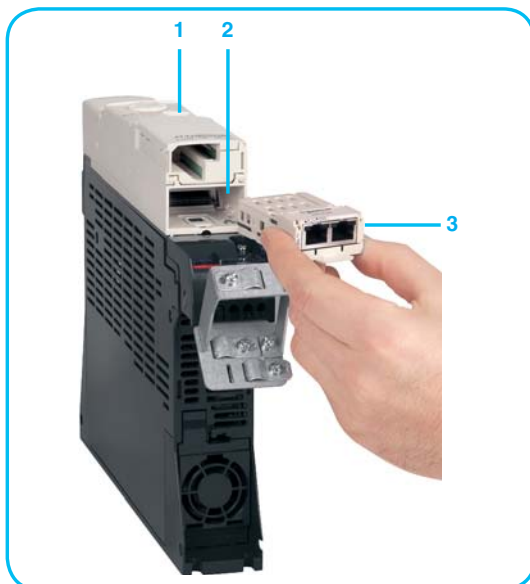
- Category C2: industrial power supply



Example of the SoMove oscilloscope function



Example of configuration on CANopen machine bus



Example of installing a communication card 3
(view of underside)

Communication buses and networks

The Altivar 32 drive is designed to meet the network requirements found in industrial communication installations.

The Modbus and CANopen communication protocols integrated into the product can be accessed via the RJ45 communication port located on the front.

The Altivar 32 drive can also be connected to other industrial communication buses and networks by using one of the optional communication cards. Communication cards are supplied in "cassette" format for ease of mounting/removal, and do not require any additional panel space or power supply.

Modbus serial link ⁽¹⁾

The Modbus serial link is used for connecting the following HMI and configuration tools:

- Magelis HMI terminal
- Remote display terminal or remote graphic display terminal
- SoMove setup software, Simple Loader or the Multi-Loader configuration tool

CANopen machine bus ^{(1),(2),(3)}

The CANopen machine bus is used for integration into control system architectures, especially when combined with Modicon™ M238 and M258 logic controllers or Lexium 32 motion controllers.

Optimized solutions for connection to the CANopen machine bus

To simplify setting up the Altivar 32 drive, three CANopen ⁽²⁾ communication cards are available depending on the connector type desired:

- CANopen Daisy chain card with 2 RJ45 connectors offering an optimized solution for daisy chain connection to the CANopen machine bus (see page 29)
- CANopen card for connection to the bus via 9-way SUB-D connector (see page 29)
- CANopen card for connection to the bus via screw terminals (see page 30)

Using one of the CANopen communication cards also reduces the installation dimensions compared to using VW3CANTAP2 and VW3CANTDM4 junction boxes.

Optional communication cards for industrial applications ⁽³⁾

The following communication cards are available:

- Modbus TCP or EtherNet/IP network card (software selectable)
- PROFIBUS DP V1 card
- DeviceNet card
- EtherCAT card

Description

The Altivar 32 drive has been designed to simplify connections to communication buses and networks, using:

- 1 Integrated RJ45 communication port for Modbus/CANopen on the front
- 2 Slot for the optional communication card
- 3 Optional communication card

Communication buses and networks

Functions

All Altivar 32 drive functions can be accessed via the communication buses and networks:

- Control
- Monitoring
- Adjustment
- Configuration

The speed reference and command may come from different sources:

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

The Altivar 32 drive advanced functions can be used to manage switching of these drive control sources according to the application requirements.

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

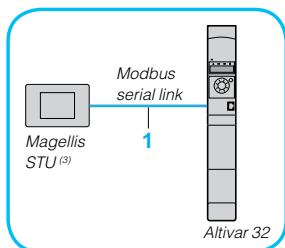
The Altivar 32 drive can be controlled:

- According to the CiA 402 native profile
- According to the I/O profile

Communication is monitored according to criteria specific to each protocol.

