

Altivar 71 and Altivar 71 Plus variable speed drives

for 3-phase motors from .5 to 2100 HP, .37 to 1550 kW

e-Catalog

2014



Schneider
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Altivar 71

variable speed drives

Introduction



Introduction

The Altivar™ 71 variable-speed drive is built for industrial and process equipment. It has been designed to excel in applications that demand high motor performance. The range offers a complete AC drive product family with advanced functionality that incorporates a simple user interface, common I/O options, and flexible communication options with leading motor performance in open loop or closed loop, over the widest horsepower range in the industry.

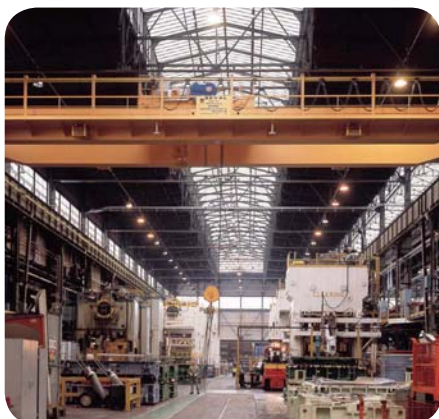
The Altivar 71 variable-speed drive enables you to:

- Reduce installation costs by matching drive HP to motor HP to obtain high motor performance without the need to oversize the drive.
- Manage data in real time by offering connection to all major networks.
- Easily configure, update, and check status via the large, customizable display and navigation wheel.
- Protect your drive, motor, connected equipment, and the environment.

Features and benefits of the Altivar 71:

- Reduce start-up time with seven built-in macros for applications such as material handling, hoisting, master-slave control, and network configuration.
- Efficiently manage your installed base across a wide horsepower range with the common user interface, I/O, and network options.
- Improve machine performance and process throughput with dual microprocessors dedicated to motor and I/O control.
- Save panel space with side-by-side mounting and maximize product life with superior resistance to high temperatures.
- Easily integrate into your machines with flexible I/O and communication options.
- Prevent unintended motor operation with STO (Safe Torque Off) power removal input.





Hoisting application



Packaging application



Wood-working machine application

Applications

The Altivar 71 excels at the following types of applications:

- 150% overload for 60 seconds, or momentary loads of up to 220%, such as aggregate conveyance, package gapping, sorters, crushers, and cutting equipment
- High starting torque and maximum motor torque at low speeds such as hoisting, extruders, and metal forming machinery
- High dynamic speed response to changing loads such as palletizers, packaging, winding, mixing, and process machine applications
- Motor encoder feedback to provide motor rotation required in some hoisting and positioning equipment
- Flexibility for unbalanced machines with the ENA (ENergy Adaptation) System

The Altivar 71 drive's advanced functions boost performance levels and make machines more versatile so they can be used for a large number of applications.

Hoisting

- Brake control adapted for translational, hoisting and slewing movements
- Load measurement using weight sensor
- High-speed hoisting
- Brake feedback management
- Limit switch management

Material handling

- Quick response times on transmission of a command: 2 ms (± 0.5 ms)
- Speed reference via pulse train or differential analog input
- Control via the principal communication networks
- Position control via limit switches with time optimization at low speed
- Multiple parameter settings via parameter set switching

Packaging

- Up to 50 Hz of bandwidth
- Quick response times on change of reference 2 ms (± 0.5 ms)
- Control via integrated CANopen machine bus
- Position control via limit switches

Material-working machines

- High-speed operation
- Fast controlled stop on loss of line supply
- Control via integrated machine controller (IMC) card
- Protection of material against over torque

Process machinery

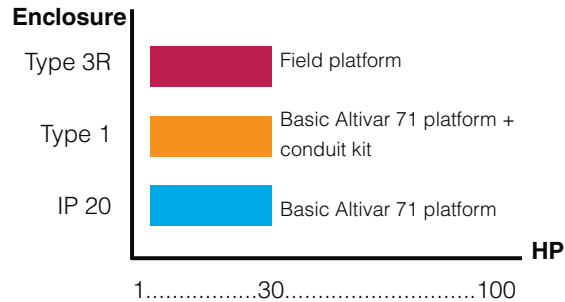
- PID regulator
- High-resolution references
- Speed control or torque control
- Connection to common communication networks
- Separate control section power supply
- Managed braking torque
- Common DC bus connection

Product range

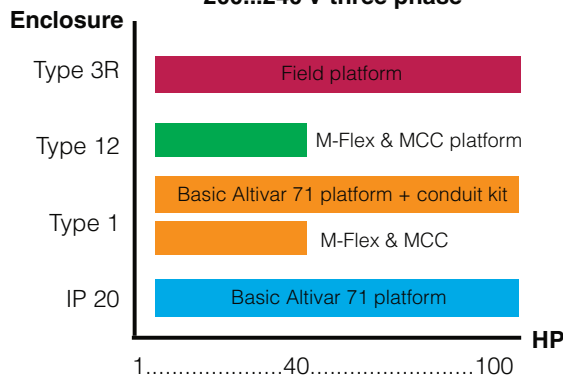
The Altivar 71 range of variable speed drives covers a wide range of motor power ratings from .5 to 2100 HP, .37 to 1550 kW in three voltage ranges.

In addition to the enclosure options listed below, customized enclosed options can be provided by Schneider Electric Drives Systems.

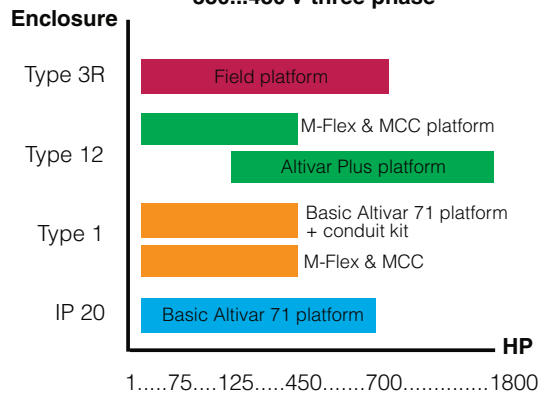
200...240 V single phase



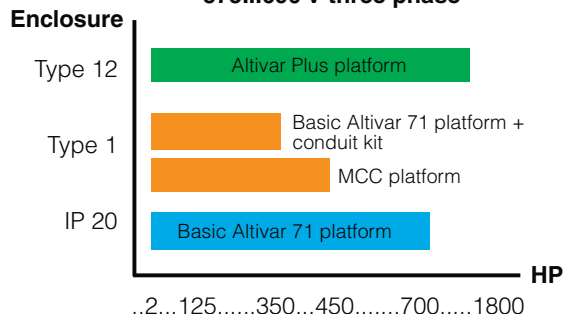
200...240 V three phase



380...480 V three phase



575...690 V three phase



Product range (continued)

The Altivar 71 AC drive is designed for the control of three-phase asynchronous and synchronous motors in constant-torque applications. It includes an LCD Graphic display keypad with an easy-to-read display and navigation wheel that allows users to scroll through drop-down menus.

The Altivar 71 comes standard with:

- LCD graphic keypad, eight lines of 24 characters
- Integrated RJ45 port, Modbus, or CAN networks selectable
- Removable control terminal block with the following I/O:
 - Six logic inputs
 - One power removal input
 - Two analog inputs
 - One analog output
 - Two relay outputs (1NO/NC, 1NO)

The Altivar 71 drive integrates the Modbus and CANopen protocols as standard, as well as over 150 functions. These functions can be extended using communication option cards, I/O extension cards, and encoder interface or an Integrated Machine controller card, which allows customer programming in the SoMachine environment.

External options such as braking resistors, line and load reactors, and filters complete the offer.

Mounting options

The Altivar 71 drive can be mounted in a variety of ways for integration in various devices.

Wall Mounting

The Altivar 71 can be mounted directly on a wall without having to be installed inside an enclosure. UL Type 1 can be achieved using kit **VW3A92●●**.

Flange-mounting in enclosure

The Altivar 71 drive has been designed to optimize the size of enclosures. This type of flange-mounting can be used to reduce the size of enclosure required and to limit the temperature rise inside the enclosure:

- The power section, with Type 12/IP 54 degree of protection, can be mounted outside the enclosure using kit **VW3A95●●**.

This type of mounting can lead to ambient temperatures of up to 60°C inside the enclosure without derating. It may be necessary to use a control card fan kit **VW3A94●●** appropriate for the drive rating in order to avoid hot spots.

Eco-friendly and energy-saving

The Altivar 71 drive has been designed to provide significant energy savings in industrial processes, that have un-balanced loads. It has been designed as an eco-friendly product (using 90 % recyclable materials, compliant with environmental standard ISO 14040). It is RoHS-compliant.

Compliance with international standards and certifications

The entire range conforms to international standards IEC/EN 61800-5-1, IEC/EN 61800-2, IEC/EN 61800-3, is UL 508C, CSA, DNV, C-Tick, NOM 117 and GOST certified, and has been developed to meet the requirements of directives regarding the protection of the environment (RoHS, WEEE, etc.) as well as those of European Directives (CE mark).

Functional safety and ATEX applications

The Altivar 71 drive features a Power Removal safety function that is designed to help ensure motor stopping and help prevent accidental restarts. This safety function means that the drive can be installed as part of the safety system for an Electrical/Electronic/Programmable Electronic control system relating to the safety of a machine or industrial process.

It meets the requirements of category 3 of the ISO 1384 machine safety standard, SIL 2 of IEC/EN 61508 and standard IEC/EN 61800-5-2 which covers the functional safety requirements of power drive products. The Power Removal safety function also enables the Altivar 71 drive to offer protection for motors installed in explosive atmospheres (ATEX certification).

Electromagnetic compatibility

Observing requirements of electromagnetic compatibility were considered right from the design stage. The incorporation of EMC filters in **ATV71H●●●M3**, **ATV71●●●●N4**, and **ATV71●●●●Y** drives and the recognition of EMC requirements facilitates installation and provides economical means of helping ensuring that machines receive the CE mark. **ATV71H●●●M3X** and **ATV71H●●●S6X** drives have been designed without an EMC filter. Filters are available as an option and can be installed by the customer to reduce the level of emissions.



Graphic display keypad & configuration tools

Graphic display keypad

The Altivar 71 drive (1) is supplied with a graphic display keypad (2). It is user-friendly, offering quick and easy access to the plain text menus and advanced functions, and online help screens in six languages. Four configuration files can be stored in the graphic display keypad.

Customizable units can be created to display machine applicable data. It can be mounted remotely on an enclosure door with Type 12 or IP 54 degree of protection. The drive's application functions are easily accessible via the user dial and programmable function keys on the display unit.

SoMove setup software (3)

SoMove software for PCs can be used to configure, adjust and debug the Altivar 71 drive with the Oscilloscope function and also for maintenance of this drive. It can also be used to customize the integrated display keypad menus. It can be used with a direct cable connection or a Bluetooth® wireless connection. The Altivar 71 requires the use of the Modbus-Bluetooth® adaptor (4).

Simple Loader and Multi-Loader programming tools

The Simple Loader tool (5) enables one drive's configuration to be downloaded, saved, and up-loaded with a simple, two button device.

The Multi-Loader tool (6) enables a number of configurations to be stored from the SoMove software to be saved or copied and downloaded to another drive. The Altivar 71 drives must be powered up.

Quick programming

Simply Start menu

The Simply start menu can be used to quickly enter the minimum parameters to get the drive running, maximize motor performance and provide motor protection.

The architecture, the hierarchical parameter structure and the direct access functions serve to make programming quick and easy, even for the more complex functions.

Macro-configuration

The Altivar 71 drive offers quick and easy programming using macro-configurations for different applications:

- Simple start-stop applications
- Material handling
- Hoisting
- General use
- Connection to communication networks
- PID regulator applications
- Master/slave applications

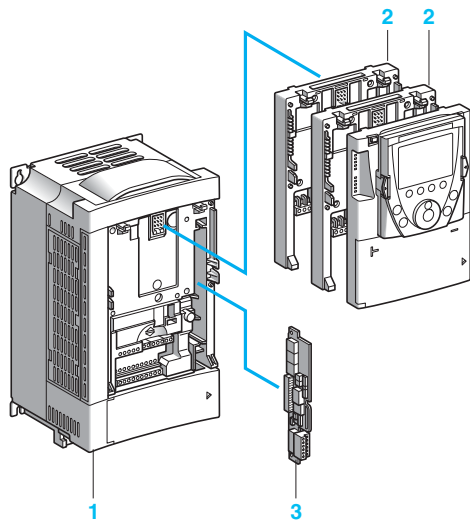
After a macro configuration is selected, the user can further modify and customize the settings.

Built-in, monitoring and diagnostic functions

The Altivar 71 has numerous built-in monitoring and diagnostic functions:

- Built-in drive test functions with diagnostic screen on the graphic display keypad
- I/O maps for active status display of inputs and outputs
- Communication maps for the different ports
- Oscilloscope function that can be viewed using the SoMove setup software
- Apply filtering and scaling to analog inputs and outputs
- Remote use of these functions by connecting the drive to an identification of the drive's part number, ratings and software versions
- Error logs with display of the value of up to 16 variables at time of a fault
- Add timing delays to logic inputs, logic outputs and relay outputs
- A service message of up to 5 lines of 24 characters can be stored in the drive





A wide range of options

The Altivar 71 has a wide range of options to adapt to a variety of installations and applications.

Option cards

The Altivar 71 drive (1) can integrate up to three different option cards simultaneously, including:

- Two of the following cards:
 - I/O extension cards (two versions available) (2)
 - Communication cards (2)
 - Integrated Machine Controller programmable card (2) to adapt the variable speed drive to specific applications
- One encoder interface cards (3): RJ45

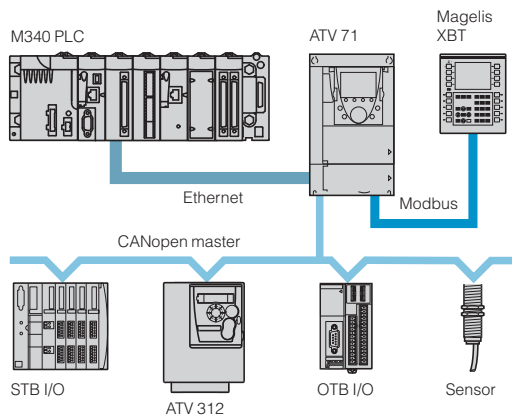
Other options

Numerous other external options can be combined with the Altivar 71:

- Flange Mounting kits to mount the heatsink outside of an enclosure
- Dynamic braking resistors
- Type 1 Conduit kits which provide conduit landing when wall mounting the drive
- Active Front End (AFE) to use the drive to return energy to the line supply or when the installation requires particularly low harmonic levels. The AFE is available via our Drive Systems group
- Line reactors and passive filters to reduce harmonic currents
- Additional EMC input filters to reduce conducted emissions on the incoming power line
- Load reactors and output filters for long cable runs

Integration into PLC architectures

The Altivar 71 drive has a built-in combined Modbus or CANopen port for quick, accurate control, adjustment, supervision and configuration. A second RJ45 port is available on the face of the product and can accept the graphic display keypad or for a Magelis terminal for a user interface.



The Altivar 71 drive can be integrated into many networked industrial applications using the communication option cards. The following protocols are available: Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, and Profinet.

The option of powering the control section separately enables communication (monitoring, diagnostics) to be maintained even if there is no power supply to the control section.

The Integrated Machine Controller (IMC) card transforms the drive into an automation island. This is used to adapt the drive to customized applications by decentralizing the control system functions:

- The IMC card has additional I/O; it can also manage the drive I/O and an I/O extension card.
- It contains onboard application programs developed in IEC/EN 61131-3 languages.
- Its CANopen master port enables control of other drives and dialogue with I/O modules and sensors.

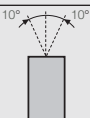
Electrical Specifications

Input power	Voltage	V	200 - 15%...240 + 10% single phase for ATV 71H075M3...HD45M3X 200 - 15%...240 + 10% three-phase for ATV 71H...M3 and ATV 71H...M3X 380 - 15%...480 + 10% three-phase for ATV 71...N4 500 - 15%...690 + 10% three-phase for ATV 71H...Y 500 - 15%...600 + 10% three-phase for ATV71H...S6X
	Frequency	Hz	50 - 5%...60 + 5%
Drive output voltages		V	Maximum three-phase voltage equal to line supply voltage
Output frequency range	ATV 71H...M3 ATV 71HD11M3X... HD37M3X ATV 71H075N4...HD37N4 ATV71H...S6X	Hz	0...599 on standard product. 0...1600 operation is available in product with specific firmware. Delivery of product requires compliance with Control of Export EU Regulation No 961/2010, Section II.A3. 003
	ATV 71HD45M3X... HD75M3X ATV 71HD45N4...HC50N4 ATV 71H...Y	Hz	0...500
Configurable switching frequency	ATV 71H...M3 ATV 71HD11M3X, HD15M3X ATV 71H075N4...HD30N4 ATV71H...S6X	kHz	Nominal switching frequency: 4 kHz without derating in continuous operation. Adjustable during operation from 1...16 kHz Above 4 kHz, see the derating curves in the Installation Manual.
	ATV 71HD18M3X, HD45M3X ATV 71HD37N4...HD75N4	kHz	Nominal switching frequency: 2.5 kHz without derating in continuous operation. Adjustable during operation from 1...16 kHz Above 2.5 kHz, see the derating curves in the Installation Manual.
	ATV 71HD55M3X, HD75M3X ATV 71HD90N4...HC50N4	kHz	Nominal switching frequency: 2.5 kHz without derating in continuous operation. Adjustable during operation from 2.5...8 kHz Above 2.5 kHz, see the derating curves in the Installation Manual.
	ATV 71HU22Y...HD30Y	kHz	Nominal switching frequency: 4 kHz without derating in continuous operation. Adjustable during operation from 2.5...6 kHz Above 4 kHz, see the derating curves in the Installation Manual.
	ATV 71HD37Y...HC63Y	kHz	Nominal switching frequency: 2.5 kHz without derating in continuous operation. Adjustable during operation from 2.5...4.9 kHz Above 2.5 kHz, see the derating curves in the Installation Manual.
Speed range	ATV 71H...M3 ATV 71H...M3X ATV 71...N4 ATV 71H...S6X		Asynchronous motor: ■ 1...1000 in closed-loop mode with encoder feedback ■ 1...100 in open-loop mode without encoder feedback Synchronous motor: ■ 1...50 in open-loop mode without encoder feedback
	ATV 71H...M3383 ATV 71H...M3X383 ATV 71H...N4383		Synchronous motor: ■ 1...1000 in closed-loop mode with encoder feedback
Speed accuracy	For a torque variation of 0.2 Tn to Tn		± 0.01% of nominal speed, in closed-loop mode with encoder feedback ± 10% of nominal slip, without encoder feedback
Torque accuracy			± 5% in closed-loop mode with encoder feedback ± 15% in open-loop mode without encoder feedback
Transient overtorque			170% of the nominal motor torque (typical value at ± 10%) for 60 s every 10 minutes 220% of the nominal motor torque (typical value at ± 10%) for 2 s
Braking torque			30% of nominal motor torque without braking resistor (typical value) Up to 150% with braking resistor installed as an option
Maximum transient current			150% of the nominal drive current for 60 s (typical value) 220% of the nominal drive current for 2 s (typical value)
Permanent torque at 0 Hz	ATV 71H037M3...HD45M3X ATV 71H075N4...HD75N4 ATV71H...S6X ATV 71HU22Y...HD90Y		The Altivar 71 drive can continuously supply the peak value of the nominal drive current
	ATV 71HD55M3X, HD75M3X ATV 71HD90N4...HC50N4 ATV 71HC11Y...HC63Y		The Altivar 71 drive can continuously supply 80% of the peak value of the nominal drive current
Motor control profiles	ATV 71H...M3 ATV 71H...M3X ATV 71...N4 ATV 71H...S6X ATV 71H...Y		Asynchronous motor: ■ Flux Vector Control (FVC) with sensor (current vector) ■ Sensorless Flux Vector Control (SFVC) (voltage or current vector) ■ Voltage/frequency ratio (2 or 5 points) ■ ENA (Energy Adaptation) System for unbalanced loads Synchronous motor: ■ Vector control without speed feedback
	ATV 71H...M3383 ATV 71H...M3X383 ATV 71H...N4383		Synchronous motor: ■ Vector control with speed feedback

Electrical Specifications (continued)

Frequency loop		PI regulator with parameters to adjust response time.
Slip compensation		Automatic. Can be suppressed or adjusted.
Drive noise level		Conforming to directive 86-188/EEC
ATV 71H037M3...HU15M3, ATV 71H075N4...HU22N4	dBA	43
ATV 71HU22M3...HU40M3, ATV 71HU30N4, HU40N4	dBA	54.5
ATV 71HU55M3, ATV 71HU55N4, HU75N4	dBA	55.6
ATV 71HU75M3, ATV 71HD11N4, ATV71H●●●S6X	dBA	57.4
ATV 71HD11M3X, HD15M3X, ATV 71HD15N4, HD18N4	dBA	60.2
ATV 71HD18M3X, HD22M3X, ATV 71HD22N4, ATV 71HU22Y...HD30Y	dBA	59.9
ATV 71HD30M3X...HD45M3X, ATV 71HD30N4, HD37N4	dBA	64
ATV 71HD45N4...HD75N4, ATV 71HD37Y...HD90Y	dBA	63.7
ATV 71HD55M3X, ATV 71HD90N4	dBA	60.5
ATV 71HD75M3X, ATV 71HC11N4	dBA	69.5
ATV 71HC13N4, HC16N4	dBA	66
ATV 71HC20N4...HC50N4, ATV 71HC11Y...HC63Y	dBA	77
Indicator LED		1 red LED: LED lit indicates the presence of drive voltage
Electrical impedance		Inductance of approximately 1-2%
ATV71H037M3...HU75M3, ATV71H075N4...HD15N4, ATV71HU15S6X...HU75S6X, ATV71HU22Y...HD11Y		
ATV71HD11M3X...HD45M3X, ATV71HD18N4...HD75N4, ATV71HD15Y...HD90Y		Integrated DC choke Inductance of approximately 2-3%
ATV71HD55M3X...HD75M3X, ATV71HD90N4...HC50N4, ATV71HC11Y...HC50Y		DC choke ships with drive for field installation Inductance of approximately 3%
ATV71HD55M3XD...HD75M3XD, ATV71HD90N4D...HC50N4D		DC choke is not included with drive Requires inductance of approximately 3%, such as AC line reactor be installed.
Electrical isolation		Between power and control (inputs, outputs, power supplies)
Acceleration and deceleration ramps		Ramp profiles: ■ Linear, can be adjusted separately from 0.01 to 9999 s ■ S, U or customized Automatic adaptation of deceleration ramp time if braking capacities exceeded, possible inhibition of this adaptation (use of braking resistor)
Braking to a standstill		By DC injection: ■ By a command on a programmable logic input ■ Automatically as soon as the estimated output frequency drops to < 0.1 Hz, period adjustable from 0 to 60 s or continuous, current adjustable from 0 to 1.2 In (in open loopmode only).
Main drive protection and protection features		Thermal protection: ■ Against overheating ■ Of the power stage Protection against: ■ Short-circuits between motor phases ■ Input phase breaks ■ Overcurrents between output phases and ground ■ Overvoltages on the DC bus ■ A break on the control circuit ■ Exceeding the limit speed ■ Line supply overvoltage and undervoltage ■ Input phase loss, in three-phase
Motor protection		Thermal protection integrated in drive via continuous calculation of I ² t taking speed into account: ■ The motor thermal state is saved when the drive is powered down. ■ Function can be modified via operator dialogue terminals, depending on the type of motor (force-cooled or self-cooled). Protection against motor phase breaks Protection with PTC probes
Dielectric strength	ATV 71H●●●M3 ATV 71H●●●M3X	Between ground and power terminals: 2830 V ~ Between control and power terminals: 4230 V ~
	ATV 71●●●●N4 ATV 71H●●●S6X	Between ground and power terminals: 3535 V ~ Between control and power terminals: 5092 V ~
	ATV 71H●●●Y	Between ground and power terminals: 3110 V ~ Between control and power terminals: 5345 V ~
Insulation resistance to ground		> 1 MΩ (electrical isolation) 500 V ~ for 1 minute
Frequency resolution	Display units	Hz 0.1
	Analog inputs	Hz 0.024/50 Hz (11 bits)