Regardless of protocol type, the reaction of the drive to a detected 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 detected fault



Example connection of an Altivar 32 drive and a Magellis STU HMI terminal via the Modbus serial link

Modbus serial link ⁽¹⁾

Connection accessories for remote Human/Machine Interface ⁽²⁾

Description	No.	Length		Part number	Weight	
		ft	m		lbs	kg
Cordsets for Modbus serial link equipped with 2 RJ45 connectors	1	1	0.3	VW3A8306R03	0.06	0.03
		3.3	1	VW3A8306R10	0.13	0.06
		9.8	3	VW3A8306R30	0.29	0.13

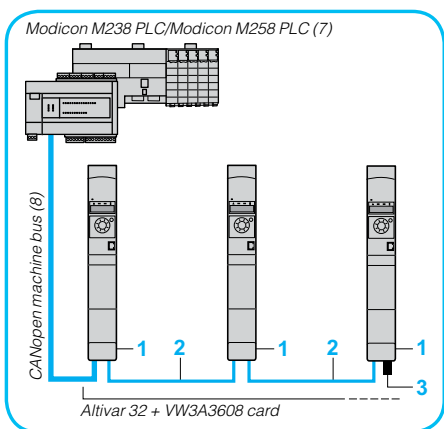
(1) The Modbus serial link always uses the RJ45 communication port located on the front. If simultaneous use of the Modbus serial link and the CANopen machine bus is required, a CANopen communication card is needed.

(2) See page 20 for connection of a remote display terminal or remote graphic display terminal.

(3) Requires a 24 VDC power supply. Please refer to the "Human/Machine Interfaces" catalog.



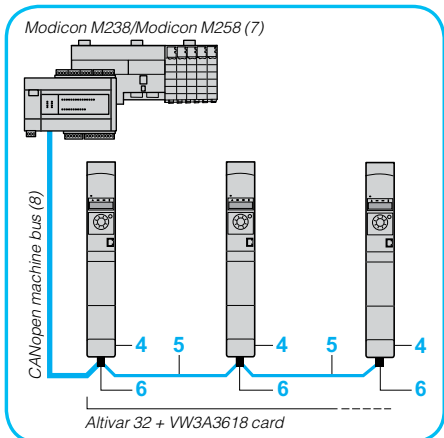
VW3A3608



Optimized solution for daisy chain connection to the CANopen machine bus



VW3A3618



Example of connection to the CANopen machine bus via SUB-D connector

CANopen machine bus ⁽¹⁾

Description	No.	Length		Part number	Weight	
		ft	m		lbs	kg

Connection with VW3 A3 608 CANopen Daisy chain card

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

CANopen Daisy chain communication card ^{(2) (3)} Ports: 2 RJ45 connectors	1	-	-	VW3A3608	-	-
CANopen cordsets equipped with 2 RJ45 connectors	2	1	0.3	VW3CANCARR03	0.11	0.05
		3.3	1	VW3CANCARR1	0.11	0.05
CANopen line terminator for RJ45 connector ⁽⁴⁾	3	-	-	TCSCAR013M120	-	-

Connection via SUB-D connector with VW A3 618 CANopen card

CANopen communication card ^{(2) (3)} Port: 1 x 9-way male SUB-D connector	4	-	-	VW3A3618	-	-
CANopen cable Standard cable, CE marking Low smoke zero halogen Flame retardant (IEC 60332-1)	5	164	50	TSXCANCA50	10.9	4.9
		328	100	TSXCANCA100	19.4	8.8
		984	300	TSXCANCA300	54.2	24.6
CANopen cable Standard cable, UL certification, CE marking Flame retardant (IEC 60332-2)	5	164	50	TSXCANCB50	7.9	3.6
		328	100	TSXCANCB100	17.3	7.8
		984	300	TSXCANCB300	48.2	21.9
CANopen cable Cable for harsh environments (5) or mobile installations, CE marking Low smoke zero halogen Flame retardant (IEC 60332-1)	5	164	50	TSXCANCD50	7.7	3.5
		328	100	TSXCANCD100	17.1	7.8
		984	300	TSXCANCD300	47.8	21.7
CANopen IP 20 straight connector 9-way female SUB-D with line terminator which can be deactivated	6	-	-	TSXCANKCDF180T	0.1	0.05
IP 20 CANopen right angle connector ⁽⁶⁾ 9-way female SUB-D with line terminator which can be deactivated	6	-	-	TSXCANKCDF90T	0.1	0.05

(1) The Modbus serial link always uses the RJ45 communication port located on the front. If simultaneous use of the Modbus serial link and the CANopen machine bus is required, a CANopen communication card is needed.