Environmental Specifications

Vibration resistance	ATV 71H●●●M3 ATV 71HD11M3X...HD45M3X ATV 71H075N4...HD75N4 ATV 71HU22Y...HD90Y ATV71H●●●S6X		1.5 mm peak to peak from 3...13 Hz, 1 gn from 13...200 Hz, conforming to IEC/EN 60068-2-6
	ATV 71HD55M3X, HD75M3X ATV 71HD90N4...HC50N4 ATV 71HC11Y...HC63Y		1.5 mm peak to peak from 3...10 Hz, 0.6 gn from 10...200 Hz, conforming to IEC/EN 60068-2-6
Shock resistance	ATV 71H●●●M3 ATV 71HD11M3X...HD45M3X ATV 71H075N4...HD75N4 ATV 71HU22Y...HD90Y ATV71H●●●Y ATV71H●●●S6X		15 gn for 11 ms conforming to IEC/EN 60068-2-27
	ATV 71HD55M3X, HD75M3X ATV 71HD90N4...HC13N4 ATV 71HC11Y...HC16Y		7 gn for 11 ms conforming to IEC/EN 60068-2-27
	ATV 71HC16N4...HC50N4 ATV 71HC20Y...HC63Y		4 gn for 11 ms conforming to IEC/EN 60068-2-27
Maximum ambient pollution Definition of insulation	ATV 71H●●●M3 ATV 71HD11M3X, HD15M3X ATV 71H075N4...HD18N4 ATVH●●●S6X		Degree 2 conforming to IEC/EN 61800-5-1
	ATV 71HD18M3X...HD75M3X ATV 71HD22N4...HC50N4 ATV 71H●●●Y		Degree 2 conforming to IEC/EN 61800-5-1 Degree 3 in accordance with UL marking conforming to UL840
Environmental conditions Use	ATV 71H●●●M3, ATV 71HD11M3X...HD45M3X ATV 71H075N4...HD75N4 ATV71H●●●S6X		IEC 60721-3-3 classes 3C1 and 3S2
	ATV 71H●●●M3S337 ATV 71HD11M3X337... HD45M3X337 ATV 71HD55M3X, HD75M3X ATV 71H075N4S337... HD75N4S337 ATV 71HD90N4...HC50N4		IEC 60721-3-3 class 3C2
Relative humidity		%	5...95% without condensation or dripping water conforming to IEC 60068-2-3
Ambient air temperature around the device	Operation	°C	For ATV 71H●●●●● drives: - 10...+ 50 without derating Up to + 60°C with derating and with the control card fan kit VW3 A9 4●● corresponding to the drive rating. See the derating curves in the Installation Manual.
	Storage	°C	- 25...+ 70
<i>Note: UL rating is for up to 40 °C. Higher temperature ratings listed above are for non-UL applications only.</i>			
Maximum operating altitude	ATV 71H●●●M3 ATV 71H●●●M3X ATV 71H●●●N4	m	1000 without derating 1000...3000 derating the current by 1% per additional 100 m. Limited to 2000 m for the "Corner Grounded" distribution network
	ATV 71H●●●Y	m	1000 without derating 1000...2260 derating the current by 1% per additional 100 m.
Operating position Maximum permanent angle in relation to the normal vertical mounting position			

Certifications and Compliance

Conformity to standards		Altivar 71 drives have been developed to conform to the strictest international standards and the recommendations relating to electrical industrial control devices (IEC, EN), in particular: low voltage, IEC/EN 61800-5-1, IEC/EN 61800-3 (conducted and radiated EMC immunity and emissions).
Protection		IEC/EN 61800-3, Environments 1 and 2 (EMC requirements and specific test methods) IEC/EN 61000-4-2 level 3 (electrostatic discharge immunity test) IEC/EN 61000-4-3 level 3 (radiated, radio-frequency, electromagnetic field immunity test) IEC/EN 61000-4-4 level 4 (electrical fast transient/burst immunity test) IEC/EN 61000-4-5 level 3 (surge immunity test) IEC/EN 61000-4-6 level 3 (immunity to conducted disturbances, induced by radio-frequency fields) IEC/EN 61000-4-11 (voltage dips, short interruptions and voltage variations immunity tests)
Conducted EMC emissions for drives		IEC/EN 61800-3, environments 1 and 2, categories C1, C2, C3
	ATV 71H037M3...HU22M3 ATV 71H075N4...HU40N4	Integrated EMC filter meets EN 55011 class A group 1, IEC/EN 61800-3 category C2 Use with additional EMC filter to meet: ■ EN 55011 class B group 1, IEC/EN 61800-3 category C1
	ATV 71HU30M3...HU75M3 ATV 71HU55N4...HC50N4 ATV 71H●●●S6X	Integrated EMC filter meets EN 55011 class A group 2, IEC/EN 61800-3 category C3 Use with additional EMC filter to meet: ■ EN 55011 class A group 1, IEC/EN 61800-3 category C2 ■ EN 55011 class B group 1, IEC/EN 61800-3 category C1
	ATV 71H●●●M3X	Use with additional EMC filter to meet: ■ EN 55011 class A group 1, IEC/EN 61800-3 category C2 ■ EN 55011 class B group 1, IEC/EN 61800-3 category C1
	ATV 71H●●●Y	Integrated EMC filter meets EN 55011 class A group 2, IEC/EN 61800-3 category C3
CE marking		The drives are marked CE according to the European low voltage (2006/95/EC) and EMC (89/336/EEC) directives
Product certifications		UL 508C, CSA, C-Tick, NOM 117 and GOST ABS, DNV
Degree of protection		IEC/EN 61800-5-1, IEC/EN 60529
		IP 21, IP 41 on upper part, IP 54 on isolated power component and heatsink section, UL Type 1 with accessory VW3A92●●
		IP 00, IP 41 on upper part and IP 30 on front panel and side parts. IP 54 on isolated power component and heatsink section UL Type 1 with accessory VW3A92●●

I/O and Control Specifications

Available internal supplies		Short-circuit and overload protection: <ul style="list-style-type: none"> 1 x 10.5 V c \pm 5% supply for the reference potentiometer (1 to 10 kΩ), maximum current 10 mA 1 x 24 V c supply (min. 21 V, max. 27 V), maximum current 200 mA
For external + 24 V power supply		24 V \pm (min. 19 V, max. 30 V) Power 30 W
Analog input	AI1-/AI1+	1 bipolar differential analog input \pm 10 V \pm (maximum voltage 24 V). Max. sampling time: 2 ms \pm 0.5 ms. Resolution: 11 bits + 1 sign bit. Accuracy: \pm 0.6% for a temperature variation of 60°C. Linearity: \pm 0.15% of maximum value.
	AI2	1 software-configurable voltage or current analog input: <ul style="list-style-type: none"> Voltage analog input 0...10 V \pm, impedance 30 kΩ (max. voltage 24 V) Current analog input X-Y mA by programming X and Y from 0 to 20 mA, with impedance 242 Ω Max. sampling time: 2 ms \pm 0.5 ms. Resolution: 11 bits. Accuracy: \pm 0.6% for a temperature variation of 60°C. Linearity: \pm 0.15% of maximum value.
	Other inputs	Available on I/O option cards.
Analog output	AO1	1 analog output software-configurable for voltage or current or as a logic output: <ul style="list-style-type: none"> Voltage analog output 0...10 V \pm, min. load impedance 470 Ω Current analog output X-Y mA by programming X and Y from 0 to 20 mA, max. load impedance 500 Ω Max. sampling time: 2 ms \pm 0.5 ms. Resolution: 10 bits. Accuracy: \pm 1% for a temperature variation of 60°C. Linearity: \pm 0.2%. <ul style="list-style-type: none"> Logic output: 10 V, 20 mA maximum
	Other outputs	Available on I/O option cards.
Relay outputs	R1A, R1B, R1C	1 relay logic output, one "N/C" contact and one "N/O" contact with common point. Minimum switching capacity: 3 mA for 24 V \pm . Maximum switching capacity: <ul style="list-style-type: none"> On resistive load ($\cos \phi = 1$): 5 A for 250 V \sim or 30 V \pm On inductive load ($\cos \phi = 0.4$ and L/R = 7 ms): 2 A for 250 V \sim or 30 V \pm Max. response time: 7 ms \pm 0.5 ms. Electrical service life: 100,000 operations.
	R2A, R2B	1 relay logic output, one "N/O" contact. Minimum switching capacity: 3 mA for 24 V \pm . Maximum switching capacity: <ul style="list-style-type: none"> On resistive load ($\cos \phi = 1$): 5 A for 250 V \sim or 30 V \pm On inductive load ($\cos \phi = 0.4$ and L/R = 7 ms): 2 A for 250 V \sim or 30 V \pm Max. response time: 7 ms \pm 0.5 ms. Electrical service life: 100,000 operations.
	Other outputs	Available on I/O option cards.
LI logic inputs	LI1...LI5	5 programmable logic inputs 24 V \pm , compatible with level 1 PLC, IEC/EN 61131-2 standard Impedance: 3.5 k Ω . Maximum voltage: 30 V. Max. sampling time: 2 ms \pm 0.5 ms. Multiple assignment makes it possible to configure several functions on one input (example: LI1 assigned to forward and preset speed 2, LI3 assigned to reverse and preset speed 3)
	LI6	1 logic input, switch-configurable as a logic input or as an input for PTC probes. Logic input, characteristics identical to inputs LI1...LI5 Input for a maximum of 6 PTC probes mounted in series: <ul style="list-style-type: none"> Nominal value < 1.5 kΩ Trip resistance 3 kΩ, reset value 1.8 kΩ Short-circuit protection < 50 Ω This logic input must never be used to protect an ATEX motor in applications in explosive atmospheres
	Positive logic (Source)	State 0 if \leq 5 V or logic input not wired, state 1 if \geq 11 V
	Negative logic (Sink)	State 0 if \geq 16 V or logic input not wired, state 1 if \leq 10 V
	Other inputs	Available on I/O option cards.
Safety input	PWR	1 input for the Power Removal safety function and/or for thermal protection of the ATEX motor in applications in explosive atmospheres. The PWR (Power Removal) safety input, also known as STO (Safe Torque Off) can be used to stop applying power to the motor and/or prevent a motor from restarting unintentionally. The PWR input allows the Altivar 71 to be installed as a part of the safety related system. This function complies with: <ul style="list-style-type: none"> Standard for safety of machinery EN 954-1 category 1 or category 3. Standard for functional safety IEC/EN 61508 Drives system standard IEC/EN 61800-5-2, SIL 2 capability. Standards for functional safety EN ISO 13849-1: category 3PLd Standard IEC/EN 61508 SIL 1, stopping category 0 or IEC/EN 61508 SIL 2, stopping category 1 The PWR (Power Removal) safety input can also be connected to a thermal sensor switch integrated in a motor used in explosive atmospheres to meet ATEX requirements: <ul style="list-style-type: none"> Power supply: 24 V c (max. 30 V) Impedance: 1.5 kΩ State 0 if < 2 V, state 1 if > 17 V Response time: <100 ms

Modbus protocol

Type of connection		Modbus RJ45 port on face of product	Modbus RJ45 network port
Structure	Physical interface	2-wire RS 485	
	Transmission mode	RTU	
	Transmission speed	Configurable via the display keypad or the SoMove™ PC software: 9600 bps or 19200 bps	Configurable via the display keypad or the SoMove PC software: 4800 bps, 9600 bps, 19200 bps or 38.4 kbps
	Format	Fixed = 8 bits, even parity, 1 stop	Configurable via the display keypad or the SoMove PC software: - 8 bits, odd parity, 1 stop - 8 bits, even parity, 1 stop - 8 bits, no parity, 1 stop - 8 bits, no parity, 2 stop
	Polarization	No polarization impedances These should be provided by the wiring system (for example, in the master)	
	Address	1 to 247, configurable via the terminal or the SoMove PC software. 3 addresses can be configured in order to access the drive data, the "Controller Inside" programmable card and the communication card respectively. These 3 addresses are identical for the connector and network ports.	
Services	Device profiles	2 profiles: CiA 402 ("Device Profile Drives and Motion Control") and I/O profile	
	Messaging	Read Holding Registers (03) 63 words maximum Write Single Register (06) Write Multiple Registers (16) 61 words maximum Read/Write Multiple Registers (23) 63/59 words maximum Read Device Identification (43) Diagnostics (08)	
	Communication monitoring	Can be inhibited. "Time out," which can be set between 0.1 s and 30 s	

CANopen protocol

Structure	Connector	This connects to the Modbus RJ45 Modbus network port.
	Network management	Slave
	Transmission speed	20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps or 1 Mbps
	Address (Node ID)	1 to 127, configurable via the terminal or the SoMove PC software
Services	Number of PDOs	3 receive and 3 transmit (PDO1, PDO2 and PDO3)
	PDO modes	Event-triggered, Time-triggered, Remotely-requested, Sync (cyclic), Sync (acyclic)
	PDO linking	Yes
	PDO mapping	Configurable (PDO1 and PDO2)
	Number of SDOs	1 server
	Emergency	Yes
	CANopen application layer	CiA DS 301, V 4.02
	Functional profiles	2 profiles: CiA 402 ("Device Profile Drives and Motion Control") and I/O profile
	Communication monitoring	Node Guarding, Heartbeat

Additional Application Information

Using Altivar 71 drives with synchronous motors	<p>Altivar 71 drives are also suitable for powering synchronous motors with sinusoidal electromotive force. This drive/motor combination makes it possible to obtain remarkable accuracy and maximum torque.</p> <p>The design and construction of synchronous motors are such that they offer enhanced power density and high-speed performance in a compact unit.</p> <p>Driving a synchronous motor with sinusoidal electromotive force without speed feedback. The entire range of Altivar 71 variable speed drives can be used to power a synchronous motor with sinusoidal electromotive force without speed feedback. The performance level achieved is then comparable to that obtained with an asynchronous motor in sensorless flux vector control.</p> <p>Driving a synchronous motor with sinusoidal electromotive force with or without speed feedback. For 200...240 V ~ and 380...480 V ~, a product variant is available for Altivar 71 drives for powering a synchronous motor with sinusoidal electromotive force with speed feedback. The performance level achieved is then comparable to that obtained with an asynchronous motor in flux vector control with encoder feedback.</p>
Using special motors at high-speed	<p>These motors are designed for constant torque applications with high frequency ranges. The Altivar 71 drive supports operating frequencies of up to 599 Hz, depending on the supply voltage and the rating. Through their design, this type of motor is more sensitive to overvoltages than a standard motor.</p> <p>Various solutions are available:</p> <ul style="list-style-type: none"> ■ Overvoltage limitation function ■ Output filters <p>The drive's 5-point voltage/frequency control ratio is particularly well-suited as it avoids resonance.</p>
Using a motor at overspeed	<p>The maximum output frequency of the drive can be adjusted from:</p> <ul style="list-style-type: none"> ■ 10 to 599 Hz for drives rated less than or equal to 37 kW in 200... 240 V ~ and 380...480 V a ■ 0 to 500 Hz for all other Altivar 71 drives whatever the type of power supply <p>When using a standardized asynchronous motor at overspeed, check the mechanical overspeed characteristics of the selected motor with the manufacturer. Above its nominal speed corresponding to a frequency of 50/60 Hz, the motor operates with a decreasing flux, and its torque decreases significantly (see curve opposite). The application must be able to permit this type of low-torque, high-speed operation.</p> <ol style="list-style-type: none"> 1. Machine torque (degressive torque) 2. Machine torque (low motor torque) 3. Continuous motor torque <p>Typical applications: wood-working machinery, broaching machines, high-speed hoisting, etc.</p>
Power of self-cooled motor greater than the drive power	<p>This motor-drive combination makes it possible to use a self-cooled motor for a greater speed range in continuous operation. The use of a motor with a higher power rating than that of the drive is only possible if the current drawn by this motor is less than or equal to the nominal drive current.</p> <p>Note: Limit the motor power to the standard rating immediately above that of the drive.</p> <p>Example: On a single machine, the use of a 2.2 kW drive combined with a 3 kW motor means that the machine can operate at its nominal power (2.2 kW) at low speed.</p> <ol style="list-style-type: none"> 1. Motor power = drive power = 2.2 kW 2. 2.2 kW drive combined with a 3 kW motor: greater speed range at 2.2 kW
Connecting motors in parallel	<p>The nominal current of the drive must be greater than or equal to the sum of the currents of the motors to be controlled.</p> <p>In this case, provide external thermal protection for each motor using probes or thermal overload relays. For cable runs over a certain length, taking account of all the tap links, it is advisable either to install an output filter between the drive and the motors or to use the overvoltage limitation function.</p> <p>If several motors are used in parallel, there are two possible scenarios:</p> <ul style="list-style-type: none"> ■ The motors have equal power ratings, in which case the torque characteristics will remain optimized after the drive has been configured ■ The motors have different power ratings, in which case the torque characteristics will not be optimized for all the motors
Using a motor at constant torque up to 87/104 Hz	<p>A 400 V, 50 Hz motor in Δ connection can be used at constant torque up to 87 Hz if it is in Δ connection. In this particular case, the initial motor power and the power of the first associated drive are multiplied by $\sqrt{3}$ (it is therefore important to select a drive with a suitable rating).</p> <p>Example: A 2.2 kW 50 Hz motor in Δ connection supplies 3.8 kW at 87 Hz with a Δ connection.</p> <p>Note: Check the overspeed operating characteristics of the motor.</p>

Altivar 71

variable speed drives

Application Information

Using special motors	Special brake motors: tapered rotor or flux bypass The magnetic field releases the brake. This type of operation with the Altivar 71 drive requires application of the voltage/frequency ratio. Note: The no-load current may be high, and operation at low speed can only be intermittent.
ATEX motors in an explosive atmosphere explosive	Use of the "Power Removal" safety function enables the variable speed drive to provide thermal protection in the event of excessive temperature rise of the ATEX motor, but it does not enable it to control and regulate the temperature of the ATEX motor. All motor types ATEX certified for use in zones 1, 21, 2 or 22, which are equipped with ATEX thermal sensors, can be protected by the Altivar 71 variable speed drive.
Resistive rotor asynchronous motors	Different motor control ratios available on the Altivar 71 drive make it possible to apply specific settings when using high-slip motors.
Switching the motor at the drive output	The drive can be switched when locked or unlocked. If the drive is switched on-the-fly (drive unlocked), the motor is controlled and accelerates until it reaches the reference speed smoothly following the acceleration ramp. This use requires configuration of the automatic catching a spinning load ("catch on the fly") and the motor phase loss on output cut functions. Typical applications: loss of run circuit at drive output, bypass function, switching of motors connected in parallel. On new installations, it is recommended that the Power Removal safety function is used.
Test on a low power motor or without a motor	In a test or maintenance environment, the drive can be tested without having to use a motor with the same rating as the drive (particularly useful in the case of high power drives). This use requires deactivation of the output phase loss function.

Maximum motor cable lengths according to the application

Depending on the type of application, drives can either be used on their own or with the addition of various options.

Altivar 71 drives include as standard a software function used to limit overvoltages at the motor terminals. For more information, please refer to the Programming Manual (SUL function).

Depending on the cable lengths or the type of application, it may be necessary to use output filters:

- Motor chokes used to limit the dV/dt
- Sine wave filters that are particularly effective for long cable runs or to reduce electromagnetic motor noise

The table below gives several examples of maximum permissible motor cable lengths according to application type. Altivar 71 drives have been designed to operate (without the need for additional optional equipment) with the following maximum motor cable lengths:

Application type	Supply voltage		Maximum shielded motor cable length		Maximum unshielded motor cable length			
	V ~	V $\overline{\text{---}}$	ft	m	Without motor choke	With motor choke ⁽¹⁾	ft	m
For ATV71H075N4...HD75N4 drives								
Drive only	400...480	560...680	164	50	328.1	100	656.2	200
With braking resistor (braking cycle = 5%)	400...480	785	164	50	328.1	100	656.2	200
With braking resistor (braking cycle \geq 50%) For hoisting application	400...480	785	164	50	65.6	20	656.2	200
With Active Front End (AFE)	400	650	164	50	328.1	100	656.2	200
	480	770	164	50	65.6	20	656.2	200
For ATV71H...M3, ATV71HD11M3X, ATV71HD55M3X, ATV71HU55N4...HD75N4 drives								
Drive only	400...480	560...680	164	50	328.1	100	984.3	300
With braking resistor (braking cycle = 5%)	400...480	785	164	50	328.1	100	984.3	300
With braking resistor (braking cycle \geq 50%) For hoisting application	400...480	785	164	50	65.6	20	984.3	300
With Active Front End (AFE)	400	650	164	50	328.1	100	984.3	300
	480	770	164	50	65.6	20	984.3	300
For ATV71HD75M3X, ATV71HD90M3X, ATV71HD90N4...HC50N4 drives								
Drive only	400...480	560...680	262.5	80	328.1	100	984.3	300
With braking resistor (braking cycle = 5%)	400...480	785	262.5	80	328.1	100	984.3	300
With braking resistor (braking cycle \geq 50%) For hoisting application	400...480	785	262.5	80	98.4	30	984.3	300
With Active Front End (AFE)	400	650	262.5	80	328.1	100	984.3	300
	480	770	262.5	80	98.4	30	984.3	300
For ATV71HPPPS6X, ATV71HU22Y...HD30Y, ATV71HD37Y...HD90Y								
Drive only	400...480	560...680	32.8	10			32.8	10
With braking resistor (braking cycle = 5%)	400...480	785	32.8	10			32.8	10
With braking resistor (braking cycle \geq 50%) For hoisting application	400...480	785	32.8	10			32.8	10
With Active Front End (AFE)	400	650	32.8	10			32.8	10
	480	770	32.8	10			32.8	10
For ATV71HC11Y...HC63Y								
Drive only	400...480	560...680	49.2	15			98.4	30
With braking resistor (braking cycle = 5%)	400...480	785	49.2	15			98.4	30
With braking resistor (braking cycle \geq 50%) For hoisting application	400...480	785	49.2	15			98.4	30
With Active Front End (AFE)	400	650	49.2	15			98.4	30
	480	770	49.2	15			98.4	30

(1) A sine wave filter is required for use with longer cables.

Altivar 71

variable speed drives

Selection Table

IP 20 drives, 200...240 V 50/60 Hz



ATV71H075M3



ATV71HU55M3



ATV71HD30M3X

Single phase input

Motor		Line supply			Altivar 71			Part Number ⁽³⁾	Frame Size	Weight	
Power ⁽¹⁾		Line current ⁽²⁾		Max. prospective line Isc	Maximum continuous current ⁽¹⁾	Max. transient current for				lbs	kg
HP	kW	200 V	240 V		230 V	60 s	2 s				
A	A	A	A	kA	A	A	A				
Single-phase supply voltage, without line reactor: 200...240 V 50/60 Hz											
0.5	.37	6.9	5.8	5	3	4.5	4.9	ATV71H075M3	2	6.6	3
1	.75	12	9.9	5	4.8	7.2	7.9	ATV71HU15M3	2	6.6	3
2	1.5	18.2	15.7	5	8	12	13.2	ATV71HU22M3	3	8.8	4
3	2.2	25.9	22.1	5	11	16.5	18.1	ATV71HU30M3	3	8.8	4
5	4	47.3	40.1	5	1	26.3	29.7	ATV71HU75M3	5A	15.4	7
7.5	6	-	51.4	5	27.5	41.3	45.3	ATV71HD15M3X ⁽⁴⁾	5B	19.8	9
10	8	-	59.6	5	33	49.5	54.5	ATV71HD18M3X ⁽⁴⁾	6	66.1	30
15	11	-	88.4	5	54	81	89.1	ATV71HD30M3X ⁽⁴⁾	7B	81.6	37
20	15	-	111.1	5	66	99	109	ATV71HD37M3X ⁽⁴⁾	7B	81.6	37
25	18	-	137.6	10	75	112	124	ATV71HD45M3X ⁽⁴⁾	7B	81.6	37

Single-phase supply voltage, with 5% line reactor: 200...240 V 50/60 Hz											
-	3	25.9	22	5	13.6	20.6	22.6	ATV71HU40M3	3	8.8	4
5	4	34.9	29.9	5	17.5	26.3	28.8	ATV71HU55M3	4	12.1	5.5
7.5	6	47.3	40.1	22	27.5	41.3	45.3	ATV71HU75M3	5A	15.3	7
10	8	-	54	22	33	49.5	54.5	ATV71HD15M3X ⁽⁴⁾	5B	19.8	9
15	11	-	78.3	22	54	81	89.1	ATV71HD22M3X ⁽⁴⁾	6	66.1	30
20	15	-	101.5	22	66	99	109	ATV71HD30M3X ⁽⁴⁾	7B	81.6	37
25	18	-	131	22	75	112	124	ATV71HD37M3X ⁽⁴⁾	7B	81.6	37
30	22	-	145.9	22	88	132	145	ATV71HD45M3X ⁽⁴⁾	7B	81.6	37

Dimensions (overall)

Frame Size	W x H x D	
	inches	mm
2	5.1 x 9.1 x 6.9	130 x 230 x 175
3	6.1 x 10.2 x 7.4	155 x 260 x 187
4	6.9 x 11.6 x 7.4	175 x 295 x 187
5A	8.3 x 11.6 x 8.4	210 x 295 x 213
5B	9.1 x 15.7 x 8.4	230 x 400 x 213
6	9.4 x 16.5 x 9.3	240 x 420 x 236
7B	12.6 x 21.6 x 10.5	320 x 550 x 266

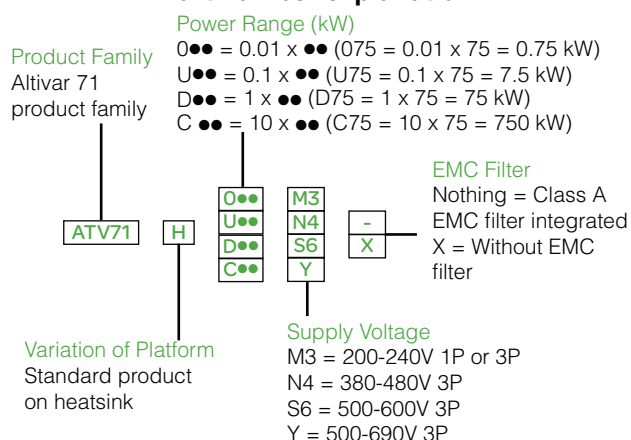
(1) These values are given for a nominal switching frequency of 4 kHz up to ATV71HD15M3X or 2.5 kHz for ATV71HD18M3X...HD75M3X drives for use in continuous operation. The switching frequency is adjustable from 1...16 kHz up to ATV71HD45M3X and from 1...8 kHz for ATV71HD55M3X and ATV71HD75M3X drives. Above 2.5 or 4 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current..

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

(3) Variants available.

(4) Note: Part numbers ending with ...M3X do not include an integrated EMC filter. EMC filters are available as an option.

Part number explanation



Altivar 71

variable speed drives

Selection Table

IP 20 drives, 200...240 V 50/60 Hz



ATV71HU22N4



ATV71HU40N4Z



ATV71HC28N4

Three phase input

Motor		Line supply			Altivar 71			Part Number ⁽³⁾	Frame Size	Weight		
Power ⁽¹⁾		Line current ⁽²⁾		Max. prospective line Isc	Maximum continuous current ⁽¹⁾		Max. transient current for					
200 V	240 V				230 V	60 s	2 s					
HP	kW	A	A	kA	A	A	A			lbs	kg	
Three-phase supply voltage: 200...240 V 50/60 Hz												
0.5	.37	3.5	3.1	5	3	4.5	4.9	ATV71H037M3	2	6.6	3	
1	.75	6.1	5.3	5	4.8	7.2	7.9	ATV71H075M3	2	6.6	3	
2	1.5	11.3	9.6	5	8	12	13.2	ATV71HU15M3	2	6.6	3	
3	2.2	15	12.8	5	11	16.5	18.1	ATV71HU22M3	3	8.8	4	
-	3	19.3	16.4	5	13.7	20.6	22.6	ATV71HU30M3	3	8.8	4	
5	4	25.8	22.9	5	17.5	26.3	28.8	ATV71HU40M3	3	8.8	4	
7.5	5.5	35	30.8	22	27.5	41.3	45.3	ATV71HU55M3	4	12.1	5.5	
10	7.5	45	39.4	22	33	49.5	54.5	ATV71HU75M3	5A	15.4	7	
15	11	53.3	45.8	22	54	81	89.1	ATV71HD11M3X	5B	48.5	22	
20	15	71.7	61.6	22	66	99	109	ATV71HD15M3X	5B	48.5	22	
25	18.5	77	69	22	75	112	124	ATV71HD18M3X	6	66.1	30	
30	22	88	80	22	88	132	145	ATV71HD22M3X	6	66.1	30	
40	30	124	110	22	120	180	198	ATV71HD30M3X	7B	81.6	37	
50	37	141	127	22	144	216	238	ATV71HD37M3X	7B	81.6	37	
60	45	167	147	22	176	264	290	ATV71HD45M3X	7B	81.6	37	
75	55	200	173	35	221	332	365	ATV71HD55M3X	9	220.5	100	
100	75	271	232	35	285	428	470	ATV71HD75M3X	10	268.5	122	

Dimensions (overall)

Frame Size	W x H x D	
	inches	mm
2	5.1 x 9.1 x 6.9	130 x 230 x 175
3	6.1 x 10.2 x 7.4	155 x 260 x 187
4	6.9 x 11.6 x 7.4	175 x 295 x 187
5A	8.3 x 11.6 x 8.4	210 x 295 x 213
5B	9.1 x 15.7 x 8.4	230 x 400 x 213
6	9.4 x 16.5 x 9.3	240 x 420 x 236
7B	12.6 x 21.6 x 10.5	240 x 550 x 266
9	12.6 x 36.2 x 14.8	320 x 920 x 377
10	14.2 x 40.2 x 14.8	360 x 1022 x 377

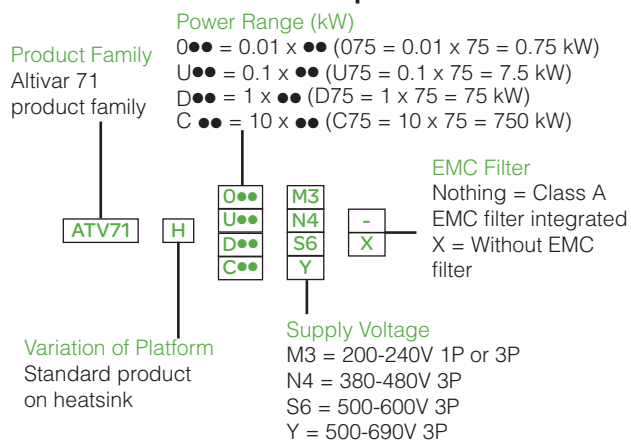
(1) These values are given for a nominal switching frequency of 4 kHz up to ATV71HD15M3X or 2.5 kHz for ATV71HD18M3X... HD75M3X drives for use in continuous operation. The switching frequency is adjustable from 1...16 kHz up to ATV71HD45M3X and from 1...8 kHz for ATV71HD55M3X and ATV71HD75M3X drives. Above 2.5 or 4 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current.

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

(3) Variants available.

(4) Note: Part numbers ending with ...M3X do not include an integrated EMC filter. EMC filters are available as an option.

Part number explanation



Altivar 71

variable speed drives

Selection Table

IP 20 drives, 380...480 V 50/60 Hz



ATV71HU22N4



ATV71HU40N4Z



ATV71HC28N4

Three phase input

Motor		Line supply			Altivar 71			Part Number ⁽³⁾	Frame Size	Weight	
Power ⁽¹⁾		Line current ⁽²⁾		Max. prospective line Isc	Maximum continuous current ⁽¹⁾	Max. transient current for					
					380 V - 480 V	60 s	2 s				
HP	kW	A	A	kA	A	A	A			lbs	kg
Three-phase supply voltage: 380...480 V 50/60 Hz											
1	0.75	3.7	3	5	2.3	3.5	3.8	ATV71H075N4	2	6.6	3
2	1.5	5.8	5.3	5	4.1	6.2	6.8	ATV71HU15N4	2	6.6	3
3	2.2	8.2	7.1	5	5.8	8.7	9.6	ATV71HU22N4	2	6.6	3
-	3	10.7	9	5	7.8	11.7	12.9	ATV71HU30N4	3	8.8	4
5	4	14.1	11.5	5	10.5	15.8	17.3	ATV71HU40N4	3	8.8	4
7.5	5.5	20.3	17	22	14.3	21.5	23.6	ATV71HU55N4	4	12.1	5
10	7.5	27	22.2	22	17.6	26.4	29	ATV71HU75N4	4	12.1	5.5
15	11	36.6	30	22	27.7	41.6	45.7	ATV71HD11N4	5A	15.4	7
20	15	48	39	22	33	49.5	54.5	ATV71HD15N4	5B	48.5	22
18.5	18.5	45.5	37.5	22	41	61.5	67.7	ATV71HD18N4	5B	48.5	22
30	22	50	42	22	48	72	79.2	ATV71HD22N4	6	66.1	30
40	30	66	56	22	66	99	109	ATV71HD30N4	7A	81.6	37
50	37	84	69	22	79	118.5	130	ATV71HD37N4	7A	81.6	37
60	45	104	85	22	94	141	155	ATV71HD45N4	8	97	44
75	55	120	101	22	116	174	191	ATV71HD55N4	8	97	44
100	75	167	137	22	160	240	264	ATV71HD75N4	8	97	44
125	90	166	134	35	179	269	295	ATV71HD90N4 ⁽⁴⁾	9	220.5	100
150	110	202	163	35	215	323	355	ATV71HC11N4 ⁽⁴⁾	10	269	122
200	132	239	192	35	259	388	427	ATV71HC13N4 ⁽⁴⁾	11	255.7	116
250	160	289	233	50	314	471	518	ATV71HC16N4 ⁽⁴⁾	12	359.4	163
300	200	357	286	50	387	580	638	ATV71HC20N4 ⁽⁴⁾	13	456.4	207
350	220	396	320	50	427	640	704	ATV71HC25N4 ⁽⁴⁾	13	456.4	207
400	250	444	357	50	481	721	793				
450	280	494	396	50	550	825	907	ATV71HC28N4 ⁽⁴⁾	13	456.4	207
500	315	555	444	50	616	924	1016	ATV71HC31N4 ⁽⁴⁾	14	705.5	320
-	355	637	512	50	671	1006	1107	ATV71HC40N4 ⁽⁴⁾	14	727.5	330
600	400	709	568	50	759	1138	1252				
700	500	876	699	50	941	1411	1552	ATV71HC50N4 ⁽⁴⁾	15	959	435

Dimensions (overall)

Frame Size	W x H x D	
	inches	mm
2	5.1 x 9.1 x 6.9	130 x 230 x 175
3	6.1 x 10.2 x 7.4	155 x 260 x 187
4	6.9 x 11.6 x 7.4	175 x 295 x 187
5A	8.3 x 11.6 x 8.4	210 x 295 x 213
5B	9.1 x 15.7 x 8.4	230 x 400 x 213
6	9.4 x 16.5 x 9.3	240 x 420 x 236
7A	12.6 x 21.6 x 10.5	240 x 550 x 266
8	12.6 x 24.8 x 11.4	320 x 630 x 290
9	12.6 x 36.2 x 14.8	320 x 920 x 377
10	14.2 x 40.2 x 14.8	360 x 1022 x 377
11	13.4 x 46.9 x 14.8	340 x 1190 x 377
12	17.3 x 46.9 x 14.8	440 x 1190 x 377
13	24.3 x 46.9 x 14.8	595 x 1190 x 377
14	35 x 54.7 x 14.8	890 x 1390 x 377
15	44.1 x 54.7 x 14.8	1120 x 1390 x 377

(1) These values are given for a nominal switching frequency of 4 kHz up to ATV71HD30N4 or 2.5 kHz for ATV71HD37N4...HC50N4 drives for use in continuous operation. The switching frequency is adjustable from 1...16 kHz up to ATV71HD75N4 and from 2.5...8 kHz for ATV71HD90N4...ATV71HC50N4 drives. Above 2.5 or 4 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current.

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

(3) Variants available.

(4) These drives are shipped with a DC choke that must be field mounted. A 5% line reactor may be purchased and installed in place of the DC choke.

Altivar 71

variable speed drives

Selection Table

IP 20 drives, 500...690 V 50/60 Hz



ATV71HU22Y



ATV71HD37Y



ATV71HC25Y



(line choke mandatory)⁽⁴⁾

Three phase input

Motor		Line supply			Altivar 71					
Power ⁽¹⁾		Line current ⁽²⁾		Max. prospective line Isc	Maximum continuous current ⁽¹⁾⁽³⁾		Part Number	Frame Size	Weight	
500 V	575 V	500 V	600 V		500 V	575 V			lbs	kg
kW	HP	A	A		kA	A				

Three-phase supply voltage: 500...600 V 50/60 Hz

1.5	2	5.6	4.9	22	3.2	2.7	ATV71HU15S6X	5A	16.5	7.5
2.2	3	7.6	6.7	22	4.5	3.9	ATV71HU22S6X	5A	16.5	7.5
3	–	9.9	10	22	5.8	–	ATV71HU30S6X	5A	16.5	7.5
4	5	12.5	10.9	22	7.5	6.1	ATV71HU40S6X	5A	16.5	7.5
5.5	7.5	16.4	14.2	22	10	9	ATV71HU55S6X	5A	16.5	7.5
7.5	10	21.4	18.4	22	13.5	11	ATV71HU75S6X	5A	16.5	7.5

Motor			Line supply				Altivar 71				Part Number	Frame Size	Weight	
Power ⁽¹⁾			Line current ⁽²⁾			Max. prospective line Isc	Maximum continuous current ⁽¹⁾⁽³⁾			lbs			kg	
500 V	575 V	690 V	500 V	600 V	690 V		500 V	575 V	690 V					
kW	HP	kW	A	A	A	kA	A	A	A					

Three-phase supply voltage: 500...690 V 50/60 Hz

1.5	2	2.2	3.8	3.2	4	22	3.2	2.7	4	ATV71HU22Y	6	66.1	30
2.2	3	3	5.2	4.4	5.2	22	4.5	3.9	4.5	ATV71HU30Y	6	66.1	30
3	–	4	6.8	–	6.6	22	5.8	–	5.5	ATV71HU40Y	6	66.1	30
4	5	5.5	8.6	7.2	8.6	22	7.5	6.1	7.5	ATV71HU55Y	6	66.1	30
5.5	7.5	7.5	11.2	9.5	11.2	22	10	9	10	ATV71HU75Y	6	66.1	30
7.5	10	11	14.6	12.3	15.5	22	13.5	11	13.5	ATV71HD11Y	6	66.1	30
11	15	15	19.8	16.7	20.2	22	18.5	17	18.5	ATV71HD15Y	6	66.1	30
15	20	18.5	24	21	24	22	24	22	24	ATV71HD18Y	6	66.1	30
18.5	25	22	29	24	27	22	29	27	27	ATV71HD22Y	6	66.1	30
22	30	30	33	28	34	22	35	32	35	ATV71HD30Y	6	66.1	30
30	40	37	48	41	47	22	47	41	43	ATV71HD37Y	8	149.9	68
37	50	45	62	51	55	22	59	52	54	ATV71HD45Y	8	149.9	68
45	60	55	68	57	63	22	68	62	62	ATV71HD55Y	8	149.9	68
55	75	75	84	70.5	88	22	85	77	84	ATV71HD75Y	8	149.9	68
75	100	90	109	92	101	22	110	99	104	ATV71HD90Y	8	149.9	68
90	125	110	128	113	117	28	136	125	125	ATV71HC11Y ⁽⁴⁾	11	224.9	102
110	150	132	153	133	137	28	165	144	150	ATV71HC13Y ⁽⁴⁾	11	224.9	102
132	–	160	182	–	163	35	200	–	180	ATV71HC16Y ⁽⁴⁾	11	224.9	102
160	200	200	227	204	212	35	240	192	220	ATV71HC20Y ⁽⁴⁾	13	399	181
200	250	250	277	249	256	35	312	242	290	ATV71HC25Y ⁽⁴⁾	13	399	181
250	350	315	342	311	317	35	390	336	355	ATV71HC31Y ⁽⁴⁾	13	399	181
315	450	400	439	401	409	35	462	412	420	ATV71HC40Y ⁽⁴⁾	15	844.4	383
400	550	500	544	491	498	35	590	528	543	ATV71HC50Y ⁽⁴⁾	15	844.4	383
500	700	630	673	613	616	42	740	672	675	ATV71HC63Y ⁽⁴⁾	15	844.4	383

Dimensions (overall)

Drives	W x H x D	
	inches	mm
5A	8.3 x 11.6 x 8.4	210 x 295 x 213
6	9.4 x 16.5 x 9.3	240 x 420 x 236
8	12.6 x 24.6 x 11.4	320 x 630 x 290
11	13.4 x 46.9 x 14.8	340 x 1190 x 377
13	23.4 x 46.9 x 14.8	595 x 1190 x 377
15	44.1 x 54.7 x 14.8	1120 x 1390 x 377

(1) These values are given for a nominal switching frequency of 4 kHz for ATV71HU...S6X and for ATV71HU22Y...HD30Y or 2.5 kHz for ATV71HD37Y...HC63Y for use in continuous operation. The switching frequency is adjustable from 2.5...6 kHz for ATV71HU...S6X and for ATV71HU22Y...HD30Y, and 2.5...4.9 kHz for ATV71HD37Y...ATV71HC63Y drives. Above 2.5 kHz or 4 kHz, depending on the rating, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. For continuous operation above the nominal switching frequency, derate the nominal drive current.

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

(3) The maximum transient current for:

- 60 seconds is equal to 150% of the maximum continuous current

- 2 seconds is equal to 165% of the maximum continuous current

(4) A 5% line choke is mandatory for ATV71HC11Y...HC63Y drives. The line choke must be ordered separately.

Altivar 71

variable speed drives

Short Circuit Current Ratings

Short Circuit Current Ratings and branch circuit protection

The combinations in the tables have been tested per UL508C (Reference UL file E116875).

These ratings are in addition to ratings on the nameplate of the product.

The values for the overcurrent protection devices are the maximum allowable amp size. Smaller amp ratings may be used.

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.

The devices are provided with software integral overload and over speed protection for the motor. Protection at 110% of the full load motor current. The motor thermal protection current (I_{th}) must be set to the rated current indicated on the motor nameplate. (For detail see the programming manual).

75°C (167 °F) copper conductor with the AWG wire size for all products, except ATV71HC13N4● to ATV71HC50N4●, ATV71HC11Y to ATV71HC63Y: 60°C (140°F) / 75°C (167 °F) copper conductor with the AWG wire size.

Suitable for use on a circuit capable of delivering not more than ___X___rms symmetrical kiloAmperes, ___Y___Volts maximum, when protected by ___Z1___ with a maximum rating of ___Z2___.

Altivar 71								Short Circuit Current Ratings ⁽²⁾													
								with Circuit Breaker ⁽³⁾			with GV●P ⁽³⁾					with Fuses ⁽³⁾			with Fuses and Type 1 kit ⁽⁴⁾		
Input Voltage 50/60 Hz Y	(HP)	(kW)	(A)	Part number	Input Rating: (kA) ⁽¹⁾	Minimum Inductance (mH)	Line Reactor Reference	PowerPact ⁽⁵⁾ Z1, Z2	SCCR (kA) X	Minimum Enclosure Volume (in ³)	GV●P Type E ⁽⁶⁾ Z1, Z2	GV●P Voltage Rating (V)	GV●P Maximum Power (HP)	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)
Single-phase Input, without line reactor																					
200/240V single-phase	0.5	0.37	3	ATV71H075M3	5	-	-	HJL36015	5	4017	-	-	-	5	1600	15 ⁽⁷⁾	5	1078	15 ⁽⁷⁾	5	1078
	1	0.75	4.8	ATV71HU15M3	5	-	-	HJL36025	5	4017	GV2P14	240	1	5	1600	25 ⁽⁷⁾	5	1078	25 ⁽⁷⁾	5	1078
	2	1.5	8	ATV71HU22M3	5	-	-	HJL36035	5	4017	GV3P18	240	3	5	4017	35 ⁽⁷⁾	5	1550	25 ⁽⁷⁾	5	1550
	3	2.2	11	ATV71HU30M3	5	-	-	HJL36035	5	4017	GV3P18	240	3	5	1920	35 ⁽⁷⁾	5	1550	40 ⁽⁷⁾	5	1550
	5	4	17.5	ATV71HU75M3	5	-	-	HJL36110	5	6528	GV3P50	240	7.5	5	4032	110 ⁽⁷⁾	5	2719	70 ⁽⁷⁾	5	2719
	7.5	6	27.5	ATV71HD15M3X	5	-	-	HJL36150	5	6528	GV3P65	240	10	5	5760	150 ⁽⁷⁾	5	4036	110 ⁽⁷⁾	5	4036
	10	8	33	ATV71HD18M3X	5	-	-	JJL36175	5	13215	-	-	-	-	-	175 ⁽⁷⁾	5	4900	125 ⁽⁷⁾	5	4900
	15	11	54	ATV71HD30M3X	5	-	-	JJL36250	5	13215	-	-	-	-	-	250 ⁽⁷⁾	5	9640	200 ⁽⁷⁾	5	9640
	20	15	66	ATV71HD37M3X	5	-	-	JJL36250	5	13215	-	-	-	-	-	250 ⁽⁷⁾	5	9640	225 ⁽⁷⁾	5	9640
	25	18	75	ATV71HD45M3X	10	-	-	-	-	-	-	-	-	-	-	300 ⁽⁷⁾	10	9640	300 ⁽⁷⁾	10	9640
Single-phase input, with line reactor																					
200/240V Single-phase	-	3	13.7	ATV71HU40M3	5	1	RL02502	HJL36060	5	6528	GV3P25	240	3	5	1920	60 ⁽⁷⁾	5	1550	45 ⁽⁷⁾	5	1550
	5	4	17.5	ATV71HU55M3	5	0.8	RL03502	HJL36080	5	6528	GV3P40	240	5	5	2880	80 ⁽⁷⁾	5	1987	60 ⁽⁷⁾	5	1987
	7.5	6	27.5	ATV71HU75M3	22	0.5	RL05502	HJL36110	22	6528	GV3P50	240	7.5	22	4032	110 ⁽⁷⁾	22	2719	70 ⁽⁷⁾	22	2719
	8	8	33	ATV71HD15M3X	22	0.4	RL08002	HJL36150	22	6528	GV3P65	240	10	22	5760	150 ⁽⁷⁾	22	4036	110 ⁽⁷⁾	22	4036
	15	11	54	ATV71HD22M3X	22	0.3	RL10002	JJL36200	22	13215	-	-	-	-	-	200 ⁽⁷⁾	22	4900	150 ⁽⁷⁾	22	4900
	20	15	66	ATV71HD30M3X	22	0.2	RL13002	JJL36250	22	13215	-	-	-	-	-	250 ⁽⁷⁾	22	9640	200 ⁽⁷⁾	22	9640
	25	18	75	ATV71HD37M3X	22	0.15	RL16002	JJL36250	22	13215	-	-	-	-	-	250 ⁽⁷⁾	22	9640	225 ⁽⁷⁾	22	9640
	30	22	88	ATV71HD45M3X	22	0.185	RL20003B14	LAL36400	22	8640	-	-	-	-	-	300 ⁽⁷⁾	22	9640	300 ⁽⁷⁾	22	9640

(1) This column shows the maximum prospective short circuit current value that cannot be exceeded without adding input impedance. Electrical distribution systems with a higher prospective short circuit current will cause higher input currents in the front end of the drive. It is possible for the tested SCCR rating of the drive to be lower than this Input rating. The tested SCCR rating can be higher than this input rating when a line reactor is used.

(2) An ATV71 output short circuit test was performed for 100 kA. In addition to providing a rating based on shorting the output of the drive, these short circuit ratings have been obtained by shorting components internal to the Altivar 71. These ratings allow proper coordination of short circuit protection. The 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. The listed line reactor or minimum impedance is required to obtain ratings above the Input Rating.

(3) Ratings apply to an Altivar 71 mounted in a non-ventilated Type 1, 3R, 4(X) or 12 rated enclosure. Use noted ratings when using a Type 1 conduit kit. Minimum enclosure volume allows for the specified SCCR. Your application specific thermal requirements may require a larger enclosure.

(4) The fuse ratings in this column are for an Altivar 71 drive installed with a VW3A92●●●● Type 1 conduit kit. These fuse ratings in this column can also apply to Altivar 71 drive installed in a Type 1, 3R, 4(X) or 12 rated enclosure that has a minimum volume listed in the table.

(5) Circuit breakers with lower interrupt ratings can be used within the same circuit breaker frame rating. For 200 / 240 Vac, replace with HGL or JGL for 65kA interrupt rating. For 380 / 480 Vac, replace with HGL or JGL for 35kA or HJL or JLL for 65kA interrupt rating. For 500 / 600 Vac, replace with HJL for 25kA or HGL for 18kA, or HDL for 14kA interrupt rating.