(2) The Altivar 32 drive can only accept one communication card.

(3) When one of the CANopen communication cards is inserted in the Altivar 32 drive, CANopen communication via the RJ45 communication port on the front is disabled.

(4) Order in multiples of 2.

(5) Standard environment:

- No particular environmental constraints
- Operating temperature between 41 °F and 140 °F (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 14 °F and 158 °F (-10°C and +70°C)
- Significant temperature variations

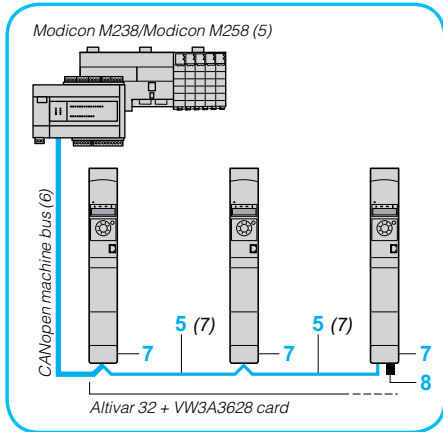
(6) Incompatible with side-by-side mounting.

(7) Please refer to the "M238 logic controller" and "M258 logic controller" catalogs.

(8) Cable dependent on the type of controller or PLC; please refer to the corresponding catalog.



VW3A3628



Example of connection to the CANopen machine bus via screw terminals

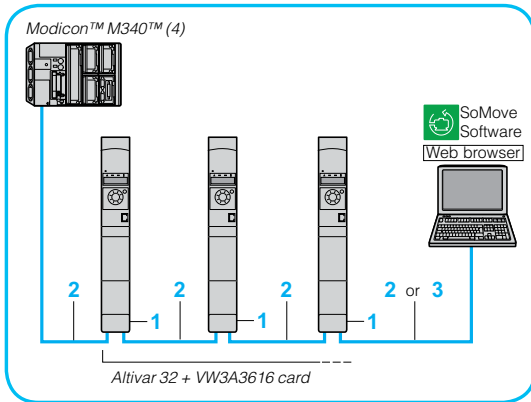
CANopen machine bus (continued)⁽¹⁾

Description	No.	Length		Part number	Weight	
		ft	m		lbs	kg
Connection via terminals with VW3 A3 628 CANopen card						
CANopen communication card ^{(2), (3)} Port: 1 5-way screw terminal block	7	-	-	VW3A3628	-	-
CANopen line terminator for screw terminal connector ⁽⁴⁾	8	-	-	TCSCAR01NM120	-	-
Other connection accessories and cordsets						
IP 20 CANopen cordsets equipped with two 9-way female SUB-D connectors. Standard cable, C€ marking Low smoke zero halogen Flame retardant (IEC 60332-1)	-	1	0.3	TSXCANCADD03	0.2	0.09
		3.3	1	TSXCANCADD1	0.32	0.14
		9.8	3	TSXCANCADD3	0.65	0.29
			5	TSXCANCADD5	0.97	0.44
IP 20 CANopen cordsets equipped with two 9-way female SUB-D connectors. Standard cable, UL certification, C€ marking Flame retardant (IEC 60332-2)	-	1	0.3	TSXCANCBDD03	0.19	0.09
		3.3	1	TSXCANCBDD1	0.29	0.13
		9.8	3	TSXCANCBDD3	0.59	0.27
		16.4	5	TSXCANCBDD5	0.88	0.4
IP 20 CANopen junction boxes equipped with: ■ 4 x 9-way male SUB-D connectors + screw terminal block for trunk cable tap link ■ Line terminator	-	-	-	TSXCANTDM4	0.43	0.19
IP 20 CANopen junction boxes equipped with: ■ 2 screw terminal blocks for trunk cable tap link ■ 2 RJ45 connectors for connecting drives ■ 1 RJ45 connector for connecting a PC	-	-	-	VW3CANTAP2	1.06	0.48