(6) 480 V ratings are for Wye connected electrical distribution systems only. 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

(7) Use fast acting fuse or time delay Class J

(8) Fuse type Class CC

Part number explanation

Power Range (kW)

0●● = 0.01 x ●● (075 = 0.01 x 75 = 0.75 kW)

U●● = 0.1 x ●● (U75 = 0.1 x 75 = 7.5 kW)

D●● = 1 x ●● (D75 = 1 x 75 = 75 kW)

C●● = 10 x ●● (C75 = 10 x 75 = 750 kW)

Product Family
Altivar 71
product family

ATV71

0●●
U●●
D●●
C●●

Variation of Platform
Standard product
on heatsink

M3
N4
S6
Y

Supply Voltage
M3 = 200-240V 3P
N4 = 380-480V 3P
S6 = 500-600V 3P
Y = 500-690V 3P

EMC Filter

Nothing = Class A
EMC filter integrated
X = Without EMC
filter

Altivar 71

variable speed drives

Short Circuit Current Ratings

Altivar 71								Short Circuit Current Ratings ⁽²⁾													
								with Circuit Breaker ⁽³⁾			with GV●P ⁽³⁾					with Fuses ⁽³⁾			with Fuses and Type 1 kit ⁽⁴⁾		
Input Voltage 50/60 Hz Y	(HP)	(kW)	(A)	Part number	Input Rating: (kA) ⁽¹⁾	Minimum Inductance (mH)	Line Reactor Reference	PowerPact ⁽⁶⁾ Z1, Z2	SCCR (kA) X	Minimum Enclosure Volume (in ³)	GV●P Type E ⁽⁶⁾ Z1, Z2	GV●P Voltage Rating (V)	GV●P Maximum Power (HP)	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)
Three-phase Input, without line reactor																					
200/240V Three-phase	0.5	0.37	3	ATV71H037M3	5	-	-	HJL36015	5	4017	GV2P08	240	1	5	1600	15 ⁽⁷⁾	5	4017	7 ⁽⁸⁾	5	1078
	1	0.75	4.8	ATV71H075M3	5	-	-	HJL36015	5	4017	GV2P10	240	1.5	5	1600	15 ⁽⁷⁾	5	4017	15 ⁽⁷⁾	5	1078
	2	1.5	8	ATV71HU15M3	5	-	-	HJL36025	5	4017	GV2P14	240	3	5	1600	25 ⁽⁷⁾	5	4017	25 ⁽⁷⁾	5	1078
	3	2.2	11	ATV71HU22M3	5	-	-	HJL36035	5	4017	GV3P18	240	5	5	1920	35 ⁽⁷⁾	5	4017	25 ⁽⁷⁾	5	1550
	-	3	13.7	ATV71HU30M3	5	-	-	HJL36035	5	4017	GV3P18	240	3	5	1920	35 ⁽⁷⁾	5	4017	40 ⁽⁷⁾	5	1550
	5	4	17.5	ATV71HU40M3	5	-	-	HJL36060	5	4017	GV3P25	240	7.5	5	1920	60 ⁽⁷⁾	5	4017	45 ⁽⁷⁾	5	1550
	7.5	6	27.5	ATV71HU55M3	22	-	-	HJL36080	22	6528	GV3P40	240	10	5	2880	80 ⁽⁷⁾	22	6528	60 ⁽⁷⁾	5	1987
	10	8	33	ATV71HU75M3	22	-	-	HJL36110	22	6528	GV3P50	240	10	5	4032	110 ⁽⁷⁾	22	6528	70 ⁽⁷⁾	5	2719
	15	11	54	ATV71HD11M3X	22	-	-	HJL36110	22	6528	GV3P50	240	10	5	5760	110 ⁽⁷⁾	22	6528	90 ⁽⁷⁾	5	4036
	20	15	66	ATV71HD15M3X	22	-	-	HJL36150	22	6528	GV3P65	240	15	5	5760	150 ⁽⁷⁾	22	6528	110 ⁽⁷⁾	5	4036
	25	18	75	ATV71HD18M3X	22	-	-	JJL36175	22	13215	-	-	-	-	-	175 ⁽⁷⁾	22	13215	125 ⁽⁷⁾	5	4900
	30	22	88	ATV71HD22M3X	22	-	-	JJL36200	22	13215	-	-	-	-	-	200 ⁽⁷⁾	22	13215	150 ⁽⁷⁾	5	4900
	40	30	120	ATV71HD30M3X	22	-	-	JJL36250	22	13215	-	-	-	-	-	250 ⁽⁷⁾	22	13215	200 ⁽⁷⁾	5	9640
	50	37	144	ATV71HD37M3X	22	-	-	JJL36250	22	13215	-	-	-	-	-	250 ⁽⁷⁾	22	13215	225 ⁽⁷⁾	5	9640
	60	45	176	ATV71HD45M3X	22	-	-	-	-	-	-	-	-	-	-	-	-	-	300 ⁽⁷⁾	10	9640
380/480V Three-phase	1	0.75	2.3	ATV71H075N4	5	-	-	HLL36015	5	4017	GV2P08	480Y/277	2	5	1600	15 ⁽⁸⁾	5	4017	6 ⁽⁸⁾	5	1078
	2	1.5	4.1	ATV71HU15N4	5	-	-	HLL36015	5	4017	GV2P10	480Y/277	4	5	1600	15 ⁽⁸⁾	5	4017	12 ⁽⁸⁾	5	1078
	3	2.2	5.8	ATV71HU22N4	5	-	-	HLL36015	5	4017	GV2P14	480Y/277	5	5	1600	15 ⁽⁷⁾	5	4017	15 ⁽⁷⁾	5	1078
	-	3	7.8	ATV71HU30N4	5	-	-	HLL36015	5	4017	GV2P14	480Y/277	5	5	1920	15 ⁽⁷⁾	5	4017	17.5 ⁽⁷⁾	5	1550
	5	4	10.5	ATV71HU40N4	5	-	-	HLL36025	5	4017	GV3P13	480Y/277	7.5	5	1920	25 ⁽⁷⁾	5	4017	25 ⁽⁷⁾	5	1550
	7.5	5.5	14.3	ATV71HU55N4	22	-	-	HLL36040	22	6528	GV3P25	480Y/277	15	5	2880	40 ⁽⁷⁾	22	6528	40 ⁽⁷⁾	5	1987
	10	7.5	17.6	ATV71HU75N4	22	-	-	HLL36050	22	6528	GV3P25	480Y/277	15	5	2880	50 ⁽⁷⁾	22	6528	40 ⁽⁷⁾	5	1987
	15	11	27.7	ATV71HD11N4	22	-	-	HLL36070	22	6528	GV3P40	480Y/277	25	5	4032	70 ⁽⁷⁾	22	6528	60 ⁽⁷⁾	5	2719
	20	15	33	ATV71HD15N4	22	-	-	HLL36100	22	6528	GV3P50	480Y/277	30	5	5760	100 ⁽⁷⁾	22	6528	70 ⁽⁷⁾	5	4036
	25	18	41	ATV71HD18N4	22	-	-	HLL36090	22	6528	GV3P50	480Y/277	30	5	8640	90 ⁽⁷⁾	22	6528	70 ⁽⁷⁾	5	4036
	30	22	48	ATV71HD22N4	22	-	-	HLL36100	22	6528	GV3P50	480Y/277	30	5	8640	100 ⁽⁷⁾	22	6528	80 ⁽⁷⁾	5	4900
	40	30	66	ATV71HD30N4	22	-	-	HLL36125	22	6528	GV3P65	480Y/277	40	5	10368	125 ⁽⁷⁾	22	6528	90 ⁽⁷⁾	5	7230
	50	37	79	ATV71HD37N4	22	-	-	HLL36150	22	13215	-	-	-	-	-	150 ⁽⁷⁾	22	13215	110 ⁽⁷⁾	5	7230
	60	45	94	ATV71HD45N4	22	-	-	JLL36200	22	13215	-	-	-	-	-	200 ⁽⁷⁾	22	13215	150 ⁽⁷⁾	10	12044
	75	55	116	ATV71HD55N4	22	-	-	JLL36225	22	13215	-	-	-	-	-	225 ⁽⁷⁾	22	13215	175 ⁽⁷⁾	10	12044
	100	75	160	ATV71HD75N4	22	-	-	JLL36250	22	38250	-	-	-	-	-	250 ⁽⁷⁾	22	38250	225 ⁽⁷⁾	10	12044
	100	75	160	ATV71HD75N4	22	-	-	KCL34250	22	38250	-	-	-	-	-	250 ⁽⁷⁾	22	38250	225 ⁽⁷⁾	10	12044

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Altivar 71

variable speed drives

Short Circuit Current Ratings

Altivar 71								Short Circuit Current Ratings ⁽²⁾														
								with Circuit Breaker ⁽³⁾					with GV●P ⁽³⁾					with Fuses ⁽³⁾			with Fuses and Type 1 kit ⁽⁴⁾	
Input Voltage 50/60 Hz Y	(HP)	(kW)	(A)	Part number	Input Rating: (kA) ⁽¹⁾	Minimum Inductance (mH)	Line Reactor Reference	PowerPact ⁽⁶⁾ Z1, Z2	SCCR (kA) X	Minimum Enclosure Volume (in ³)	GV●P Type E ⁽⁶⁾ Z1, Z2	GV●P Voltage Rating (V)	GV●P Maximum Power (HP)	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	
Three-phase Input, without line reactor																						
575V Three-phase	2	1.5	2.7	ATV71HU15S6X	22	-	-	-	-	-	-	-	-	-	-	6 ⁽⁷⁾	22	3898	10 ⁽⁷⁾	22	3898	
	3	2.2	3.9	ATV71HU22S6X	22	-	-	-	-	-	-	-	-	-	-	6 ⁽⁷⁾	22	3898	10 ⁽⁷⁾	22	3898	
	-	3	5.8	ATV71HU30S6X	22	-	-	-	-	-	-	-	-	-	-	6 ⁽⁷⁾	22	3898	15 ⁽⁷⁾	22	3898	
	5	4	6.1	ATV71HU40S6X	22	-	-	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	22	3898	15 ⁽⁷⁾	22	3898	
	7.5	5.5	9	ATV71HU55S6X	22	-	-	-	-	-	-	-	-	-	-	15 ⁽⁷⁾	22	3898	20 ⁽⁷⁾	22	3898	
	10	7.5	11	ATV71HU75S6X	22	-	-	-	-	-	-	-	-	-	-	20 ⁽⁷⁾	22	3898	25 ⁽⁷⁾	22	3898	
500/600V Three-phase	2	1.5	2.7	ATV71HU22Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	22	8640	
	3	2.2	3.9	ATV71HU30Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	22	8640	
	-	3	5.8	ATV71HU40Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	22	8640	
	5	4	6.1	ATV71HU55Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	15 ⁽⁷⁾	22	8640	
	7.5	5.5	9	ATV71HU75Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	20 ⁽⁷⁾	22	8640	
	10	7.5	11	ATV71HD11Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	25 ⁽⁷⁾	22	8640	
	15	11	17	ATV71HD15Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	35 ⁽⁷⁾	22	8640	
	20	15	22	ATV71HD18Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	45 ⁽⁷⁾	22	8640	
	25	18.5	27	ATV71HD22Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	60 ⁽⁷⁾	22	8640	
	30	22	32	ATV71HD30Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	60 ⁽⁷⁾	22	8640	
	40	30	41	ATV71HD37Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	90 ⁽⁷⁾	22	9792	
	50	37	52	ATV71HD45Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	100 ⁽⁷⁾	22	9792	
	60	45	62	ATV71HD55Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	125 ⁽⁷⁾	22	9792	
	75	55	77	ATV71HD75Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	150 ⁽⁷⁾	22	9792	
100	75	99	ATV71HD90Y	22	-	-	-	-	-	-	-	-	-	-	-	-	-	175 ⁽⁷⁾	22	9792		
Three-phase Input, with line reactor																						
200/240V Three-phase	0.5	0.37	3	ATV71H037M3	5	3	RL00401	HJL36015	100	4017	GV2P08	240	1	65	1600	15 ⁽⁷⁾	100	4017	7 ⁽⁸⁾	5	1078	
	1	0.75	4.8	ATV71H075M3	5	1.5	RL00401	HJL36015	100	4017	GV2P10	240	1.5	65	1600	15 ⁽⁷⁾	100	4017	15 ⁽⁷⁾	5	1078	
	2	1.5	8	ATV71HU15M3	5	1.25	RL00801	HJL36025	100	4017	GV2P14	240	3	65	1600	25 ⁽⁷⁾	100	4017	25 ⁽⁷⁾	5	1078	
	3	2.2	11	ATV71HU22M3	5	0.8	RL01201	HJL36035	100	4017	GV3P18	240	5	65	1920	35 ⁽⁷⁾	100	4017	25 ⁽⁷⁾	5	1550	
	-	3	13.7	ATV71HU30M3	5	0.8	RL01801	HJL36035	100	4017	GV3P18	240	5	65	1920	35 ⁽⁷⁾	100	4017	40 ⁽⁷⁾	5	1550	
	5	4	17.5	ATV71HU40M3	5	0.5	RL01801	HJL36060	100	4017	GV3P25	240	7.5	65	1920	60 ⁽⁷⁾	100	4017	45 ⁽⁷⁾	5	1550	
	7.5	6	27.5	ATV71HU55M3	22	0.4	RL02501	HJL36080	100	6528	GV3P40	240	10	65	2880	80 ⁽⁷⁾	100	6528	60 ⁽⁷⁾	5	1987	
	10	8	33	ATV71HU75M3	22	0.3	RL03501	HJL36110	100	6528	GV3P50	240	10	65	4032	110 ⁽⁷⁾	100	6528	70 ⁽⁷⁾	5	2719	
	15	11	54	ATV71HD11M3X	22	0.25	RL04501	HJL36110	100	6528	GV3P50	240	10	65	5760	110 ⁽⁷⁾	100	6528	90 ⁽⁷⁾	5	4036	
	20	15	66	ATV71HD15M3X	22	0.2	RL05501	HJL36150	100	6528	GV3P65	240	15	65	5760	150 ⁽⁷⁾	100	6528	110 ⁽⁷⁾	5	4036	
	25	18	75	ATV71HD18M3X	22	0.15	RL08001	JJL36175	100	13215	-	-	-	-	-	175 ⁽⁷⁾	100	13215	125 ⁽⁷⁾	5	4900	
	30	22	88	ATV71HD22M3X	22	0.1	RL10001	JJL36200	100	13215	-	-	-	-	-	200 ⁽⁷⁾	100	13215	150 ⁽⁷⁾	5	4900	
	40	30	120	ATV71HD30M3X	22	0.075	RL13001	JJL36250	100	13215	-	-	-	-	-	250 ⁽⁷⁾	100	13215	200 ⁽⁷⁾	5	9640	
	50	37	144	ATV71HD37M3X	22	0.055	RL16001	JJL36250	100	13215	-	-	-	-	-	250 ⁽⁷⁾	100	13215	225 ⁽⁷⁾	5	9640	
	60	45	176	ATV71HD45M3X	22	0.055	RL20001	LAL36400	22	8640	-	-	-	-	-	400 ⁽⁷⁾	22	8640	300 ⁽⁷⁾	10	9640	

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Altivar 71

variable speed drives

Short Circuit Current Ratings

Altivar 71								Short Circuit Current Ratings ⁽²⁾													
								with Circuit Breaker ⁽³⁾			with GV●P ⁽³⁾					with Fuses ⁽³⁾			with Fuses and Type 1 kit ⁽⁴⁾		
Input Voltage 50/60 Hz Y	(HP)	(kW)	(A)	Part number	Input Rating: (kA) ⁽¹⁾	Minimum Inductance (mH)	Line Reactor Reference	PowerPact ⁽⁶⁾ Z1, Z2	SCCR (kA) X	Minimum Enclosure Volume (in ³)	GV●P Type E ⁽⁶⁾ Z1, Z2	GV●P Voltage Rating (V)	GV●P Maximum Power (HP)	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)
Three-phase Input, without line reactor																					
380/480V Three-phase	1	0.75	2.3	ATV71H075N4	5	12	RL00201	HLL36015	100	4017	GV2P08	480Y/277	2	65	1600	15 ⁽⁷⁾	100	4017	6 ⁽⁸⁾	100	1078
	2	1.5	4.1	ATV71HU15N4	5	6.5	RL00402	HLL36015	100	4017	GV2P10	480Y/277	4	65	1600	15 ⁽⁷⁾	100	4017	12 ⁽⁸⁾	100	1078
	3	2.2	5.8	ATV71HU22N4	5	6.5	RL00402	HLL36015	100	4017	GV2P14	480Y/277	5	65	1600	15 ⁽⁷⁾	100	4017	15 ⁽⁷⁾	100	1078
	-	3	7.8	ATV71HU30N4	5	3	RL00802	HLL36015	100	4017	GV2P14	480Y/277	5	65	1920	15 ⁽⁷⁾	100	4017	17.5 ⁽⁷⁾	100	1550
	5	4	10.5	ATV71HU40N4	5	3	RL00802	HLL36025	100	4017	GV3P13	480Y/277	7.5	65	1920	25 ⁽⁷⁾	100	4017	25 ⁽⁷⁾	100	1550
	7.5	5.5	14.3	ATV71HU55N4	22	2.5	RL01202	HLL36040	100	6528	GV3P25	480Y/277	15	65	2880	40 ⁽⁷⁾	100	6528	40 ⁽⁷⁾	100	1987
	10	7.5	17.6	ATV71HU75N4	22	1.5	RL01802	HLL36050	100	6528	GV3P25	480Y/277	15	65	2880	50 ⁽⁷⁾	100	6528	40 ⁽⁷⁾	100	1987
	15	11	27.7	ATV71HD11N4	22	1.2	RL02502	HLL36070	100	6528	GV3P40	480Y/277	25	65	4032	70 ⁽⁷⁾	100	6528	-	100	-
	20	15	33	ATV71HD15N4	22	0.8	RL03502	HLL36100	100	6528	GV3P50	480Y/277	30	65	5760	100 ⁽⁷⁾	100	6528	70 ⁽⁷⁾	100	4036
	25	18	41	ATV71HD18N4	22	0.8	RL03502	HLL36090	100	6528	GV3P50	480Y/277	30	65	8640	90 ⁽⁷⁾	100	6528	70 ⁽⁷⁾	100	4036
	30	22	48	ATV71HD22N4	22	0.7	RL04502	HLL36100	100	6528	GV3P50	480Y/277	30	65	8640	100 ⁽⁷⁾	100	6528	80 ⁽⁷⁾	100	4900
	40	30	66	ATV71HD30N4	22	0.5	RL05502	HLL36125	100	13215	GV3P65	480Y/277	40	65	10368	125 ⁽⁷⁾	100	6528	90 ⁽⁷⁾	100	7230
	50	37	79	ATV71HD37N4	22	0.4	RL08002	HLL36150	100	13215	-	-	-	-	-	150 ⁽⁷⁾	100	13215	110 ⁽⁷⁾	100	7230
	60	45	94	ATV71HD45N4	22	0.4	RL08002	JLL36200	100	13215	-	-	-	-	-	200 ⁽⁷⁾	100	13215	150 ⁽⁷⁾	100	12044
	75	55	116	ATV71HD55N4	22	0.3	RL10002	JLL36225	100	38250	-	-	-	-	-	225 ⁽⁷⁾	100	13215	175 ⁽⁷⁾	100	12044
	100	75	160	ATV71HD75N4	22	0.2	RL13002	JLL36250	100	38250	-	-	-	-	-	250 ⁽⁷⁾	100	38250	225 ⁽⁷⁾	100	12044
100	75	160	ATV71HD75N4	22	0.2	RL13002	KCL34250	100	38250	-	-	-	-	-	250 ⁽⁷⁾	100	38250	225 ⁽⁷⁾	100	12044	
575V Three-phase	2	1.5	2.7	ATV71HU15S6X	22	9	RL00403	HLL36015	50	3898	-	-	-	-	-	6 ⁽⁷⁾	100	3898	10 ⁽⁷⁾	22	3898
	3	2.2	3.9	ATV71HU22S6X	22	9	RL00403	HLL36015	50	3898	-	-	-	-	-	6 ⁽⁷⁾	100	3898	10 ⁽⁷⁾	22	3898
	-	3	5.8	ATV71HU30S6X	22	9	RL00403	HLL36015	50	3898	-	-	-	-	-	6 ⁽⁷⁾	100	3898	15 ⁽⁷⁾	22	3898
	5	4	6.1	ATV71HU40S6X	22	5	RL00803	HLL36015	50	3898	-	-	-	-	-	10 ⁽⁷⁾	100	3898	15 ⁽⁷⁾	22	3898
	7.5	5.5	9	ATV71HU55S6X	22	3	RL01203	HLL36020	50	3898	-	-	-	-	-	15 ⁽⁷⁾	100	3898	20 ⁽⁷⁾	22	3898
	10	7.5	11	ATV71HU75S6X	22	2.5	RL01203	HLL36025	50	3898	-	-	-	-	-	20 ⁽⁷⁾	100	3898	25 ⁽⁷⁾	22	3898
500/600V Three-phase	2	1.5	2.7	ATV71HU22Y	22	9	RL00403	-	-	-	-	-	-	-	-	6 ⁽⁸⁾	100	8640	10 ⁽⁷⁾	100	8640
	3	2.2	3.9	ATV71HU30Y	22	9	RL00403	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	100	8640	10 ⁽⁷⁾	100	8640
	-	3	5.8	ATV71HU40Y	22	5	RL00803	-	-	-	-	-	-	-	-	10 ⁽⁷⁾	100	8640	15 ⁽⁷⁾	100	8640
	5	4	6.1	ATV71HU55Y	22	5	RL00803	-	-	-	-	-	-	-	-	15 ⁽⁷⁾	100	8640	15 ⁽⁷⁾	100	8640
	7.5	5.5	9	ATV71HU75Y	22	3	RL00802	-	-	-	-	-	-	-	-	20 ⁽⁷⁾	100	8640	20 ⁽⁷⁾	100	8640
	10	7.5	11	ATV71HD11Y	22	2.5	RL01202	-	-	-	-	-	-	-	-	25 ⁽⁷⁾	100	8640	25 ⁽⁷⁾	100	8640
	15	11	17	ATV71HD15Y	22	1.5	RL01802	-	-	-	-	-	-	-	-	35 ⁽⁷⁾	100	8640	35 ⁽⁷⁾	100	8640
	20	15	22	ATV71HD18Y	22	1.2	RL02502	-	-	-	-	-	-	-	-	45 ⁽⁷⁾	100	8640	45 ⁽⁷⁾	100	8640
	25	18.5	27	ATV71HD22Y	22	1.2	RL02502	-	-	-	-	-	-	-	-	60 ⁽⁷⁾	100	8640	60 ⁽⁷⁾	100	8640
	30	22	32	ATV71HD30Y	22	0.8	RL03502	-	-	-	-	-	-	-	-	60 ⁽⁷⁾	100	8640	60 ⁽⁷⁾	100	8640
	40	30	41	ATV71HD37Y	22	0.7	RL04502	-	-	-	-	-	-	-	-	90 ⁽⁷⁾	100	9792	90 ⁽⁷⁾	100	9792
	50	37	52	ATV71HD45Y	22	0.5	RL05502	-	-	-	-	-	-	-	-	100 ⁽⁷⁾	100	9792	100 ⁽⁷⁾	100	9792
	60	45	62	ATV71HD55Y	22	0.4	RL08002	-	-	-	-	-	-	-	-	125 ⁽⁷⁾	100	9792	125 ⁽⁷⁾	100	9792
	75	55	77	ATV71HD75Y	22	0.4	RL08002	-	-	-	-	-	-	-	-	150 ⁽⁷⁾	100	9792	150 ⁽⁷⁾	100	9792
	100	75	99	ATV71HD90Y	22	0.3	RL10002	-	-	-	-	-	-	-	-	175 ⁽⁷⁾	100	9792	175 ⁽⁷⁾	100	9792

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Altivar 71

variable speed drives

Short Circuit Current Ratings

Altivar 71								Short Circuit Current Ratings ⁽²⁾													
								with Circuit Breaker ⁽³⁾			with GV●P ⁽³⁾				with Fuses ⁽³⁾			with Fuses and Type 1 kit ⁽⁴⁾			
Input Voltage 50/60 Hz Y	(HP)	(kW)	(A)	Part number	Input Rating: (kA) ⁽¹⁾	Minimum Inductance (mH)	Line Reactor Reference	PowerPact ⁽¹⁰⁾ Z1, Z2	SCCR (kA) X	Minimum Enclosure Volume (in ³)	GV●P Type E ⁶ Z1, Z2	GV●P Voltage Rating (V)	GV●P Maximum Power (HP)	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)	Fuse Ampere Rating (A) Z1, Z2	SCCR (kA) X	Minimum enclosure Volume (in ³)
Three-phase Input, without line reactor																					
200/240V Three-phase	75	55	221	ATV71HD55M3X	35	-	-	-	-	-	-	-	-	-	-	350 ⁽⁶⁾	10	22749	350 ⁽⁶⁾	10	22749
	100	75	285	ATV71HD75M3X	35	-	-	-	-	-	-	-	-	-	-	450 ⁽⁶⁾	10	28416	450 ⁽⁶⁾	10	28416
380/480V Three-phase	125	90	179	ATV71HD90N4	35	-	-	-	-	-	-	-	-	-	-	300 ⁽⁶⁾	35	45900	250 ⁽⁶⁾	10	22749
	150	110	215	ATV71HC11N4	35	-	-	-	-	-	-	-	-	-	-	300 ⁽⁶⁾	35	45900	300 ⁽⁶⁾	10	28416
	200	132	259	ATV71HC13N4	35	-	-	-	-	-	-	-	-	-	-	400 ⁽⁶⁾	35	45900	350 ⁽⁶⁾	10	31117
	250	160	314	ATV71HC16N4	50	-	-	-	-	-	-	-	-	-	-	400 ⁽⁵⁾	50	45900	400 ⁽⁶⁾	18	40250
	300	200	387	ATV71HC20N4	50	-	-	-	-	-	-	-	-	-	-	500 ⁽⁵⁾	50	53550	500 ⁽⁶⁾	18	54450
	400	250	481	ATV71HC25N4	50	-	-	-	-	-	-	-	-	-	-	600 ⁽⁵⁾	50	53550	600 ⁽⁶⁾	18	54450
	450	280	550	ATV71HC28N4	50	-	-	-	-	-	-	-	-	-	-	600 ⁽⁵⁾	50	53550	700 ⁽⁶⁾	30	54450
	500	315	616	ATV71HC31N4	30	-	-	-	-	-	-	-	-	-	-	800 ⁽⁷⁾	30	95579	-	-	-
	600	400	759	ATV71HC40N4	30	-	-	-	-	-	-	-	-	-	-	2 x 500 ^{6, 9}	30	95579	-	-	-
	700	500	941	ATV71HC50N4	42	-	-	-	-	-	-	-	-	-	-	2 x 600 ^{6, 9}	42	120265	-	-	-
Three-phase input, with line reactor																					
200/240V Three-phase	75	55	221	ATV71HD55M3X● ⁽⁸⁾	35	0.045	RL25001	-	-	-	-	-	-	-	-	350 ⁽⁶⁾	10	22749	350 ⁽⁶⁾	10	22749
	100	75	285	ATV71HD75M3X● ⁽⁸⁾	35	0.04	RL32001	-	-	-	-	-	-	-	-	450 ⁽⁶⁾	10	28416	450 ⁽⁶⁾	10	28416
380/480V Three-phase	125	90	179	ATV71HD90N4● ⁽⁸⁾	35	0.15	RL16002	LLL36400	100	43200	-	-	-	-	-	300 ⁽⁶⁾	100	43200	250 ⁽⁶⁾	10	22749
	150	110	215	ATV71HC11N4● ⁽⁸⁾	35	0.11	RL20002	LLL36400	100	43200	-	-	-	-	-	300 ⁽⁶⁾	100	43200	300 ⁽⁶⁾	10	28416
	200	132	259	ATV71HC13N4● ⁽⁸⁾	35	0.09	RL25002	LLL36400	100	43200	-	-	-	-	-	400 ⁽⁶⁾	100	43200	350 ⁽⁶⁾	10	31117
	250	160	314	ATV71HC16N4● ⁽⁸⁾	50	0.075	RL32002	-	-	-	-	-	-	-	-	400 ⁽⁵⁾	100	45900	400 ⁽⁶⁾	18	40250
	300	200	387	ATV71HC20N4● ⁽⁸⁾	50	0.06	RL40002	-	-	-	-	-	-	-	-	500 ⁽⁵⁾	100	53550	500 ⁽⁶⁾	18	54450
	400	250	481	ATV71HC25N4● ⁽⁸⁾	50	0.05	RL50002	-	-	-	-	-	-	-	-	600 ⁽⁵⁾	100	53550	600 ⁽⁶⁾	18	54450
	450	280	550	ATV71HC28N4● ⁽⁸⁾	50	0.04	RL60002	-	-	-	-	-	-	-	-	600 ⁽⁵⁾	100	53550	700 ⁽⁷⁾	30	54450
	500	315	616	ATV71HC31N4● ⁽⁸⁾	30	0.04	RL60002	-	-	-	-	-	-	-	-	800 ⁽⁷⁾	100	95579	-	-	-
	600	400	759	ATV71HC40N4● ⁽⁸⁾	30	0.03	2 x RL40002B14 ⁽⁹⁾	-	-	-	-	-	-	-	-	2 x 500 (6, 9)	100	95579	-	-	-
	700	500	941	ATV71HC50N4● ⁽⁸⁾	42	0.025	2 x RL50002 ⁽⁹⁾	-	-	-	-	-	-	-	-	2 x 600 (6, 9)	100	120265	-	-	-
500/600V Three-phase	125	110	125	ATV71HC11Y	28	0.2	RL13002	-	-	-	-	-	-	-	-	200 ⁽⁶⁾	100	31117	200 ⁽⁶⁾	28	31117
	150	132	150	ATV71HC13Y	28	0.15	RL16002	-	-	-	-	-	-	-	-	200 ⁽⁶⁾	100	31117	200 ⁽⁶⁾	28	31117
	-	160	180	ATV71HC16Y	35	0.11	RL20002	-	-	-	-	-	-	-	-	250 ⁽⁶⁾	100	31117	250 ⁽⁶⁾	35	31117
	200	200	200 / 220	ATV71HC20Y	35	0.11	RL20002	-	-	-	-	-	-	-	-	300 ⁽⁶⁾	100	54450	300 ⁽⁶⁾	35	54450
	250	250	290	ATV71HC25Y	35	0.09	RL25002	-	-	-	-	-	-	-	-	400 ⁽⁶⁾	100	54450	400 ⁽⁶⁾	35	54450
	350	315	355	ATV71HC31Y	35	0.06	RL40002	-	-	-	-	-	-	-	-	500 ⁽⁶⁾	100	54450	500 ⁽⁶⁾	35	54450
	450	400	420	ATV71HC40Y	42	0.045	2 x RL25002B14 ⁽⁹⁾	-	-	-	-	-	-	-	-	2 x 300 (6, 9)	100	120265	-	-	-
	550	500	543	ATV71HC50Y	42	0.0375	2 x RL32002B14 ⁽⁹⁾	-	-	-	-	-	-	-	-	2 x 400 (6, 9)	100	120265	-	-	-
700	630	675	ATV71HC63Y	42	0.03	2 x RL40002B14 ⁽⁹⁾	-	-	-	-	-	-	-	-	2x 500 (6, 9)	100	120265	-	-	-	

Footnotes page 28

Altivar 71

variable speed drives

Short Circuit Current Ratings

(1) This column shows the maximum prospective short circuit current value that cannot be exceeded without adding input impedance. Electrical distribution systems with a higher prospective short circuit current will cause higher input currents in the front end of the drive. It is possible for the tested SCCR rating of the drive to be lower than this Input rating. The tested SCCR rating can be higher than this input rating when a line reactor is used. Add the inductance referred in the table at the input of the drive if installing the drive on a system with higher prospective short circuit current. A 3% (minimum) input line reactor or equivalent inductance is required for the 500..600 Vac Altivar 71s and provides the listed value with the listed fuse protection.

(2) An ATV71 output short circuit test was performed for 100 kA. In addition to providing a rating based on shorting the output of the drive, these short circuit ratings have been obtained by shorting components internal to the Altivar 71. These ratings allow proper coordination of short circuit protection.

Note: The 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. The listed line reactor or minimum impedance is required to obtain ratings above the Input Rating.

(3) Ratings apply to an Altivar 71 mounted in a non-ventilated Type 1, 3R, 4(X) or 12 rated enclosure. Use noted ratings when using a Type 1 kit. Minimum enclosure volume allows for the specified SCCR. Your application specific thermal requirements may require a larger enclosure.

(4) The fuse ratings in this column are for an Altivar 71 drive installed with a VW3A92... Type 1 conduit kit. Fuse type must be fast acting Class J fuses unless otherwise noted. These fuse ratings in this column can also apply to Altivar 71 drives installed in a Type 1, 3R, 4(X), or 12 rated enclosure that has a minimum volume listed in the table

(5) Use Bussmann fuses Class J ref. LPJ...SP series, 600V max .

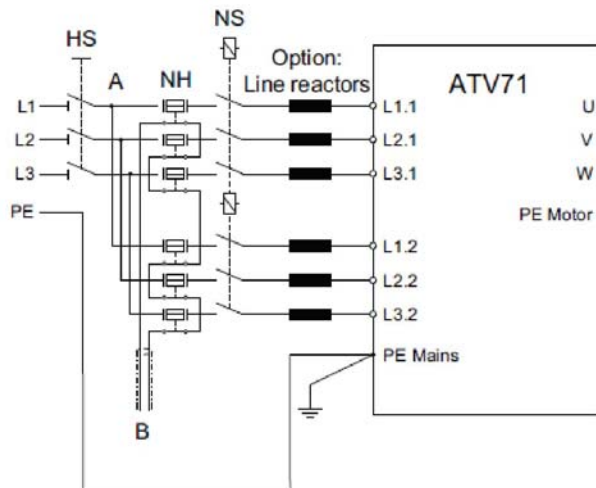
(6) Fuse Class J / fast acting, 600V max.

(7) Fuse Class T / fast acting, 600V max

(8) Can be ordered without a DC Choke for connections to the DC BUS or when using a line reactor by adding D at the end of the reference.

(9) The diagram below shows how to address drives with two rectifiers.

(10) Circuit breakers with lower interrupt ratings can be used within the same circuit breaker frame rating. For 380 / 480 Vac, replace LLL with LDL for 18kA or LGL for 35kA or LJL for 65kA interrupt rating.



A: The ATV71 supply must be split up in front of the line reactors, if they are used.

B: The monitoring of the fuses is necessary to protect the inverter against unbalanced load. It must act on mains contactor or pulse inhibit (e.g. digital input "External fault", see Programming guide)

HS: Main switch (to be used if required according to the local regulations)

NH: Mains fuses considering table "Fuse Ampere Rating" (absolutely necessary)

NS: Mains contactor (to be used if required according to the local regulations)



ATV71H075N4383



ATV71H075M3S337



ATV71HU22M3Z

Product variant options

The Altivar 71 is available in several variations for unique applications and needs. These variations are mutually exclusive.

For use with a synchronous motor and closed loop feedback

The Altivar 71 includes the capability to control synchronous motors in open loop applications. When applying the Altivar 71 on a synchronous motor in a closed loop, add 383 at the end of the part number.

Example: ATV71H075N4 becomes **ATV71H075N4383**.

For mounting the drive in dusty and corrosive environments

This variant enables variable speed drives to be installed in a higher level of ambient pollution conditions and complies with standard IEC60721-3-3 class 3C2 by tinning any exposed copper.

To order this option for ATV71H●●●M3 and ATV71H075N4...HD75N4 variable speed drives, add **S337** at the end of the part number.

Example: ATV71H075M3 becomes **ATV71H075M3S337**.

To order this option for ATV71HD11M3X...HD45M3X drives, add **337** at the end of the part number.

Example: ATV71HD11M3X becomes **ATV71HD11M3X337**.

The following list of drives already have exposed copper tinned and comply with IEC 60721-3-3 class 3C2:

- ATV71HD55M3X, HD75M3X
- ATV71HD90N4... HC50N4
- All ATV71H...Y

This variant is supplied with the graphic display keypad.

Ordering without the graphic display keypad

All Altivar 71 drives come with a graphic display keypad and an integrated keypad display as standard.

ATV71H037M3...HD15M3X and ATV71H075N4...HD75N4 drives can be ordered without the graphic display keypad. They will then have the integrated keypad display only.

Without the graphic display keypad installed, a 4 button keypad and 4 digit, 7 segment display is visible. In this case, add **Z** at the end of the reference.

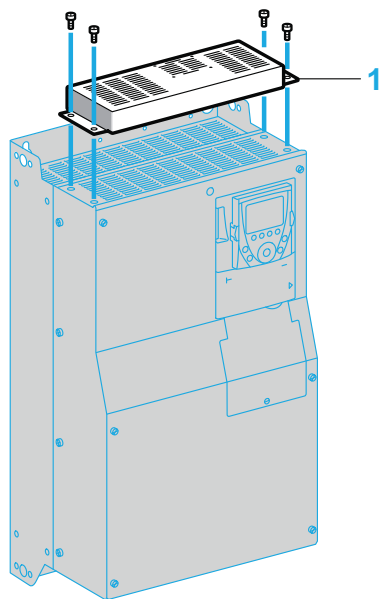
Example: ATV71H075M3 becomes **ATV71H075M3Z**.

Order the drive without a DC choke

ATV71HD90N4...HC50N4 drives are supplied as standard with a DC choke which must be field mounted when installing drives to the three-phase supply.

These drives can be ordered without a DC choke for connections to the DC bus or when using a line choke, by adding **D** at the end of the reference.

Example: ATV71HD90N4 becomes **ATV71HD90N4D**.



Control card fan kit

Control card fan kit (for ATV71H●●●●● drives on heatsink)

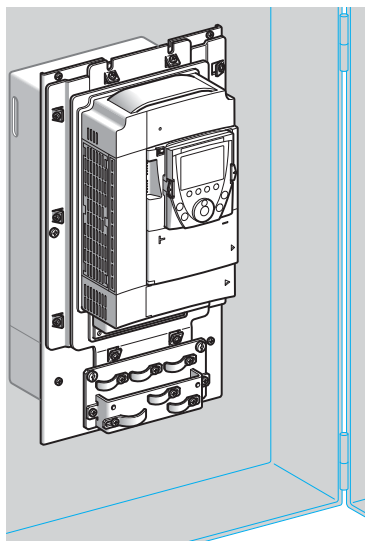
This kit is required for ATV71HD18M3X...HD45M3X, ATV71HD22N4...HD75N4 and ATV71HU22Y...HD90Y drives in order that they can operate at ambient temperatures between 50°C and 60°C, for example if they are mounted in a Type 12/ IP 54 enclosure. The circulation of air around the electronic cards prevents the formation of hot spots.

To ascertain the derating to be applied to the drive nominal current, please refer to the curves in the Installation Manual.

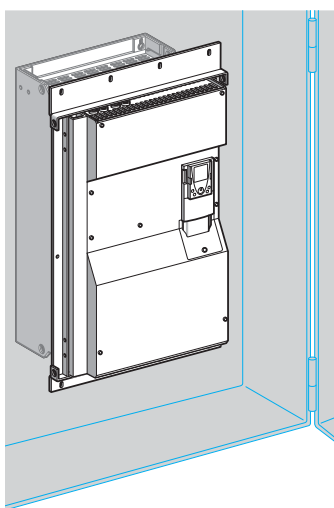
The kit (1) is mounted on the upper part of the drive. It is powered by the drive and includes:

- A fan subassembly
- Mounting screws
- A manual

For drives	Part number	Weight	
		lbs	kg
ATV71HD18M3X, HD22M3X ATV71HD22N4 ATV71HU22Y...HD30Y	VW3A9404	1	.5
ATV71HD30N4, HD37N4	VW3A9405	2	.9
ATV71HD30M3X...HD45M3X	VW3A9406	3	1.4
ATV71HD45N4...HD75N4 ATV71HD37Y...HD90Y	VW3A9407	3	1.4



ATV71HU75N4 flush-mounted drive



ATV71HC28N4D flush-mounted drive

Kit for flush-mounting in a dust and damp proof enclosure (for ATV71H●●●● drives on heatsink)

This kit can be used to mount the power section of the drive outside the enclosure, which reduces the power dissipated into the enclosure ⁽¹⁾.

It is available for ATV71H●●●M3, ATV71H●●●M3X, ATV71H075N4...HC28N4, ATV71HD90N4D...HC28N4D and ATV71HU22Y...HC31Y drives.

With this type of mounting, the maximum internal temperature in the enclosure can then reach 60°C without it being necessary to derate the drive.

Between 50°C and 60°C, a control card fan kit must be used for ATV71HD18M3X...HD45M3X, ATV71HD22N4...HD75N4, ATV71H●●●S6X and ATV71HU22Y...HD90Y drives to prevent hot spots.

The back of the enclosure must be drilled and cut out for this type of mounting.

The kit includes:

- A metal frame of the right size for the drive rating
- Corner pieces
- Seals
- A fan support (this can be used to move the fans so that they can be accessed from the front of the enclosure)
- Mounting screws
- A manual

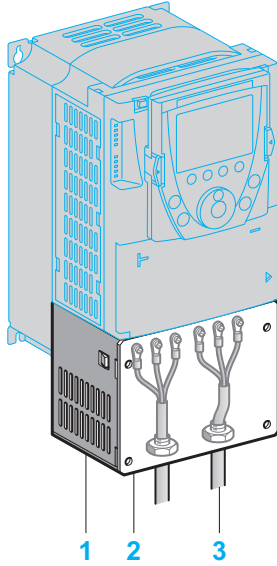
For drives	Part number	Weight	
		lbs	kg
ATV71H037M3...HU15M3 ATV71H075N4...HU22N4	VW3A9501	6	2.7
ATV71HU22M3...HU40M3 ATV71HU30N4, HU40N4	VW3A9502	6.8	3.1
ATV71HU55M3 ATV71HU55N4, HU75N4	VW3A9503	8.2	3.7
ATV71HU75M3 ATV71HD11N4 ATV71HU15S6X...HU75S6X	VW3A9504	10.1	4.6
ATV71HD11M3X, HD15M3X ATV71HD15N4, HD18N4	VW3A9505	10.8	4.9
ATV71HD18M3X, HD22M3X ATV71HD22N4 ATV71HU22Y...HD30Y	VW3A9506	8.6	3.9
ATV71HD30N4, HD37N4	VW3A9507	9.3	4.2
ATV71HD30M3X...HD45M3X	VW3A9508	10.8	4.9
ATV71HD45N4...HD75N4 ATV71HD37Y...HD90Y	VW3A9509	11.5	5.2
ATV71HD55M3X ⁽²⁾ ATV71HD90N4 ⁽²⁾ ATV71HD90N4D ⁽³⁾	VW3A9510	11.2	5.1
ATV71HD75M3X ⁽²⁾ ATV71HC11N4 ⁽²⁾ ATV71HC11N4D ⁽³⁾	VW3A9511	7.9	3.6
ATV71HC13N4 ⁽²⁾ ATV71HC13N4D ⁽³⁾ ATV71HC11Y...HC16Y ⁽⁴⁾	VW3A9512	9.5	4.3
ATV71HC16N4 ⁽²⁾ ATV71HC16N4D ⁽³⁾	VW3A9513	9.7	4.4
ATV71HC20N4...HC28N4 ⁽²⁾ Without braking unit ATV71HC20N4D...HC28N4D ⁽³⁾ ATV71HC20Y...HC31Y ⁽⁴⁾	VW3A9514	10.4	4.7

⁽¹⁾ Power dissipated in the enclosure for dust and damp proof flush-mounting.

⁽²⁾ Drives supplied as standard with a DC choke. In this case, cut out and drill the enclosure for the choke.

⁽³⁾ Drives supplied without DC choke.

⁽⁴⁾ Drives supplied as standard with a transformer for the fan. In this case, cut out and drill the enclosure for the transformer.



UL Type 1 conformance kit

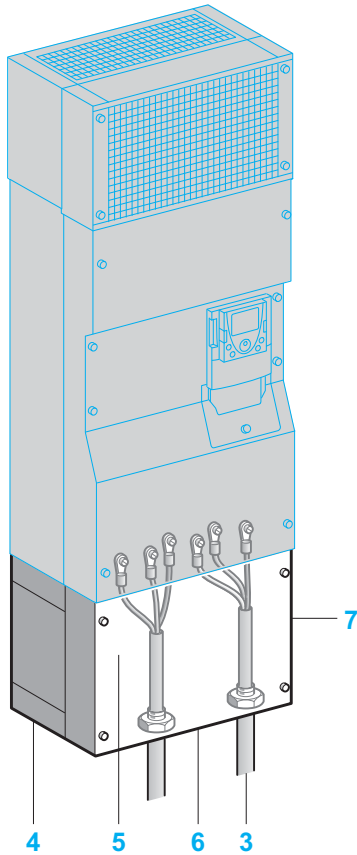
When the drive is mounted directly on a wall outside the enclosure, this kit can be used to provide UL Type 1 conformance when connecting the cables and conduit. The shielding is connected inside the kit.

For ATV71H●●●M3, ATV71HD11M3X...HD45M3X, ATV71H075N4...HD75N4, ATV71H●●●S6X and ATV71HU22Y...HD90Y drives, the kit includes:

- All the mechanical fittings (1) including a pre-cut plate (2) for conduit entrance (3)
- Mounting screws
- A manual

For ATV71HD55M3X, HD75M3X, ATV71HD90N4...HC28N4, ATV71HD90N4D...HC28N4D and ATV71HC11Y...HC31Y drives, the kit includes:

- A casing (4) used to maintain the Type 12/IP 54 degree of protection for the power section
- An EMC plate (5)
- A UL Type 1 cover (7)
- A pre-drilled plate (6) for connecting the tubes (3)
- Mounting screws
- A manual



UL Type 1 conformity kits

For drives	Part number	Weight	
		lbs	kg
ATV71H037M3...HU15M3 ATV71H075N4...HU22N4 ATV71P075N4Z...PU22N4Z	VW3A9201	2.9	1.3
ATV71HU22M3...HU40M3 ATV71HU30N4, HU40N4 ATV71PU30N4Z, PU40N4Z	VW3A9202	3.3	1.5
ATV71HU55M3 ATV71HU55N4, HU75N4 ATV71PU55N4Z, PU75N4Z	VW3A9203	4	1.8
ATV71HU75M3 ATV71HD11N4 ATV71HU15S6X...HU75S6X	VW3A9204	4.4	2
ATV71HD11M3X, HD15M3X ATV71HD15N4, HD18N4	VW3A9205	6.2	2.8
ATV71HD18M3X, HD22M3X ATV71HD22N4 ATV71HU22Y...HD30Y	VW3A9206	8.8	4
ATV71HD30N4, HD37N4 ATV71HD30M3X...HD45M3X	VW3A9207	11	5
ATV71HD45N4...HD75N4 ATV71HD37Y...HD90Y	VW3A9208	15.4	7
ATV71HD45N4...HD75N4 ATV71HD37Y...HD90Y	VW3A9208	15.9	7.2
ATV71HD55M3X ⁽¹⁾ ATV71HD90N4 ⁽¹⁾ ATV71HD90N4D ⁽²⁾	VW3A9209	20.7	9.4
ATV71HD75M3X ⁽¹⁾ ATV71HC11N4 ⁽¹⁾ ATV71HC11N4D ⁽²⁾	VW3A9210	26	11.8
ATV71HC13N4 ⁽¹⁾ ATV71HC13N4D ⁽²⁾ ATV71HC11Y...HC16Y ⁽³⁾	VW3A9211	26.6	11.6
ATV71HC16N4 ⁽¹⁾ ATV71HC16N4D ⁽²⁾	VW3A9212	32.2	14.6
ATV71HC20N4...HC28N4 ⁽¹⁾ ATV71HC20N4D...HC28N4D ⁽²⁾ ATV71HC20Y...HC31Y ⁽³⁾	Without braking unit VW3A9213	43	19.5

(1) Drives supplied as standard with a DC choke.

(2) Drives supplied without DC choke.

(3) Drives supplied as standard with a transformer for the fan.

Altivar 71 variable speed drives

Accessories & Options Configuration Tools



SoMove setup software with Modbus-Bluetooth® adaptor for PC

SoMove setup software

SoMove™ setup software is user-friendly software for PC designed for configuring multiple Schneider Electric motor control devices, including the Altivar 71 drives. SoMove is available as a free download through the button to the left.

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

- Configuration preparation
- Start-up
- Maintenance

To facilitate setup and maintenance of devices, SoMove software can use a direct USB/RJ45 cable link or a Bluetooth® wireless link to connect to the motor control device and communicate directly to it.

SoMove software is also compatible with the Multi-Loader configuration tool. These tools can save a significant amount of time when loading, duplicating or editing configurations on a device.

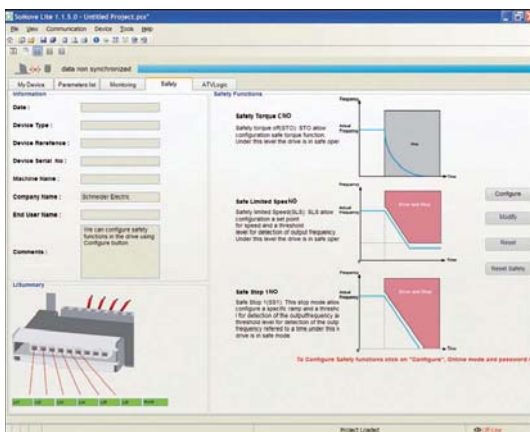
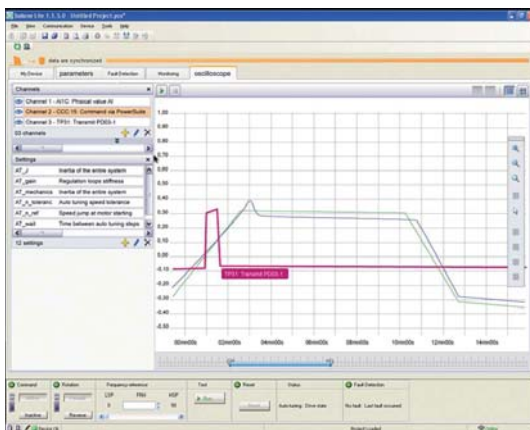
User Interface

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

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

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

- Display the I/O
- Compile and print a report
- Develop a program and transfer it to the drive
- Display and debug the program already on the drive
- Automatic mode for quick setup, designed for simple applications
- Expert mode for optimizing the adjustment parameters, designed for complex applications





Configuration with the Multi-Loader tool connected to the Altivar 71 drive

Simple-Loader configuration tool

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

Description	For drives	Part number	Weight
Simple Loader configuration tool The tool is supplied with a preassembled cordset with 2 RJ45 connectors.	ATV71●●●●●●	VW3A8120	–

Multi-Loader configuration tool

The Multi-Loader tool enables a number of configurations from a PC or drive to be copied and duplicated on another drive; the Altivar 71 drives must be powered up.

Description	For drives	Part number	Weight
Multi-Loader configuration tool Includes: <ul style="list-style-type: none">- 1 preassembled cordset with 2 RJ45 connectors- 1 preassembled cordset with a USB type A connector and a USB Mini-B type connector- 1 x SD memory card- 1 x female/female RJ45 adaptor- 4 AA/LR6 1.5 V batteries- 1 anti-shock protection- 1 carrying handle	ATV71●●●●●●	VW3A8121	–

List of options common to Altivar 71 drives

Description	Part number
Logic input adaptor	
Adaptor for 115 V ~ logic inputs	VW3A3101
Graphic Display Keypad	
Graphic display keypad	VW3A1101
Encoder interface cards ⁽¹⁾	
With RS 422 compatible differential outputs	VW3A3401, 402
With open collector outputs	VW3A3403, 404
With push-pull outputs	VW3A3405...407
With RS 422 compatible differential outputs with encoder emulation	VW3A3411
I/O expansion cards ⁽¹⁾	
Basic I/O option card 4 logic inputs, 2 logic outputs, 1 form C relay output, PTC probe input 24Vdc output	VW3A3201
Extended I/O option card 4 logic inputs, 2 logic outputs, 1 form C relay output, 2 analog inputs, 2 analog outputs, PTC probe input, 1 Hz pulse input, 24Vdc output	VW3A3202
Programmable card ⁽¹⁾	
IMC programmable card	VW3521S0

List of options specific to Altivar 71H●●●M3383, M3X383 and N4383 drives

Description	Part number
Encoder interface cards	
Resolver	VW3A3408
Universal with SinCos, SinCos Hiperface®, EnDat® or SSI	VW3A3409

List of communication cards (1)

Description	Part number
Modbus TCP Daisy chain	VW3A3310D
EtherNet/IP	VW3A3316
DeviceNet	VW3A3309
Modbus/Uni-Telway	VW3A3303
PROFIBUS DP V0	VW3A3307
PROFIBUS DP V1	VW3A3307S371

(1) The Altivar 71 can accept one encoder card. The Altivar 71 can accept up to 2 of any combination of I/O expansion cards, communication cards, and the programmable card. Two cards of the same part number is not allowed.



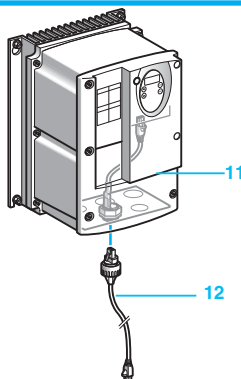
LCD graphic display keypad



Remote mounting accessories for graphic display keypad



Remote location of the graphic display keypad on enclosure door: **6 + 7 + 9** if IP 54, **6 + 7 + 9 + 10** if IP 65



Remote mounting accessories for RJ45 connection with IP 55 degree of protection

LCD graphic display keypad

This LCD graphic display keypad provides a user-friendly interface for configuration, diagnostics and maintenance. In addition, it can be used to transfer and store up to 4 configuration files. It can be mounted on an enclosure door and used to connect up to 8 drives using the accessories below. The LCD graphic display keypad comes with the Altivar 71, unless it is ordered without it.

It is supplied with six languages installed (Chinese, English, French, German, Italian and Spanish).