(1) The Modbus serial link always uses the RJ45 communication port located on the front. If simultaneous use of the Modbus serial link and the CANopen machine bus is required, a CANopen communication card is needed.
(2) The Altivar 32 drive can only accept one communication card.
(3) When one of the CANopen communication cards is inserted in the Altivar 32 drive, CANopen communication via the RJ45 communication port on the front is disabled.
(4) Order in multiples of 2.
(5) Please refer to the "M238 logic controller" and "M258 logic controller" catalogs.
(6) Cable dependent on the type of controller or PLC; please refer to the corresponding catalog.
(7) See page 29 for item "5".



VW3A3616



Example of connection on an EtherNet/IP network

Modbus™ TCP network and EtherNet/IP network ⁽¹⁾

Description	No.	Length ⁽³⁾		Part number	Weight	
		ft	m		lbs	kg

Communication card

Modbus TCP and EtherNet/IP network card For connection to the Modbus TCP network or EtherNet/IP network (software selectable) Ports: 2 RJ45 connectors <ul style="list-style-type: none"> 10/100 Mbps, half duplex and full duplex Embedded Web server Requires cordsets 490 NTW 000 ●●/●●U or 490 NTC 000 ●●/●●U	1	-	-	VW3A3616	0.66	0.3
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ConneXium™ cordsets ^{(2),(3)}

Straight shielded twisted pair cordsets equipped with 2 RJ45 connectors Conforming to EIA/TIA-568 category 5 and IEC 11801/EN 50173-1, class D standards	2	6.6	2	490NTW00002	-	-
		16.4	5	490NTW 000 05	-	-
		39.8	12	490NTW00012	-	-
Crossed shielded twisted pair cordsets equipped with 2 RJ45 connectors Conforming to EIA/TIA-568 category 5 and IEC 11801/EN 50173-1, class D standards	3	16.4	5	490NTW00005	-	-
		39.8	15	490NTC00015	-	-
Straight shielded twisted pair cordsets equipped with 2 RJ45 connectors <ul style="list-style-type: none"> Conforming to UL and CSA 22.1 standards 	2	6.6	2	490NTW00002U	-	-
		16.4	5	490NTW00005U	-	-
		39.8	12	490NTW00012U	-	-
Crossed shielded twisted pair cordsets equipped with 2 RJ45 connectors Conforming to UL and CSA 22.1 standards	3	16.4	5	490NTC00005U	-	-
		39.8	15	490NTC00015U	-	-

(1) The Altivar 32 drive can only accept one communication card.

(2) For other ConneXium connection accessories, please refer to our website at "www.schneider-electric.us".

(3) Also available in 131 and 262 foot (40 and 80 meter) lengths (2).

(4) Please refer to the "M340 Automation platform" catalog.



VW3A3607



VW3A3609



VW3A3601

PROFIBUS DP V1 bus ⁽¹⁾

Description	Part number	Weight	
		lbs	kg
PROFIBUS DP V1 communication card Port: One 9-way female SUB-D connector Conforming to PROFIBUS DP V1 Profiles supported: <ul style="list-style-type: none"> ■ CiA 402 drive ■ Profidrive Offers several message handling modes based on DP V1	VW3A3607	0.31	0.14

DeviceNet bus ⁽¹⁾

Description	Part number	Weight	
		lbs	kg
DeviceNet communication card Port: 1 removable 5-way screw connector Profiles supported: <ul style="list-style-type: none"> ■ CIP AC DRIVE ■ CiA 402 drive 	VW3A3609	0.31	0.14

EtherCAT bus ⁽¹⁾

Description	Part number	Weight	
		lbs	kg
EtherCAT communication card Port: 2 RJ45 connectors	VW3A3601	0.31	0.14

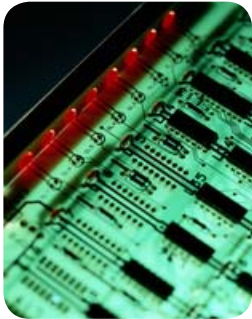
(1) The Altivar 32 drive can only accept one communication card.