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

Graphic display (1):

- Plain text display on 8 lines of 24 characters, 240 x 160 pixels, large digit display

Assignable function (2): keys F1, F2, F3, F4:

- Dialogue functions: direct access, help screens, navigation
- Application functions: "Local Remote," preset speed

ESC key (3): aborts a value, a parameter or a menu to return to the previous selection

Motor local control keys (4):

- RUN: starts the motor
- STOP/RESET : stops the motor/resets drive faults
- FWD/REV: reverses the direction of rotation of the motor

Navigation button (5): for quick, easy access to the drop-down menus

- Rotate \pm : goes to the next/previous line, increases/decreases the value
- Press: saves the current value (ENT)

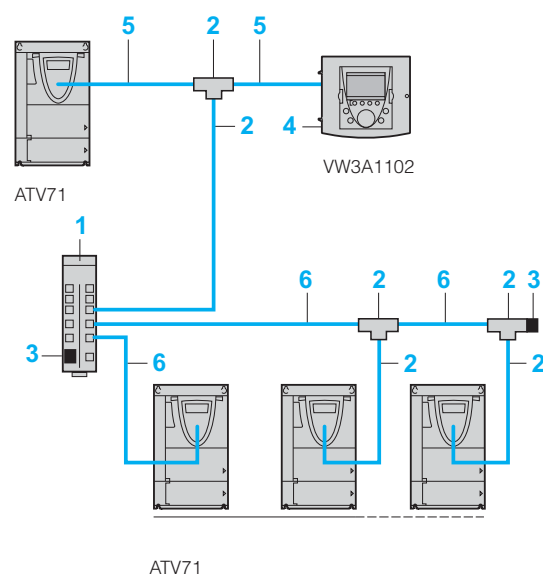
Description	Item no.	Length ft m	Part number	Weight lbs kg
LCD graphic display keypad A remote-mounting cable VW3 A1 104 R●●● and an RJ45 adaptor VW3 A1 105 must be provided when mounting remotely.	(6)	— —	VW3 A1 101	0.4 0.2

Accessories for mounting the graphic display keypad remotely

Remote cables equipped with 2 RJ45 connectors	(7)	3.3 1 9.8 3 16.4 5 32.8 10	VW3A1104R10 VW3A1104R30 VW3A1104R50 VW3A1104R100	0.1 0.1 0.3 0.2 0.6 0.3 1.1 0.5
Female/female RJ45 adaptor	(8)	— —	VW3A1105	0.02 0.1
Remote mounting kit for mounting on an enclosure door IP 54 degree of protection	(9)	— —	VW3A1102	0.3 0.2
Door for remote mounting kit VW3 A1 102 Can be used to provide IP 65 degree of protection	(10)	— —	VW3A1103	0.1 0.4

Remote mounting accessories for RJ45 connection with IP 55 degree of protection

Internal IP 55 cables equipped with an RJ45 connector and an IP 55 RJ45 base. For remote location of the drive's RJ45 port while maintaining IP 55 protection	(11)	1.0 0.3 2.0 0.6	VW3A01500 VW3A01502	0.1 0.1 0.2 0.1
IP 55 cable equipped with an RJ45 connector and an IP 55 RJ45 connector. For connecting an drive equipped with a VW3 A0 150● cable	(12)	9.8 3	VW3A01501	0.3 0.1



Multidrop connection accessories

These accessories enable a graphic display keypad to be connected to several drives via a multidrop link. This multidrop link is connected to the Modbus terminal port on the front of the drive.

Connection accessories

Description	Item no.	Order in lots of	Part number	Weight	
				lbs	kg
Modbus splitter box 10 RJ45 connectors and 1 screw terminal	(1)	–	LU9GC3	1.1	0.5
Modbus T-junction boxes	With integrated cable (0.3 m)	(2)	–	–	–
	With integrated cable (1 m)	(2)	–	–	–
Modbus line terminator For RJ45 connector	(3)	2	VW3A8306RC	0.02	0.01
Remote mounting kit For graphic display keypad VW3A1101	(4)	–	VW3A1102	0.4	0.2

Cordsets (preassembled with 2 RJ45 connectors)

Used for	Item no.	Length		Part number	Weight	
		ft.	m		lbs	kg
For remote operation of the Altivar 71 and the graphic display keypad VW3A1101	(5)	3.3	1	VW3A1104R10	0.2	0.1
		9.8	3	VW3A1104R30	0.4	0.2
		16.4	5	VW3A1104R50	0.7	0.3
		32.8	10	VW3A1104R100	1.1	0.5
Modbus serial link	(6)	1	0.3	VW3A8306R03	0.7	0.3
		3.3	1	VW3A8306R10	0.2	0.1
		9.8	3	VW3A8306R30	0.2	0.1



Encoder interface card VW3A3401

Encoder interface cards

Encoder interface cards are used for Flux Vector Control operation with sensor (FVC mode) for asynchronous motors, or for Vector Control operation with speed feedback (FSY mode) for synchronous motors.

They improve drive performance irrespective of the motor load state:

- Zero speed torque
- Accurate speed regulation
- Torque accuracy
- Shorter response times on a torque surge
- Improved dynamic performance in transient state

For asynchronous motors, in the other control modes (voltage vector control, voltage/frequency ratio), encoder interface cards improve static speed accuracy.

Encoder interface cards can also be used for:

- Overspeed detection
- Load slipping detection

They can also transmit a reference provided by the encoder input to the Altivar 71. This use is specific to synchronizing the speed of several drives. These two functions are available for encoder interface cards VW3A3401 to VW3A3407 and VW3A3411.

Six types of card are available depending on the encoder technology (incremental or absolute):

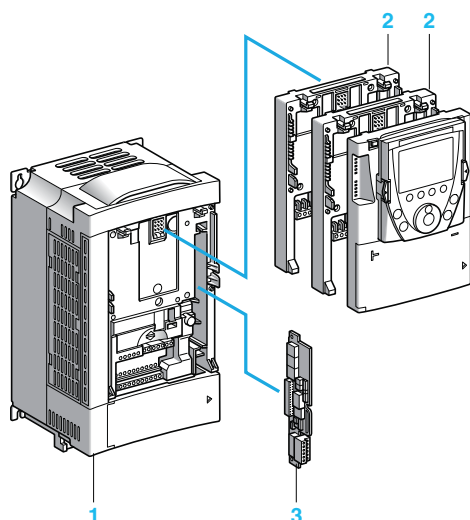
- RS 422 compatible differential outputs
- Open collector outputs (NPN)
- Push-pull outputs
- Resolver ⁽¹⁾
- SinCos, SinCos Hiperface®, EnDat® or SSI output ⁽¹⁾
- RS 422 compatible differential outputs with encoder emulation (RS 422 ESIM)

The RS 422 ESIM (Encoder SIMulation) encoder interface card is used to indicate the position and speed of the motor to a motion controller via the RS 422 interface ESIM output. It is also used to establish a master/slave relationship between two Altivar 71 drives. The Altivar 71 variable speed drive can only take one encoder interface card. The interface encoder card is inserted in a dedicated slot. It is protected against short circuits and overloads.

Description	Used with encoder	Voltage	Maximum current	Maximum cable length		Maximum operating frequency	Part number	Weight	
		V	mA	ft	m	kHz		lbs	kg
Encoder interface card with RS422 compatible differential outputs	XCC1●●●●●●X XCC1●●●●●●R XCC1●●●●●●RN	5	200	164	50	300	VW3A3401	0.4	0.2
	XCC1●●●●●●X	15	175	328.1	100	300	VW3A3402 ⁽²⁾	0.4	0.2
Encoder interface cards with open collector outputs	—	12	175	1640.4	500	300	VW3A3403	0.4	0.2
	—	15	175	1640.4	500	300	VW3A3404	0.4	0.2
Encoder interface cards with push-pull outputs	XCC1●●●●●●Y	12	175	1640.4	500	300	VW3A3405	0.4	0.2
	XCC1●●●●●●K	15	175	1640.4	500	300	VW3A3406	0.4	0.2
	XCC1●●●●●●KN	24	100	1640.4	500	300	VW3A3407	0.4	0.2
Resolver encoder interface card	—	1.25...5.6	50	656.2	200	4, 8 or 12	VW3A3408 ⁽¹⁾	0.2	0.1
Universal encoder interface card with SinCos, SinCos Hiperface®, EnDat® or SSI output	—	5, 8 or 12	200	164	50	500	VW3A3409 ⁽¹⁾	0.4	0.2
Encoder interface cards with RS 422 compatible differential outputs with encoder emulation	—	5	200	164	50	300	VW3A3411	0.4	0.2
		15	200	328.1	100				

(1) Card requires an ATV71H●●●N4383 drive.

(2) The VW3A3402 card ensures compatibility between Altivar 68F drive applications and Altivar 71 drive applications.



I/O extension cards

The Altivar 71 drive can integrate up to three different option cards simultaneously including:

- Two of the following cards:
 - I/O extension cards (two versions available)
 - Communication card
 - Integrated Machine Controller programmable card to adapt the variable speed drive to specific applications
- One encoder interface cards: RJ45

These options cards can be installed under the front panel of the variable speed drive. They have been designed to be integrated without adding to the width or height of the installation. Adding an I/O extension card or communication card will add 1 inch (25 mm) to the depth dimension.

Both I/O extension cards can be added to adapt the I/O needs for the application. Adding two of the same option card (I/O option card or communication card) is not possible.

Description	Type of I/O							Part number	Weight	
	Logic input	Logic output	Relay logic output	Analog input	Analog output	Input for PTC probes ⁽¹⁾	Frequency control input		lbs	kg
Basic I/O card	4	2	1	–	–	1	–	VW3A3201	0.7	0.3
Extended I/O card	4	2	1	2	2	1	1	VW3A3202	0.7	0.3

(1) This PTC probe input must never be used to protect an ATEX motor in applications in explosive atmospheres.

Adaptor for 115 V ~ logic inputs

This adaptor is used to connect 115 V ~ logic signals to the logic inputs on the drive or an I/O extension card.

7 logic inputs with capacitive impedance at 60 Hz of 0.22 µF are available for connecting the logic signals:

- Max. current: 200 mA
- Response time: 5 ms to change from state 0 to state 1, 20 ms to change from state 1 to state 0
- Logic state 0 for a voltage below 20 V, logic state 1 for a voltage between 70 V and 132 V

The power supply must be provided by a 115 V external power supply (min. 70 V, max. 132 V).

Description	Part number	Weight
Adaptor for 115 V ~ logic inputs	VW3A3101	–

Specifications of Option Card VW3A3201 Control Terminals

Designation	Terminal	Specification
Relay output 3 (R3A N.O. contact, R3B N.C. contact)	R3A R3B R3C	<ul style="list-style-type: none"> ■ Switching capacity min. 3 mA at 24 Vdc ■ Switching capacity max. 5 A at 250 Vac ($\cos \phi = 1$) or 30 Vdc, max. 2 A at 250 Vac ($\cos \phi = 0.4$) or 30 Vdc (L/R = 7 ms) ■ Reaction time 7 ms 0.5 ms, typical life cycle of 100.000 switching cycles at max. switching capability ■ Sampling voltage must correspond to overvoltage category II so that the PELV conditions for the remaining control terminals are fulfilled.
Voltage supply for potentiometer 1–10 k Ω	-10	<ul style="list-style-type: none"> ■ -10 Vdc (-10.5 V\pm0.5 V) ■ max. 10 mA; short circuit protected
Sampling voltage for logic inputs (Sink/Source-switching is selected with selector switch SW3.)	+24	<ul style="list-style-type: none"> ■ Selector switch SW3 in position Source or Sink Int.: +24 Vdc (min. 21 V, max. 27 V), short circuit protected max. 50 mA (for basic device and options) ■ Selector switch SW3 in position Sink Ext.: Input for external voltage supply +24 Vdc of the logic inputs
Logic inputs LI7–LI10 (Usage can be specified with parameter settings. Sink/Source-switching is selected with selector switch SW1.)	LI7	■ +24 Vdc (max. 30 V), impedance 3.5 k Ω , reaction time 2 ms \pm 0.5 ms
	LI8	■ Positive logic (Source) or negative logic (Sink)
	LI9	■ Compatible with Level 1 PLC Standard IEC 65A-68
	LI10	■ SW3 at Source (factory setting): High > 11 Vdc, Low < 5 Vdc SW3 at Sink Int. or Sink Ext.: High < 10 Vdc, Low > 16 Vdc
Ground	0 V	0 V reference potential for logic inputs
Thermistor input 2	TH2+ TH2-	<ul style="list-style-type: none"> ■ For a maximum of 6 PTC thermistors in series⁽¹⁾ ■ Thermistor nominal value < 1.5 kΩ, threshold value 3 kΩ ■ Disengaging value 1.8 kΩ, short-circuit monitoring at < 50 Ω
Logic output LO1 (Usage can be specified with parameter settings.)	LO1	<ul style="list-style-type: none"> ■ +24 Vdc open collector outputs, floating ground ■ Positive logic (Source) or negative logic (Sink) ■ Compatible with Level 1 PLC Standard IEC 65A-68
Logic output LO2 (Usage can be specified with parameter settings.)	LO2	<ul style="list-style-type: none"> ■ Switching capacity max. 200 mA at 12–30 Vdc ■ Reaction time: 2 ms \pm0.5 ms
Common	CLO	Reference potential of the logic outputs
Ground	0 V	0 V general use

(1) Shield the wiring and lay the cables separate from the motor cable.

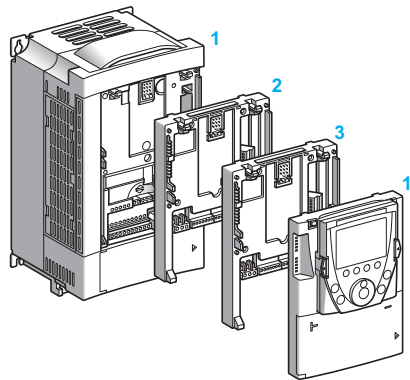
Specifications of Option Card VW3A3202 Control Terminals

Designation	Terminal	Specification
Relay output 4 (R4A N.O. contact, R4B N.C. contact)	R4A R4B R4C	Switching capacity min. 3 mA at 24 Vdc Switching capacity max. 5 A at 250 Vac ($\cos \varphi = 1$) or 30 Vdc, max. 2 A at 250 Vac ($\cos \varphi = 0.4$) or 30 Vdc ($L/R = 7$ ms) Reaction time 10 ms ± 0.5 ms, typical life cycle of 100.000 switching cycles at max. switching capability Sampling voltage must correspond to overvoltage category II so that the PELV conditions for the remaining control terminals are fulfilled.
Voltage supply for potentiometer 1–10 k Ω	-10	■ -10 Vdc (-10.5 V ± 0.5 V) ■ max. 10 mA; short circuit protected
Analog input AI3 (Usage and limits can be adjusted with parameter settings.)	AI3+ AI3-	0(4)–20 mA, differential amplifier, impedance 250 Ω , Reaction time 5 ms ± 1 ms, resolution 11 bits + 1 sign bit, accuracy $\pm 0.6\%$ at $\Delta\theta = +60^\circ\text{C}$ (+140 $^\circ\text{F}$), linearity $\pm 0.15\%$
Analog input AI4 (Selection, usage, and limits can be adjusted with parameter settings.)	AI4	■ 0 to +10 Vdc (floating up to max. 24 V), impedance 30 k Ω ¹ or ■ 0(4)–20 mA, impedance 250 Ω Reaction time 5 ms ± 1 ms, resolution 11 bits, Accuracy $\pm 0.6\%$ at $\Delta\theta = +60^\circ\text{C}$ (+140 $^\circ\text{F}$), linearity $\pm 0.15\%$
Ground	COM	0 V reference potential for analog in-/outputs
Analog output AO2	AO2	■ 0–10 Vdc or -10/+10 Vdc according to software configuration, min. load impedance 500 Ω ¹ or
Analog output AO3	AO3	■ 0(4)–20 mA, max. load impedance 500 Ω Resolution 10 bits, reaction time 5 ms ± 1 ms, accuracy $\pm 1\%$ at $\Delta\theta = +60^\circ\text{C}$ (+140 $^\circ\text{F}$), linearity $\pm 0.2\%$
Sampling voltage for logic inputs (Sink/Source-switching is selected with selector switch SW4.)	+24	■ Selector switch SW4 in position Source or Sink Int.: +24 Vdc (min. 21 V, max. 27 V), short circuit protected max. 50 mA (for basic device and options) ■ Selector switch SW4 in position Sink Ext.: Input for external voltage supply +24 Vdc of the logic inputs
Logic inputs LI11–LI14 (Usage can be specified with parameter settings. Sink/Source-switching is selected with selector switch SW4.)	LI11 LI12 LI13 LI14	■ +24 Vdc (max. 30 V), impedance 3.5 k Ω , reaction time 5 ms ± 1 ms Positive logic (Source) or negative logic (Sink) Compatible with Level 1 PLC Standard IEC 65A-68 SW4 at Source (factory setting): High > 11 Vdc, Low < 5 Vdc SW4 at Sink Int. or Sink Ext.: High < 10 Vdc, Low > 16 Vdc
Ground	0 V	0 V reference potential for logic inputs
Thermistor input 3	TH3+ TH3-	For a maximum of 6 PTC thermistors in series ⁽¹⁾ Thermistor nominal value < 1.5 k Ω , threshold value 3 k Ω Disengaging value 1.8 k Ω , short circuit monitoring at < 50 Ω
Frequency input FP	FP	Frequency range 0–30 kHz, 1:1 $\pm 10\%$, reaction time 5 ms ± 1 ms Input voltage 5 Vdc, 15 mA Series resistor for 12 V = 510 Ω , for 15 V = 910 Ω , for 24 V = 1.3 k Ω (max. 30 V); High > 3.5 V, Low < 1.2 V
Logic output LO3 (Usage can be specified with parameter settings.)	LO3	+24 Vdc open collector outputs, floating ground Positive logic (Source) or negative logic (Sink) Compatible with Level 1 PLC Standard IEC 65A-68
Logic output LO4 (Usage can be specified with parameter settings.)	LO4	Switching capacity max. 200 mA at 12–30 Vdc Reaction time: 2 ms ± 0.5 ms
Common	CLO	Reference potential of the logic outputs
Ground	0 V	0 V general use

(1) Shield the wiring and lay the cables separate from the motor cable.



Altivar IMC integrated controller card



Altivar IMC integrated controller

The Altivar IMC integrated controller card forms a part of Flexible Machine Control approach, a key component of MachineStruxure™, which brings you maximum flexibility and provides the most optimized control solution.

The Altivar IMC integrated controller card **VW3A3521S0** is a compact optimized solution developed for Altivar 61 and 71 variable speed drives. When equipped with the ATV IMC card, Altivar 61 and 71 drives become controllers capable of meeting the needs of machine manufacturers (OEMs) in applications such as textiles, hoisting, pumping or woodworking, etc.

The Altivar IMC integrated controller card **VW3A3521S0** is configured and programmed using SoMachine software.

The Altivar IMC card boosts the expansion capability of machines and allows us to meet the OEM market's requirements in terms of performance, simplicity of use and openness.

Installation

The Altivar IMC card is designed for integration on Altivar 71 variable speed drives in conjunction with other Altivar 71-specific cards, such as I/O expansion cards and communication cards.

- 1 Altivar 71 drive and graphic display keypad
- 2 Altivar IMC card **VW3A3521S0**
- 3 I/O expansion card **VW3A32●●** or communication card **VW3A33●●**

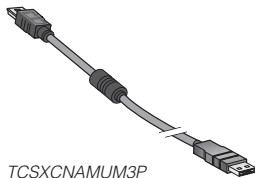
Note: Only one I/O expansion card or communication card can be mounted simultaneously with the Altivar IMC card on an Altivar 71 drive.

Altivar IMC integrated controller card

Designation	Voltage	Part number	Weight	
			lbs	kg
Altivar IMC integrated controller card	24 V ~	VW3A3521	0.4	0.2

Connection cable

Designation	Use	Length		Part number	Weight	
		ft	m		lbs	kg
Programming cable	From the mini USB-B port on the Altivar IMC integrated controller card to the type A USB port on the PC terminal for programming and updating firmware	9.8	3	TCSXCNAMUM3P	0.2	0.1



TCSXCNAMUM3P

Special features

User memory	RAM	2 MB
	Flash	2 MB
Data storage memory FRAM (Ferroelectric RAM)		64 KB
Typical time (for 1000 Boolean instructions)		942 µs
User program size		1 MB
Power supply		24 V ~
Inputs	Digital	10 x 24 V ~ inputs, 4 of which can be used for 2 high-speed counter inputs (100 kHz) or 2 incremental encoders (A/B) (100 kHz)
	Analog	2 x 0...20 mA inputs
Outputs	Digital	6 transistor outputs (2 A) - source
	Analog	2 x 0...20 mA outputs
Built-in communication ports	RJ45 port	Ethernet Modbus TCP, Web/FTP Server
	SUB-D connector (male 9-way)	Master CANopen bus (16 slaves)
	USB Mini-B port	SoMachine software programming
Real-time clock		Integrated

Performance

Reduce the time it takes to develop your machines

- The use of a single SoMachine programming software environment offers a number of advantages:
 - A single project file
 - A single software program
 - A single download for the whole application
- The ease of use of PLCopen function blocks significantly reduces the time needed to program motion control and independent axis control on machines.

A more powerful machine

The Altivar IMC integrated controller card has 8 tasks to suit different machine requirements (cyclic, event-triggered, free). A task can be synchronized with the task of the drive in which it is embedded. This task manages the speed reference, the torque reference, the speed feedback, the torque feedback, the number of encoder pulses feedback in order to increase machine performance.

A more intelligent drive

- Performs more complex operations (2 MB memory)
- Reduces program loading time (Mini-B USB connectors)
- Communication with all the other system devices (built-in Ethernet and CANopen connection ports)

Transparency of your machines

Access to all the other devices in the system architecture via CANopen is totally transparent due to FDT/DTM technology.

Development and technology

The Altivar IMC integrated controller card has been developed with two criteria in mind: low cost and practicality.

- Low cost because the standard equipment for the Altivar IMC card comprises:
 - Sixteen discrete I/O
 - A built-in Ethernet port
 - Two analog inputs
 - Two analog outputs
 - And a CANopen master
- Practicality because the Altivar IMC card is ideal for integration in Altivar 71 drives, and can therefore use:
 - Their inputs/outputs
 - Their communication cards
 - Their parameters: speed, current, torque, etc.
 - Their remote graphic display keypad
 - And also the inputs/outputs in their I/O expansion cards
 - Plus the speed feedback counter in the encoder interface cards

Software configuration

Configuration and programming of the Altivar IMC integrated controller card and equipment in Schneider Electric's "Flexible Machine Control" concept are both designed to cut costs and optimize your machine performance. Schneider Electric's SoMachine™ software platform can be used to program Altivar IMC integrated controller card using:

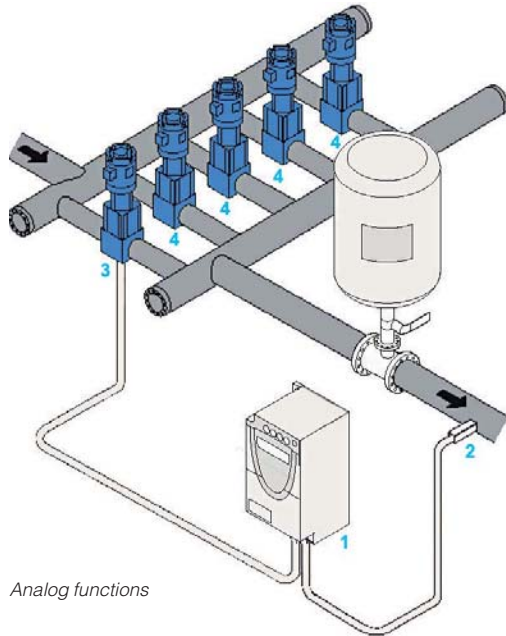
- IEC 61131-3 programming languages: Instruction List (IL), Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart/Grafset (SFC) and Structured Text (ST)
 - CFC (Continuous Function Chart) language.
- PLCopen function blocks are used for managing motion control and axis control on your machines.

Integration in the Schneider Electric product offer

Combined with other OEM products in the Schneider Electric offer, such as Altivar variable speed drives, Lexium™ servo drives, Magelis™ HMI terminals, TeSys™ motor starters and contactors, the Altivar IMC integrated controller card can be integrated transparently in a number of architectures.



SoMachine software platform



Analog functions

Functions

Analog functions

For machines that require functions to process data issued by analog sensors/actuators (voltage or current), temperature sensors, pressure or PID control sensors, the Altivar IMC card has, as standard, 2 analog inputs (voltage or current) with 10-bit resolution and 2 analog outputs (current) with 10-bit resolution.

- 1 Altivar IMC integrated controller card installed on Altivar 61
- 2 Pressure sensor
- 3 Variable speed pump
- 4 Fixed speed pumps

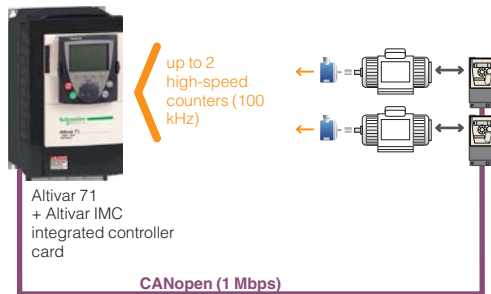
HSC high-speed counting and/or incremental encoder function

In order to meet requirements for machine productivity, the Altivar IMC has 2 embedded high-speed counters with a counting frequency of 100 kHz for each channel as well as 4 reflex outputs. The availability of these embedded counters and also the presence of the master CANopen link makes it quick and easy to create low-cost, high-performance multi-axis functions that suit the machines limitations. With the availability of "PLCopen" function blocks specific to the motion control functions in the SoMachine software, application development is sure to be quick and reliable. In addition, these high-speed counting inputs can be used as an incremental encoder (A/B) with a frequency of 100 kHz in order to adapt to the machine's specific requirements.

Position control function

Several options are offered in terms of position control:

- Either creating a sequence in Lexium 32 servo drives, with communication with the Altivar IMC integrated controller card achieved by the use of discrete I/O
- Or creating an application in the Altivar IMC card and controlling the Lexium 32A/ Lexium 32M servo drives and/or SD3●● stepper motor drives via the master CANopen integrated link.



High-speed counter function (one-phase or two-phase)



Machine with CANopen architecture:

- Lifting motion: Altivar 71
- Translatory motion: Altivar 312
- Carriage motion: Altivar 312

Functions (continued)

Communication function

Ethernet

The Altivar IMC integrated controller card has a built-in RJ45 Ethernet port (10/100 Mbps, MDI/MDIX) with Ethernet TCP Modbus, SoMachine on Ethernet, UDP, TCP and SNMP protocols. In addition, the Altivar IMC card has an embedded Web Server and FTP Server. As well as the default address based on the MAC address, it is possible to assign a controller IP address via a DHCP server or via a BOOTP server.

CANopen

The Altivar IMC integrated controller card has an embedded CANopen master which can be used to control devices on a communication bus with ease. The link can be configured between 20 kbps and 1 Mbps and supports up to 16 slaves. Architectures based on CANopen can be used to distribute I/O modules as close to the sensors and actuators as possible, thus reducing wiring costs and times, and to communicate with different devices such as variable speed drives, servo drives, etc. The CANopen configurator is integrated in the SoMachine software and can also be used to import standard description files in EDS format.

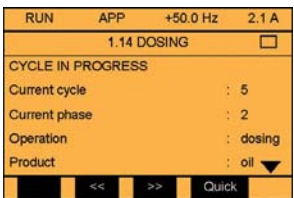
Customization function on the graphic display keypad

Menu 1.14

The remote graphic display keypad on Altivar 71 drives includes a menu dedicated to the Altivar IMC integrated controller card. The user is offered a graphic display of 8 lines of 24 characters. This menu can be customized simply and directly using the SoMachine software. The user can define the language, name, unit, decimal point, and the type of parameter he wishes to customize for his own application. The user can also define alarms and error messages for his application.

Clock function

A time and date-stamping function combined with a clock backed up by a lithium battery makes it possible to keep a log of events that have occurred. When the Altivar IMC integrated controller card is installed in the drive, drive faults are automatically time and date-stamped without the need for any special programming.



Menu 1.14

Communication

The Altivar IMC integrated controller card has the following built-in communication ports:

Communication ports	Use
1 x RJ45 (MDI/MDIX port)	<div><input type="checkbox"/> FTP server</div> <div><input type="checkbox"/> Web server</div> <div><input type="checkbox"/> Modbus TCP server</div> <div><input type="checkbox"/> Modbus TCP client</div> <div><input type="checkbox"/> Manager SoMachine</div> <div><input type="checkbox"/> SNMP</div> <div><input type="checkbox"/> Modbus device</div>
1 x mini-USB	Programming port (480 Mbps)
1 x 9-way male SUB-D	Master CANopen connection

Embedded Ethernet

The Altivar IMC integrated controller card has an embedded Ethernet link via a direct connection to its RJ45 port.

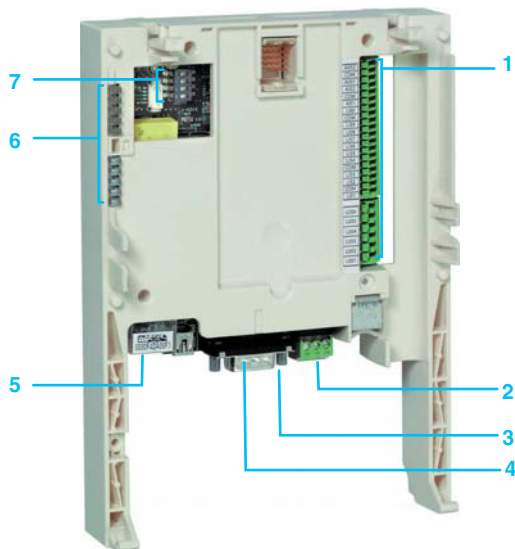
- Speed: "10 BaseT" and "100 BaseTX" with auto-negotiation
- RJ45 port (MDI/MDIX): automatic adaptation to a straight or crossed cable

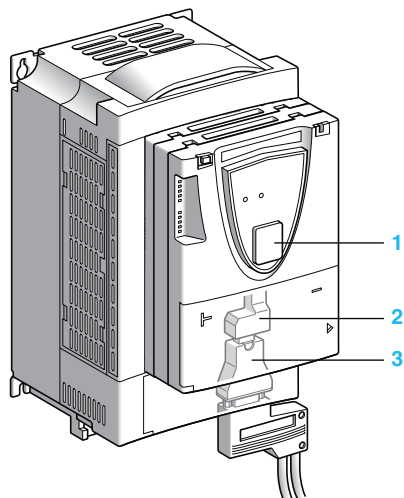
Protocols	Number of connections
Modbus server	8
Modbus device	2
FTP server	4
Web server	10

Description

The Altivar IMC integrated controller card comprises:

- Three spring connectors for:
 - ☐ 10 digital inputs
 - ☐ 6 digital outputs
 - ☐ 2 analog inputs
 - ☐ 2 analog outputs
 - ☐ 2 commons
- A connector with removable screw terminals, 3 contacts at intervals of 3.81 for the 24 V ~ power supply
- A mini USB-B connector for programming using SoMachine software
- A 9-way SUB-D connector for connection to the CANopen machine bus
- An RJ45 connector for connection of the SoMachine software workshop and/or connection to an Ethernet Modbus TCP network
- Five LEDs:
 - ☐ 1 green/yellow ETH LED for Ethernet activity
 - ☐ 1 green/red NS (Network status) LED
 - ☐ 1 green/red MS (Module status) LED
 - ☐ 1 green/red CAN (CANopen activity) LED
 - ☐ 1 green/red LED programmable by the user
- Four configuration selector switches





Integrated communication for Modbus and CANopen protocols

Communication buses and networks

The Altivar 71 drive has been designed to meet all the configuration requirements encountered within the context of industrial communication installations.

Integrated communication protocols

It includes Modbus and CANopen communication protocols as standard.

Two integrated communication ports enable direct access to the Modbus protocol:

- One RJ45 Modbus terminal port (1), located on the drive front panel, which is used to connect a Human Machine Interface or one of the following configuration tools:
 - Remote graphic display keypad
 - Magelis industrial HMI terminal
 - SoMove setup software
 - Simple Loader and Multi-Loader configuration tools
- One RJ45 Modbus network port (2), located on the drive's control keypad which is assigned to control and signaling by a PLC or by another type of controller. It can also be used to connect a terminal or the SoMove setup software.

The CANopen protocol can be accessed from the Modbus network port (2) via the daisy chain tap or the CANopen adaptor (3). In this case, the terminal port (1) must be used to access the Modbus protocol.

Optional communication cards

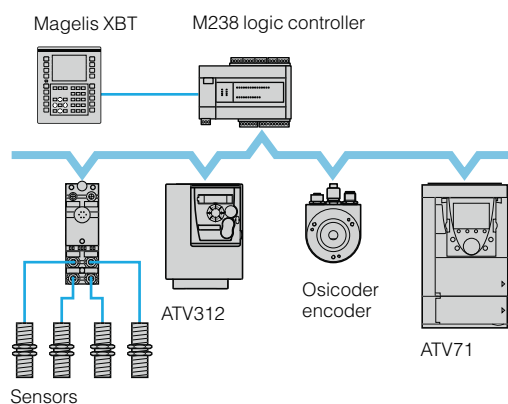
The Altivar 71 drive can also be connected to the following industrial communication buses and networks by adding one of the communication option cards:

- Modbus TCP Daisy Chain
- Modbus/Uni-Telway (this card provides access to additional functions, which complement those of the integrated ports (Modbus ASCII and 4-wire RS 485))
- EtherNet/IP
- DeviceNet
- PROFIBUS DP V0 and V1
- EtherCAT
- Profinet
- EtherNet RSTP: Modbus TCP/IP (selectable)

The option of powering the control part separately enables communication to be maintained (monitoring, diagnostics) even if there is no power supply to the power part.

The main communication functions of Altivar 58 and Altivar 58F drives are compatible with the Altivar 71:

- Connection
- Communication services
- Drive behavior (profile)
- Control and monitoring parameters
- Standard adjustment parameters



Configuration example on CANopen machine bus

Functions

All drive functions can be accessed via the network:

- Configuration
- Adjustment
- Control
- Monitoring

The Altivar 71 drive's advanced functions provide excellent interfacing flexibility. They enable the different control sources (I/O, communication networks, communication cards and graphic display keypad) to be assigned to control functions that satisfy the requirements of numerous, complex applications. Network configuration is simplified through the provision of configuration software (configurator for SyCon® networks, etc.).

For the integrated Modbus and CANopen ports and the communication cards for industrial applications, the Altivar 71 drive can be controlled:

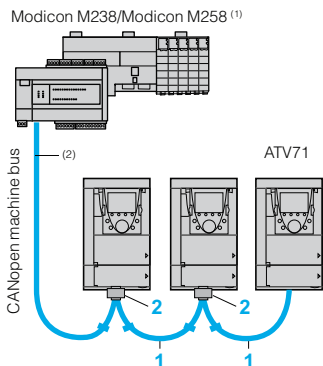
- According to the CiA 402 profile
- According to the I/O profile, where control is as simple and adaptable as control via the I/O terminals.

The DeviceNet card also supports CIP AC Drive and Allen-Bradley drive profiles; PROFIBUS DP V0 and V1 cards also support the PROFIdrive profile.

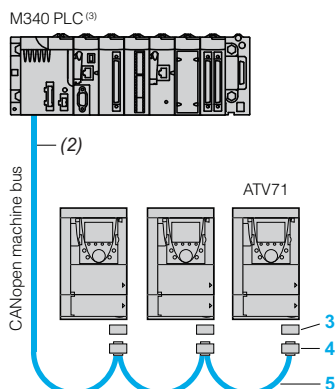
Communication is monitored according to the specific criteria for each protocol. However, regardless of the protocol, it is possible to configure how the drive responds to a communication fault:

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

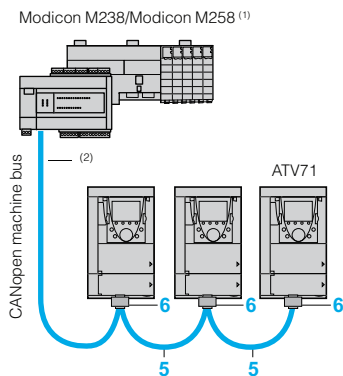
A command from the CANopen machine bus is processed with the same priority as one of the drive terminal inputs. This results in excellent response times on the network port via the CANopen adaptor.



Optimized solution for daisy chain connection to the CANopen machine bus



Example of CANopen diagram with SUB-D connector



Example of CANopen diagram with daisy chain tap

CANopen machine bus

Description	Item no.	Length		Part number	Weight	
		ft	m		lbs	kg

Connection via RJ45 connector (optimized solution for daisy chain connection to the CANopen machine bus)

CANopen cordsets equipped with 2 RJ45 connectors	1	1	0.3	VW3CANCARR03	0.1	0.05
		3.3	1	VW3CANCARR1	1.1	0.5
Daisy chain tap equipped with: ■ 2 RJ45 connectors for connecting the CANopen bus in a daisy chain ■ 1 cordset equipped with an RJ45 connector for connecting the drive	2	1	0.3	TCSCNT023F13M03	-	-

Connection via SUB-D connector

CANopen adaptor for mounting on the RJ45 port on the drive control terminals. The adaptor provides a 9-way male SUB-D connector conforming to the CANopen standard (CIA DRP 303-1).	3	-	-	VW3CANA71	-	-
---	---	---	---	-----------	---	---

CANopen connector ⁽⁴⁾ 9-way female SUB-D with line terminator (can be disabled). 180° cable outlet for 2 CANopen cables. CAN-H, CAN-L, CAN-GND connection.	4	-	-	VW3CANKCDF180T	-	-
---	---	---	---	----------------	---	---

CANopen cables ⁽¹⁾⁽²⁾ Standard cable, CE marking Low smoke zero halogen Flame retardant (IEC 60332-1)	5	164	50	TSXCANCA50	10.8	4.9
		328.1	100	TSXCANCA100	19.4	8.8
		984.3	300	TSXCANCA300	54.2	24.6

CANopen cables ⁽¹⁾⁽²⁾ UL certified, CE marking Flame retardant (IEC 60332-2)	5	164	50	TSXCANCB50	7.9	3.6
		328.1	100	TSXCANCB100	17.2	7.8
		984.3	300	TSXCANCB300	48.3	21.9

CANopen cables ⁽¹⁾⁽²⁾ 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
		328.1	100	TSXCANCD100	17.2	7.8
		984.3	300	TSXCANCD300	47.8	21.7

Connection via terminals

Daisy chain tap equipped with: ■ 2 spring terminal blocks for connecting the CANopen bus in a daisy chain ■ 1 cordset equipped with an RJ45 connector for connecting the drive	6	2	0.6	TSCCTN026M16M	-	-
---	---	---	-----	---------------	---	---

(1) Please refer to the "Modicon M238 Logic Controller" and "M258 Logic Controller" catalogues.

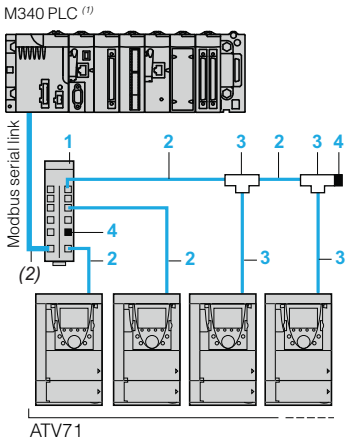
(2) Cable dependent on the type of controller or PLC.

(3) Please refer to the "Modicon M340 Automation Platform" catalogue.

(4) For ATV71H●●●M3, ATV71HD11M3X, HD15M3X, ATV71H075N4...HD18N4, ATV71H075N4383...HD18N4383 and ATV71HU22Y...HC63Y drives, this connector can be replaced by the TSXCANKCDF180T connector.

(5) Harsh environments:

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

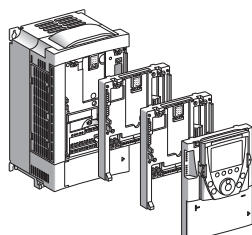


Example of Modbus diagram with connection via splitter box and RJ45 connectors

Modbus serial link- Connection accessories

Description	Item no.	Length		Part number	Weight	
		ft	m		lbs	kg
Modbus splitter box 10 RJ45 connectors and 1 screw terminal	1	-	-	LU9GC3	1.1	0.5
Cables for Modbus serial link equipped with 2 RJ45 connectors	2	1	0.3	VW3A8306R03	0.07	0.03
		3.3	1	VW3A8306R10	0.2	0.1
		9.8	3	VW3A8306R30	0.2	0.1
Modbus T-junction boxes (with integrated cable)	3	1	0.3	VW3A8306TF03	0.4	0.2
		3	1	VW3A8306TF10	0.4	0.2
Line terminators R = 120 Ω for RJ45 connector ⁽³⁾ C = 1 nf	4	-	-	VW3A8306RC	0.02	0.01
	4	-	-	VW3A8306R	0.02	0.01

(1) Please refer to the “Modicon M340 Automation Platform” catalog.
 (2) Cable dependent on the type of controller or PLC.
 (3) Order in lots of 2.



Modbus TCP Daisy Chain and EtherNet/IP network ^{(1) (2)}

Description		Length		Part number	Weight	
		ft	m		lbs	kg
Communication cards						
Modbus TCP Daisy Chain	Equipped with 2 RJ45 connectors Modbus TCP 10/100 Mbps class C20	-	-	VW3A3310D	0.7	0.3
EtherNet/IP	Equipped with 2 RJ45 connectors	-	-	VW3A3316	0.7	0.3
ConneXium Modbus TCP (VW3A3310D) or EtherNet/IP (VW3A3316 and VW3A3320) cordsets						
Straight shielded twisted pair cordsets	Equipped with 2 RJ45 connectors To be connected on a hub or on a switch	6.6	2	490NTW00002	-	-
		16.4	5	490NTW00005	-	-
		39.4	12	490NTW00012	-	-
		131.2	40	490NTW00040	-	-
		262.5	80	490NTW00080	-	-

DeviceNet bus ^{(1) (2)}

Description		Part number	Weight	
			lbs	kg
Communication card				
DeviceNet	Equipped with a 5-way removable screw terminal block	VW3A3309	0.7	0.3

INTERBUS bus ^{(1) (2)}

Description		Part number	Weight	
			lbs	kg
Communication card				
INTERBUS	Equipped with one 9-way male SUB-D connector and one 9-way female SUB-D connector To be connected using cordset 170MCI●●●00 ⁽³⁾	VW3A3304	0.7	0.3

Modbus/Uni-Telway network ^{(1) (2)}

Description		Length		Part number	Weight	
		ft	m		lbs	kg
Communication card						
Modbus/Uni-Telway	Equipped with a 9-way female SUB-D connector	-	-	VW3A3303	0.7	0.3
Connection accessories for Modbus/Uni-Telway card (VW3A3303)						
Subscriber socket	Equipped with two 15-way female SUB-D connectors and two screw terminal blocks. For 2-channel junction box, trunk cable extension and line terminator	-	-	TSXS6A62	1.3	0.6
Cordset for TSXS6A62 subscriber socket	Equipped with two 9-way and 15-way male SUB-D connectors	9.8	3	VW3A83062	0.4	0.2

(1) The Altivar 71 drive can only take one communication card.

(2) User manuals can be downloaded from our website www.schneider-electric.com. For the PROFIBUS DP, DeviceNet cards, the description files in gsd, eds or xif format can also be downloaded from our website www.schneider-electric.com.

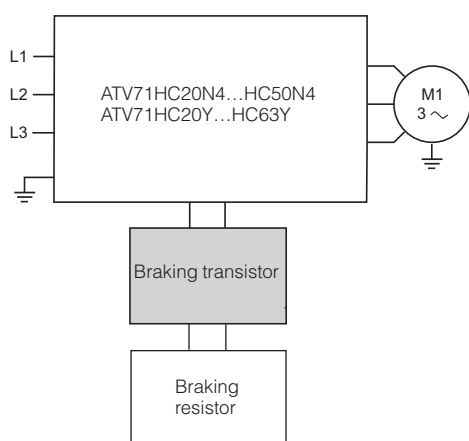
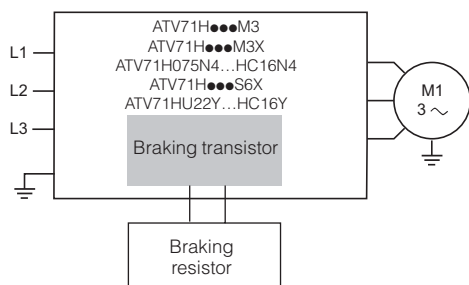
(3) For a v5.7ie70#6 and above software version.

PROFIBUS DP V0/V1 ⁽¹⁾⁽²⁾

Description		Length		Part number	Weight	
		ft	m		lbs	kg
Communication cards						
PROFIBUS DP V0	Equipped with a 9-way female SUB-D connector	-	-	VW3A3307	0.7	0.3
PROFIBUS DP V1	Equipped with a 9-way female SUB-D connector	-	-	VW3A3307S371	0.7	0.3
Connection accessories for PROFIBUS DP V0 (VW3A3307) or V1 (VW3A3307S371) card						
Connectors: 9-way male SUB-D	For middle of line	-	-	490NAD91104	-	-
	For end of line	-	-	490NAD91103	-	-
Cable for connector 490NAD911●●		328.1	100	TSXPBSCA100	-	-
		1312.3	400	TSXPBSCA400	-	-

(1) The Altivar 71 drive can only take one communication card.

(2) User manuals can be downloaded from our website www.schneider-electric.com. For the PROFIBUS DP, DeviceNet cards, the description files in gsd, eds or xif format can also be downloaded from our website www.schneider-electric.com.



Dynamic braking resistors

Dynamic braking (also referred to as resistance braking) allows the Altivar 71 to maintain control of the motor when the motor becomes an energy generator. Examples of a motor becoming a generator could be a hoist lowering a load, a downhill conveyor that is fully loaded, or a high inertia load requiring a fast deceleration time. The motor can become a generator when the load attached to the motor overhauls the motor. When the motor becomes a generator, the drive can be used to manage the energy being transferred from the load; through the motor back to the drive needs to be managed.

For applications where a significant amount of energy is being regenerated by the load, it may be prudent to consider an active front-end drive or engineer a system of Altivar 71 drives with a common DC bus tie. The active front-end is a second power section added between the Altivar 71 and the incoming power line and synchronizes the generated energy back to the incoming power line. A system of Altivar 71 drives with a common DC bus tie is common in applications where one load requires acceleration, while another is decelerating. Contact your Schneider Electric representative if you believe your application could benefit from an active front-end solution or DC bus tie solution.

For many applications where the motor becomes an energy generator, dynamic braking resistors can be used with the Altivar 71 to maintain control of the motor and manage speed and torque. The dynamic braking resistors are connected to the DC bus on the Altivar 71 through a transistor (also referred to as a chopper or dynamic braking transistor). When connected to a resistor, this transistor turns on before the energy coming back from the motor elevates the DC bus voltage to overvoltage trip level. The generated energy is then able to flow to the resistors and this energy is dissipated in the form of heat.

The following drives have a dynamic braking transistor built in: ATV71H●●●M3, ATV71H●●●M3X, ATV71H075N4...HC16N4, ATV71H●●●S6X, and ATV71HU22Y...HC16Y.

An external braking transistor is required for ATV71HC20N4...HC50N4 and ATV71HC20Y...HC63Y. Powerohm Type BM Braking Modules monitor the DC bus voltage of the Altivar 71 and allow power to flow to the external braking resistors to avoid over-voltage trips and allow the Altivar 71 to provide braking torque. These braking modules are available in three voltage ranges.

Powerohm Part Number	RMC Continuous Load Current	Turn ON Voltage	Max Peak Current	Dimensions				
				A	B	C	D	E
240 Nominal Line Voltage								
ATVBM2-50	50	390	200	6.38	5.13	11	8.88	5.88
ATVBM2-115	115	390	200	6.38	5.13	12.75	8.88	5.88
ATVBM2-150	150	390	300	6.38	5.13	12.75	8.88	5.88
ATVBM240-450	450	390	600	7.13	10	20	5	19
ATVBM240-600	600	390	900	7.13	10	20	5	19
ATVBM240-900	900	390	1200	10.06	10	24	7	23
ATVBM240-1200	1200	390	1800	10.06	10	24	7	23
480 Nominal AC Line Voltage								
ATVBM4-50	50	775	200	6.38	5.13	11	8.88	5.88
ATVBM4-115	115	775	200	6.38	5.13	12.75	8.88	5.88
ATVBM4-150	150	775	300	6.38	5.13	12.75	8.88	5.88
ATVBM480-450	450	775	600	7.13	10	20	5	19
ATVBM480-600	600	775	900	7.13	10	20	5	19
ATVBM480-900	900	775	1200	10.06	10	24	7	23
ATVBM480-1200	1200	775	1800	10.06	10	24	7	23
600 Nominal AC Line Voltage								
ATVBM6-50	50	970	200	6.38	5.13	11	8.88	5.88
ATVBM6-115	115	970	200	6.38	5.13	12.75	8.88	5.88
ATVBM6-150	150	970	300	6.38	5.13	12.75	8.88	5.88
ATVBM600-450	450	970	600	7.13	10	20	5	19
ATVBM600-600	600	970	900	7.13	10	20	5	19
ATVBM600-900	900	970	1200	10.06	10	24	7	23
ATVBM600-1200	1200	970	1800	10.06	10	24	7	23