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Quality Assurance

This document communicates a summary of the processes, procedures & quality assurance that are in place for the manufacturing of the Altivar 32. Altivar 32 drives are produced in ISO certified facilities. Customers can be assured that these processes and procedures are followed. Audits conducted by third party representatives verify documented processes and procedures are followed and provide certification to ISO 14001. Schneider Electric utilizes quality assurance processes and procedures to verify the integrity of components and the assembly process. Data is gathered on each unit and tracked via the unique serial number of each unit during the manufacturing process. The document was not intended to imply this data is available in a format that could be easily communicated externally nor that a written report is generated for each product.



Outline of Test Process and Procedures

Printed circuit board testing, dielectric testing, preliminary memory and functional test, unit operation with burn-in testing, and final verification testing are conducted at various points in the manufacturing process for each drive. All aspects of these tests during the assembly are logged electronically for internal tracking purposes. Each unit is checked and product conformance status is recorded at each test station. Appropriate conformance information is carried in nonvolatile memory within the unit. The sequence of testing is monitored. Each test station requires a successful bar code scan on entry to ensure each drive has successfully completed any prerequisite test stations.

In addition to the processes and procedures detailed below, each test station has a visual quality inspection check list. This check list includes a physical inspection for proper connections, power component polarities, proper assembly torques, mechanical integrity and proper documentation.

Printed Circuit Board Testing

Printed circuit boards used in the assembly of the ATV32 undergo testing as a part of the board assembly. These tests include:

- In-circuit, component level testing
- Functional power-on testing
- Thermal-cycle stress testing
- High-potential test applied to high voltage boards

Dielectric Testing (Hi Pot Test)

This test verifies the dielectric withstand between customer connection points and ground to validate that the required isolation barriers are intact. Isolation barriers are typically tested for a duration of one (1) second during which a high voltage is applied according to IEC 61800-5-1 standard. This station is also used to verify placement of the power circuit connections.

Preliminary memory and functional testing

During this test, the unit's on-board communication port is utilized to read internal memory and set aside a portion of memory to track the processes performed on the drive and its main components. Each tracked process must have been completed successfully to proceed. These include:

- Supplier preformed tests of printed circuit boards with on-board memory.
- Successful drive hi-pot test.

A preliminary test is run to verify:

- Heatsink ground screw presence
- RFI filter jumper setting
- DC bus Jumper presence
- EEPROM test
- Product rating verification
- Initial rating verification
- Analog input calibration
- Analog output calibration
- Self test (verification of the display board and control terminal board)
- Pre-motor test

Unit operation and burn-in testing

Burn-in testing involves four aspects - (I) sample plan, (II) thermal profile, (III) electrical cycling, and (IV) load cycling. Each will vary slightly by the equipment available at each production facility and by the current quality results experienced by each production facility.

(I) Sample Plan

Burn-in is sampled at a rate that varies from 5% to 100%. The rate is based on current quality results for each production facility. Each production facility is required to burn-in at sample rates determined by the following model.

(II) Thermal Profile

Constant elevated temperature of 60°C for two hours during which the drive is subjected to electrical cycling for the entire duration of the thermal profile.

(III) Electrical Cycles

The electrical cycle runs concurrently with the thermal profile. An electrical cycle energizes and de-energizes the drive by connecting and removing AC input power. The drive is energized for the duration of a load cycle (typically 4 minutes) and de-energized to allow the drive power supply to shut down (typically 40 seconds). This cycle repeats continuously during the portions of the thermal profile indicated above. This cycle is repeated continuously during the thermal profile.

(IV) Load Cycles

Drives are connected to an inertial motor load during burn-in. When the drive is energized, the drive is cycled between high speed forward and reverse operations. Load cycles are made at a minimum interval of 10 seconds. Acceleration and deceleration rates are 0.1s (minimum). The rates are selected to maximize transition stress.

Monitoring during burn-in cycle

The drive detected fault register and drive speed are monitored during the load cycle. If the drive does not reach the commanded speed then it stops and then indicates that it did not pass the test.

Final verification testing

This test validates proper operation after burn-in and prepares the drive settings for customer shipment. The following checks are made:

- DC bus pre-charge check
- Communication port test
- Product model verification
- 7 segment LED display check
- DC charge LED check
- CPU version check
- DC bus level check
- Fan operation test
- Nominal load characteristic check
- Overcurrent test
- Ground fault trip test
- Brake transistor off check
- Brake transistor on check
- Set factory default configuration

This document provides information regarding the quality assurance processes and procedures that are in place for the manufacturing of Altivar 32. These are in place to monitor and confirm the quality of the product line that has been designed in from the outset.



Solutions for every stage of your equipment's life cycle

Schneider Electric™ provides services far beyond meeting your immediate needs for application or equipment repair. We take a long-term, holistic approach to determine your facility and operational needs and develop a strategy for improving the performance of your people, systems, and processes.

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Repair capabilities for over 400,000 part numbers from more than 2,500 manufacturers at our Greensboro, NC repair facility. Repair is available for both Schneider Electric and non-Schneider Electric equipment.

> Spare parts management

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> Software renewals

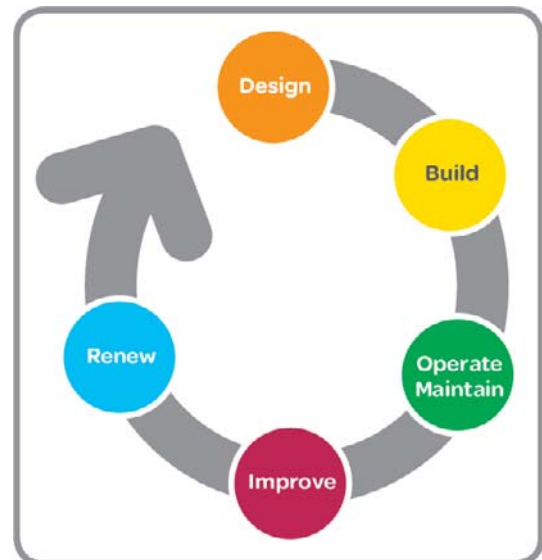
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- Improve reliability and safety
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The Altivar family of variable speed AC drives and the Altistart family of soft starts presents the most advanced and user-friendly solutions in the marketplace. Featuring proprietary motor control algorithms to achieve optimal reaction times and complete scalability to match your application requirements for speed, size, and protection, the complete line of Altivar and Altistart products provides the flexibility and performance to:

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>Drive Product Support Group

For support and assistance, contact the Drive Product Support Group. The Drive Product Support Group is staffed from 8:00 am until 6:00 pm Eastern time to assist with product selection, start-up, and diagnosis of product or application problems.

EMERGENCY Technical phone support is available 24 hours a day, 365 days a year.

Toll Free **1-888-778-2733**

E-mail **drive.products.support@us.schneider-electric.com**

Fax **919-217-6508**

>Schneider Electric Service (On-Site)

The Schneider Electric Services division is committed to providing quality on-site service that consistently meets customer expectations. Services responds to your requests, seven days a week, 24 hours a day.

Phone **1-888-778-2733**

>Schneider Electric Customer Training

Schneider Electric offers a variety of instructor-led skill enhancing and technical product training programs for customers. For a complete list of drives/soft start training with dates, locations, and pricing please call:

Phone **978-975-9306**

Fax **978-975-2821**

>Customer Care Center

(Assist with stock checks, assist with claims, and assist with order management issues)

To provide additional support, Schneider Electric has rolled out new Technical Service Representatives in local offices which have the strongest needs.

Due to time zone changes and different time operation requirements business operation times vary.

Phone **888-778-2733**

Fax **888-329-9773**



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