Altivar 71

variable speed drives

Accessories & Options

Dynamic Braking Accessories

Drive Part Number	HP	kW	Min Ohms	DC Bus Voltage	Required Braking Module	10% Decl 5% OHL	20% Decl 10% OHL	50% Decl 25% OHL	10% Decl 5% OHL	20% Decl 10% OHL	50% Decl 25% OHL
200-240 Voltage											
ATV 71H037M3	0.5	0.37	44	390	N/A	P184441	P184441	P184441	P184441	P184441	P184441
ATV 71H075M3	1	0.75	44	390	N/A	P184441	P184441	P184441	P184441	P184441	P184441
ATV 71HU15M3	2	1.5	33	390	N/A	P1844417	P1844417	P1844417	P1844417	P1844417	P1844418
ATV 71HU22M3	3	2.2	22	390	N/A	P1844427	P1844427	P1844428	P1844427	P1844427	P1844429
ATV 71HU30M3	4	3	22	390	N/A	P1844427	P1844427	P1844428	P1844427	P1844428	P1844429
ATV 71HU40M3	5	4	16	390	N/A	P1844437	P1844437	P1844439	P1844437	P1844438	P1844442
ATV 71HU55M3	7.5	5.5	11	390	N/A	P1844437	P1844438	P1844442	P1844438	P1844439	P1844447
ATV 71HU75M3	10	7.5	8	390	N/A	P1844459	P1844460	P1844468	P1844460	P1844462	P1844463
ATV 71HD11M3X	15	11	3	390	N/A	P1844482	P1844485	P1844487	P1844482	P1844483	P1844488
ATV 71HD15M3X	20	15	3	390	N/A	P1844482	P1844489	P1844488	P1844485	P1844484	P1844491
ATV 71HD18M3X	25	18.5	4	390	N/A	P1844498	P1844497	P1844499	P18444100	P18444101	P18444102
ATV 71HD22M3X	30	22	3.3	390	N/A	P18444112	P18444111	P18444116	P18444110	P18444114	P18444118
ATV 71HD30M3X	40	30	3.3	390	N/A	P18444110	P18444113	P18444118	P18444111	P18444115	P18444120
ATV 71HD37M3X	50	34	1.7	390	N/A	P18444138	P18444141	P18444145	P18444140	P18444143	P18444146
ATV 71HD45M3X	60	45	1.7	390	N/A	P18444139	P18444142	P18444147	P18444141	P18444143	P18444148
ATV 71HD55M3X	75	55	1.7	390	N/A	P18444140	P18444143	P18444146	P18444142	P18444144	P18444149
ATV 71HD75M3X	100	75	1.3	390	N/A	P18444150	P18444153	P18444156	P18444151	P18444154	P18444158
380-480 Voltage											
ATV 71H075N4	1	0.75	56	750	N/A	P184441	P184441	P184441	P184441	P184441	P184441
ATV 71HU15N4	2	1.5	56	750	N/A	P184441	P184441	P184441	P184441	P184441	P184442
ATV 71HU22N4	3	2.2	56	750	N/A	P184441	P184441	P184442	P184441	P184441	P184443
ATV 71HU30N4	4	3	34	750	N/A	P184441	P184441	P184442	P184441	P184442	P184443
ATV 71HU40N4	5	4	34	750	N/A	P1844417	P1844417	P1844419	P1844417	P1844418	P1844420
ATV 71HU55N4	7.5	5.5	23	750	N/A	P1844417	P1844418	P1844420	P1844418	P1844419	P1844422
ATV 71HU75N4	10	7.5	19	750	N/A	P1844417	P1844418	P1844421	P1844418	P1844419	P1844423
ATV 71HD11N4	15	11	12	750	N/A	P1844428	P1844429	P1844435	P1844429	P1844432	P1844431
ATV 71HD15N4	20	15	7	750	N/A	P1844460	P1844466	P1844464	P1844462	P1844461	P1844465
ATV 71HD18N4	25	18.5	7	750	N/A	P1844462	P1844468	P1844465	P1844462	P1844463	P1844467
ATV 71HD22N4	30	22	13.3	750	N/A	P1844449	P1844457	P1844453	P1844454	P1844450	P1844456
ATV 71HD30N4	40	30	13.3	750	N/A	P1844452	P1844450	P1844455	P1844457	P1844451	P1844458
ATV 71HD37N4	50	37	6.7	750	N/A	P1844472	P1844474	P1844477	P1844473	P1844475	P1844479
ATV 71HD45N4	60	45	5	750	N/A	P1844484	P1844490	P1844494	P1844488	P1844492	P1844495
ATV 71HD55N4	75	55	5	750	N/A	P1844487	P1844491	P1844495	P1844488	P1844493	P1844496
ATV 71HD75N4	100	75	3.3	750	N/A	P18444115	P18444118	P18444121	P18444116	P18444120	P18444124
ATV 71HD90N4	125	90	2.5	750	N/A	P18444115	P18444119	P18444123	P18444117	P18444122	P18444124
ATV 71HC11N4	150	110	1.9	750	N/A	P18444125	P18444127	P18444133	P18444126	P18444129	P18444134
ATV 71HC13N4	200	130	1.9	750	N/A	P18444126	P18444130	P18444133	P18444127	P18444132	P18444135
ATV 71HC16N4	250	160	1.9	750	N/A	P18444126	P18444129	P18444134	P18444128	P18444133	P18444137
ATV 71HC20N4	300	200	1.05	750	ATVBM480450	P18444152	P18444156	P18444161	P18444155	P18444158	P18444163
ATV 71HC25N4	400	250	1.05	750	ATVBM480450	P18444154	P18444157	P18444162	P18444156	P18444159	P18444163
ATV 71HC28N4	450	280	1.05	750	ATVBM480450	P18444154	P18444158	P18444163	P18444157	P18444160	P18444164
ATV 71HC31N4	500	310	0.7	750	ATVBM480900	P18444173	P18444176	-	P18444174	P18444177	-
ATV 71HC40N4	600	400	0.7	750	ATVBM480900	P18444174	P18444177	-	P18444175	P18444178	-
ATV 71HC50N4	700	500	0.7	750	ATVBM480900	P18444175	P18444178	-	P18444177	-	-

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Accessories & Options

Dynamic Braking Accessories

Drive Part Number	HP	kW	Min Ohms	DC Bus Voltage	Required Braking Module	10% Decl 5% OHL	20% Decl 10% OHL	50% Decl 25% OHL	10% Decl 5% OHL	20% Decl 10% OHL	50% Decl 25% OHL
575-600 Voltage											
ATV 71HU22Y, ATV71HU15S6X	2	1.5	12	970	N/A	P184441	P184441	P184441	P184441	P184441	P184442
ATV 71HU30Y, ATV71HU22S6X	3	2.2	12	970	N/A	P184441	P184441	P184442	P184441	P184441	P184443
ATV 71HU40Y, ATV71HU30S6X	4	3	12	970	N/A	P184441	P184441	P184442	P184441	P184442	P184443
ATV 71HU55Y, ATV71HU40S6X	5	4	12	970	N/A	P184441	P184441	P184443	P184441	P184442	P184444
ATV 71HU75Y, ATV71HU55S6X	7.5	5.5	12	970	N/A	P184441	P184442	P184444	P184442	P184443	P184445
ATV 71HD11Y, ATV71HU75S6X	10	7.5	12	970	N/A	P1844417	P1844418	P1844421	P1844418	P1844419	P1844423
ATV 71HD15Y	15	15	12	970	N/A	P1844418	P1844419	P1844423	P1844419	P1844421	P1844425
ATV 71HD18Y	20	18.5	12	970	N/A	P1844418	P1844420	P1844424	P1844419	P1844422	P1844426
ATV 71HD22Y	25	22	12	970	N/A	P1844429	P1844432	P1844431	P1844430	P1844435	P1844433
ATV 71HD30Y	30	30	12	970	N/A	P1844439	P1844447	P1844444	P1844445	P1844440	P1844446
ATV 71HD37Y	40	37	12	970	N/A	P1844442	P1844440	P1844446	P1844447	P1844443	P1844448
ATV 71HD45Y	50	45	8	970	N/A	P1844468	P1844464	P1844469	P1844463	P1844465	P1844471
ATV 71HD55Y	60	55	8	970	N/A	P1844461	P1844465	P1844470	P1844463	P1844467	P1844471
ATV 71HD75Y	75	75	5	970	N/A	P1844473	P1844475	P1844479	P1844474	P1844476	P1844480
ATV 71HD90Y	100	90	5	970	N/A	P1844474	P1844476	P1844480	P1844475	P1844478	P1844481
ATV 71HC11Y	125	110	4	970	N/A	P1844499	P18444103	P18444106	P18444102	P18444105	P18444107
ATV 71HC13Y	150	132	4	970	N/A	P18444101	P18444104	P18444108	P18444103	P18444105	P18444109
ATV 71HC16Y	175	160	4	970	N/A	P18444102	P18444105	P18444107	P18444103	P18444106	P18444109
ATV 71HC20Y	200	200	2	970	ATVBM600450	P18444126	P18444129	P18444134	P18444127	P18444132	P18444137
ATV 71HC25Y	250	250	2	970	ATVBM600450	P18444127	P18444131	P18444134	P18444129	P18444133	P18444137
ATV 71HC31Y	350	315	2	970	ATVBM600450	P18444128	P18444133	P18444137	P18444132	P18444134	P18444136
ATV 71HC40Y	450	400	1	970	ATVBM600600	P18444165	P18444168	P18444172	P18444167	P18444170	-
ATV 71HC50Y	550	500	1	970	ATVBM600600	P18444166	P18444169	P18444172	P18444168	P18444171	-
ATV 71HC63Y	700	630	1	970	ATVBM600600	P18444167	P18444170	-	P18444169	P18444172	-

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variable speed drives

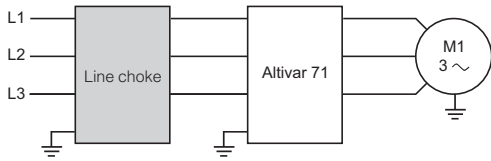
Accessories & Options

Dynamic Braking Accessories

Part Number	Ohms	Watts	Dimension	Weight
			inches	lbs
P184441	100	400	12 x 5 x 5	7
P184442	100	800	12 x 7 x 5	9
P184443	100	1200	12 x 10 x 5	13
P184444	100	1600	12 x 13 x 5	16
P184445	100	2400	19 x 10 x 5	20
P1844417	40	400	12 x 5 x 5	7
P1844418	40	800	12 x 7 x 5	9
P1844419	40	1200	12 x 10 x 5	13
P1844420	40	1600	12 x 13 x 5	16
P1844421	40	2000	12 x 16 x 5	18
P1844422	40	2400	19 x 10 x 5	20
P1844423	40	2800	19 x 13 x 5	24
P1844424	40	4000	19 x 16 x 5	30
P1844425	40	4400	26.5 x 13 x 5	32
P1844426	40	5600	26.5 x 16 x 5	38
P1844427	25	400	12 x 5 x 5	7
P1844428	25	800	12 x 7 x 5	9
P1844429	25	1200	12 x 10 x 5	13
P1844430	25	1600	12 x 13 x 5	16
P1844431	25	5625	26.5 x 13 x 5	28
P1844432	25	2000	12 x 16 x 5	18
P1844433	25	8100	26.5 x 16 x 5	36
P1844435	25	2800	19 x 13 x 5	24
P1844437	16	400	12 x 5 x 5	7
P1844438	16	800	12 x 7 x 5	9
P1844439	16	1200	12 x 10 x 5	13
P1844440	16	3600	19 x 10 x 5	19
P1844442	16	1600	12 x 13 x 5	16
P1844443	16	5184	26.5 x 13 x 5	28
P1844444	16	6400	26.5 x 13 x 5	31
P1844445	16	2000	12 x 16 x 5	18
P1844446	16	8464	26.5 x 16 x 5	36
P1844447	16	2400	19 x 10 x 5	20
P1844448	16	10816	28 x 10 x 10	39
P1844449	14	1200	12 x 10 x 5	13
P1844450	14	3150	19 x 10 x 5	19
P1844451	14	4536	26.5 x 10 x 5	25
P1844452	14	1600	12 x 13 x 5	16
P1844453	14	5600	26.5 x 13 x 5	28
P1844454	14	2000	12 x 16 x 5	18
P1844455	14	7406	26.5 x 16 x 5	33
P1844456	14	9464	28 x 10 x 10	37
P1844457	14	2400	19 x 10 x 5	20
P1844458	14	11774	28 x 13 x 10	51
P1844459	10	400	12 x 5 x 5	7
P1844460	10	800	12 x 7 x 5	9
P1844461	10	2250	19 x 10 x 5	17
P1844462	10	1200	12 x 10 x 5	13
P1844463	10	3240	19 x 10 x 5	19
P1844464	10	4000	26.5 x 10 x 5	24
P1844465	10	5290	26.5 x 10 x 5	25
P1844466	10	1600	12 x 13 x 5	16
P1844467	10	6760	26.5 x 13 x 5	28
P1844468	10	2000	12 x 16 x 5	18
P1844469	10	10240	28 x 10 x 10	44
P1844470	10	12960	28 x 13 x 10	55
P1844471	10	16000	28 x 16 x 10	70

Part Number	Ohms	Watts	Dimension	Weight
			inches	lbs
P1844472	8	1800	19 x 10 x 5	16
P1844473	8	3200	19 x 10 x 5	19
P1844474	8	4232	28 x 10 x 10	32
P1844475	8	5408	28 x 10 x 10	32
P1844476	8	8192	26.5 x 16 x 5	37
P1844477	8	10368	28 x 10 x 10	44
P1844478	8	12800	28 x 13 x 10	59
P1844479	8	16200	28 x 16 x 10	70
P1844480	8	20000	30 x 18 x 16	99
P1844481	8	28800	30 x 18 x 24	142
P1844482	6	800	12 x 7 x 5	9
P1844483	6	1944	19 x 10 x 5	17
P1844484	6	2400	19 x 10 x 5	17
P1844485	6	1200	12 x 10 x 5	13
P1844487	6	3174	19 x 10 x 5	19
P1844488	6	4056	26.5 x 10 x 5	24
P1844489	6	1600	12 x 13 x 5	16
P1844490	6	5046	26.5 x 13 x 5	30
P1844491	6	6144	26.5 x 13 x 5	32
P1844492	6	7776	26.5 x 16 x 5	37
P1844493	6	9600	28 x 10 x 10	47
P1844494	6	12150	28 x 13 x 10	57
P1844495	6	15000	28 x 13 x 10	67
P1844496	6	21600	28 x 16 x 10	89
P1844497	4.5	1800	19 x 10 x 5	16
P1844498	4.5	1200	12 x 10 x 5	13
P1844499	4.5	4608	26.5 x 10 x 5	26
P18444100	4.5	1600	12 x 13 x 5	16
P18444101	4.5	5832	26.5 x 13 x 5	32
P18444102	4.5	7200	26.5 x 16 x 5	39
P18444103	4.5	9112	26.5 x 16 x 5	41
P18444104	4.5	11250	28 x 10 x 10	53
P18444105	4.5	16200	28 x 13 x 10	74
P18444106	4.5	22050	28 x 16 x 10	99
P18444107	4.5	32512	30 x 18 x 16	151
P18444108	4.5	28800	30 x 18 x 16	105
P18444109	4.5	45000	30 x 18 x 24	204
P18444110	3.3	1745	19 x 10 x 5	16
P18444111	3.3	2230	19 x 10 x 5	17
P18444112	3.3	1200	12 x 10 x 5	13
P18444113	3.3	2775	19 x 10 x 5	19
P18444114	3.3	3379	19 x 10 x 5	21
P18444115	3.3	4276	26.5 x 10 x 5	26
P18444116	3.3	5280	26.5 x 13 x 5	33
P18444117	3.3	6682	26.5 x 13 x 5	34
P18444118	3.3	8250	26.5 x 6 x 5	44
P18444119	3.3	8923	28 x 10 x 10	40
P18444120	3.3	11880	28 x 10 x 10	58
P18444121	3.3	16170	28 x 13 x 10	75
P18444122	3.3	13516	28 x 13 x 10	55
P18444123	3.3	23842	30 x 18 x 16	127
P18444124	3.3	33000	30 x 18 x 24	176
P18444125	2.2	5500	26.5 x 10 x 5	30
P18444126	2.2	7920	26.5 x 13 x 5	41
P18444127	2.2	10780	26.5 x 16 x 5	54
P18444128	2.2	11404	28 x 13 x 10	56
P18444129	2.2	15895	28 x 13 x 10	82

Part Number	Ohms	Watts	Dimension	Weight
			inches	
P18444130	2.2	14080	28 x 16 x 10	70
P18444131	2.2	17820	28 x 16 x 10	73
P18444132	2.2	22000	28 x 16 x 10	108
P18444133	2.2	31680	30 x 18 x 24	151
P18444134	2.2	40095	30 x 18 x 32	168
P18444135	2.2	49500	30 x 18 x 40	232
P18444136	2.2	97020	30 x 18 x 40	368
P18444137	2.2	71280	30 x 18 x 48	310
P18444138	1.8	1843	19 x 10 x 5	16
P18444139	1.8	2332	19 x 10 x 5	18
P18444140	1.8	2880	19 x 10 x 5	22
P18444141	1.8	3645	19 x 10 x 5	22
P18444142	1.8	4500	26.5 x 10 x 5	30
P18444143	1.8	6480	26.5 x 10 x 5	33
P18444144	1.8	8820	26.5 x 13 x 5	45
P18444145	1.8	9331	28 x 10 x 10	44
P18444146	1.8	13005	28 x 13 x 10	75
P18444147	1.8	11520	28 x 13 x 10	59
P18444148	1.8	18000	28 x 13 x 10	89
P18444149	1.8	20995	30 x 18 x 16	89
P18444150	1.3	4680	26.5 x 10 x 5	32
P18444151	1.3	6370	26.5 x 10 x 5	36
P18444152	1.3	9392	26.5 x 16 x 5	54
P18444153	1.3	8320	28 x 10 x 10	47
P18444154	1.3	13000	28 x 10 x 10	70
P18444155	1.3	15163	28 x 16 x 10	63
P18444156	1.3	18720	28 x 16 x 10	89
P18444157	1.3	23692	30 x 18 x 16	98
P18444158	1.3	29250	30 x 18 x 24	145
P18444159	1.3	37570	30 x 18 x 24	194
P18444160	1.3	42120	30 x 18 x 32	201
P18444161	1.3	52000	30 x 18 x 32	260
P18444162	1.3	57330	30 x 18 x 32	251
P18444163	1.3	84532	30 x 18 x 56	426
P18444164	1.3	117000	30 x 18 x 64	546
P18444165	1.1	15840	28 x 13 x 10	74
P18444166	1.1	20047	30 x 18 x 16	88
P18444167	1.1	24750	30 x 18 x 24	134
P18444168	1.1	35640	30 x 18 x 24	159
P18444169	1.1	44000	30 x 18 x 32	226
P18444170	1.1	48510	30 x 18 x 32	225
P18444171	1.1	71527	30 x 18 x 48	364
P18444172	1.1	99000	30 x 18 x 56	462
P18444173	0.7	15750	28 x 16 x 10	76
P18444174	0.7	22680	30 x 18 x 16	105
P18444175	0.7	28000	30 x 18 x 16	143
P18444176	0.7	30870	30 x 18 x 16	132
P18444177	0.7	45517	30 x 18 x 32	240
P18444178	0.7	63000	30 x 18 x 40	310



Line reactors

Line reactors (also referred to as line chokes) are used to provide improved protection against overvoltages on the line supply to reduce input currents to the drive and to reduce harmonic distortion of the current produced by the drive. Line reactors (or some form of additional impedance) are recommended when the impedance of the power distribution system is low, such as when the power of the system transformer is ten times larger than the power rating of the drive.

Line reactors are mandatory:

- For ATV71HC11Y...HC63Y drives

They can also be used with:

- ATV71H...M3 drives powered by a 200...240 V 50/60 Hz three-phase supply and with ATV71H...M3X, ATV71...N4 and ATV71P...N4Z drives
- ATV71...Y variable speed drives in order to reach a total rate of distortion in current in conformity with the IEC 61000-3-12 standard

Note: ATV71HD90N4...HC50N4, supplied as standard with a DC choke, can be ordered without a choke by adding the letter D at the end of the reference.

Chokes must be installed upstream of the drive.

Applications

The use of line chokes is recommended in particular under the following circumstances:

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

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variable speed drives

Input Power Options

Line Reactors



VW3A4572

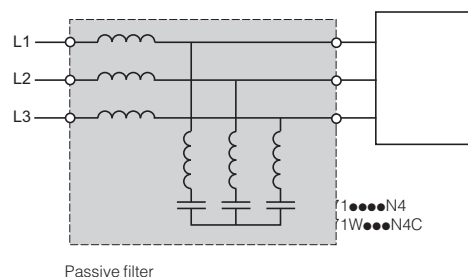
For drives	Quantity required per drive	Part number	Weight		Line supply lsc	Line choke				UL recognized CSA certified Part number ⁽¹⁾	Weight	
			Induc- tance value	Nomi- nal current		Satura- tion current	Loss	lbs	kg			
		lbs	kg	kA	mH	A	A	W	lbs	kg		
Single-phase supply voltage: 200...240 V 50/60 Hz												
ATV71HU40M3X	1	-	-	-	-	-	-	-	-	RL02502	14	6.3
ATV71HU55M3X	1	-	-	-	-	-	-	-	-	RL03502	16	7.3
ATV71HU75M3X	1	-	-	-	-	-	-	-	-	RL05502	27	12
ATV71HD15M3X	1	-	-	-	-	-	-	-	-	RL08002	51	23
ATV71HD22M3X	1	-	-	-	-	-	-	-	-	RL10002	51	23
ATV71HD30M3X	1	-	-	-	-	-	-	-	-	RL13002	57	26
ATV71HD37M3X	1	-	-	-	-	-	-	-	-	RL16002	50	23
ATV71HD45M3X	1	-	-	-	-	-	-	-	-	RL20003B14	100	45
Three-phase supply voltage: 200...240 V 50/60 Hz												
ATV71H037M3	1	VW3A4551	3.3	1.5	5	10	4	-	45	RL00401	4	1.8
ATV71H075M3	1	VW3A4551	3.3	1.5	5	10	4	-	45	RL00401	4	1.8
ATV71HU15M3	1	VW3A4552	6.6	3	5	4	10	-	65	RL00801	7	3.2
ATV71HU22M3	1	VW3A4552	6.6	3	5	4	10	-	65	RL01201	9	4.1
ATV71HU30M3	1	VW3A4553	7.7	3.5	5	2	17	-	75	RL01801	9	4.1
ATV71HU40M3	1	VW3A4554	13.2	6	5	1	31	-	90	RL01801	9	4.1
ATV71HU55M3	1	VW3A4554	13.2	6	22	1	31	-	90	RL02501	11	5
ATV71HU75M3	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL03501	14	6.3
ATV71HD11M3X	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL04501	23	10
ATV71HD15M3X	1	-	-	-	-	-	-	-	-	RL05501	24	11
ATV71HD18M3X	1	-	-	-	-	-	-	-	-	RL08001	43	20
ATV71HD22M3X	1	-	-	-	-	-	-	-	-	RL10001	47	21
ATV71HD30M3X	1	-	-	-	-	-	-	-	-	RL13001	50	23
ATV71HD37M3X	1	-	-	-	-	-	-	-	-	RL16001	57	26
ATV71HD45M3X	1	-	-	-	-	-	-	-	-	RL20001	67	30
ATV71HD55M3X	1	-	-	-	-	-	-	-	-	RL25001	68	31
ATV71HD75M3X	1	-	-	-	-	-	-	-	-	RL32001	110	50
Three-phase supply voltage: 380...480 V 50/60 Hz												
ATV71H075N4	1	VW3A4551	3.3	1.5	5	10	4	-	45	RL00201	4	1.8
ATV71HU15N4	1	VW3A4551	3.3	1.5	5	10	4	-	45	RL00402	5	2.3
ATV71HU22N4	1	VW3A4552	6.6	3	5	4	10	-	65	RL00402	5	2.3
ATV71HU40N4	1	VW3A4552	6.6	3	5	4	10	-	65	RL00802	11	5
ATV71HU55N4	1	VW3A4553	7.7	3.5	22	2	17	-	75	RL01202	18	8.2
ATV71HU75N4	1	VW3A4553	7.7	3.5	22	2	17	-	75	RL01802	16	7.3
ATV71HD11N4	1	VW3A4554	13.2	6	22	1	31	-	90	RL02502	20	9.1
ATV71HD15N4	1	VW3A4554	13.2	6	22	1	31	-	90	RL03502	30	14
ATV71HD18N4	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL03502	30	14
ATV71HD22N4	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL04502	39	18
ATV71HD30N4	1	-	-	-	-	-	-	-	-	RL05502	41	19
ATV71HD37N4	1	-	-	-	-	-	-	-	-	RL08002	61	28
ATV71HD45N4	1	-	-	-	-	-	-	-	-	RL08002	61	28
ATV71HD55N4	1	-	-	-	-	-	-	-	-	RL10002	74	34
ATV71HD75N4	1	-	-	-	-	-	-	-	-	RL13002	64	29
ATV71HD90N4	1	-	-	-	-	-	-	-	-	RL16002	67	30
ATV71HC11N4	1	-	-	-	-	-	-	-	-	RL20002	100	45
ATV71HC13N4	1	-	-	-	-	-	-	-	-	RL25002	140	63
ATV71HC16N4	1	-	-	-	-	-	-	-	-	RL32002	190	86
ATV71HC20N4	1	-	-	-	-	-	-	-	-	RL40002	200	91
ATV71HC25N4	1	-	-	-	-	-	-	-	-	RL50002	290	132
ATV71HC28N4	1	-	-	-	-	-	-	-	-	RL60002	290	132
ATV71HC31N4	1	-	-	-	-	-	-	-	-	RL60002	290	132
ATV71HC40N4	2	-	-	-	-	-	-	-	-	RL40002B14	155	70
ATV71HC50N4	2	-	-	-	-	-	-	-	-	RL50002	180	82

(1) See Short Circuit Current Ratings on pages 23-28 for more information about UL recognized line reactors.

For drives	Quantity re- quired per drive	Part number	Weight		Line supply Isc	Line choke				UL recognized CSA certified part number ⁽²⁾	Weight	
						Induc- tance value	Nominal current	Satura- tion current	Loss			
			lbs	kg							kA	mH
Three-phase supply voltage: 500...600 V 50/60 Hz												
ATV71HU15S6X	1	VW3A4551	3.3	1.5	22	10	4	–	45	RL00403	5	2.3
ATV71HU22S6X	1	VW3A4551	3.3	1.5	22	10	4	–	45	RL00403	5	2.3
ATV71HU30S6X	1	VW3A4551	3.3	1.5	22	10	4	–	45	RL00403	11	5
ATV71HU40S6X	1	VW3A4552	6.6	3	22	4	10	–	65	RL00803	11	5
ATV71HU55S6X	1	VW3A4552	6.6	3	22	4	10	–	65	RL01203	18	8.2
ATV71HU75S6X	1	VW3A4553	7.7	3.5	22	2	17	–	75	RL01203	18	8.2
Three-phase supply voltage: 500...690 V 50/60 Hz												
ATV71HU22Y	1	VW3A4551	3.3	1.5	22	10	4	-	45	RL00403	5	2.3
ATV71HU30Y	1	VW3A4551	3.3	1.5	22	10	4	-	45	RL00403	5	2.3
ATV71HU40Y	2	VW3A4552	6.6	3	22	4	10	-	65	RL00803	11	5
ATV71HU55Y	2	VW3A4552	6.6	3	22	4	10	-	65	RL00803	11	5
ATV71HU75Y	2	VW3A4552	6.6	3	22	4	10	-	65	RL00802	8	3.6
ATV71HD11Y	1	VW3A4553	7.7	3.5	22	2	17	-	75	RL01202	10	4.5
ATV71HD15Y	1	VW3A4553	7.7	3.5	22	2	17	-	75	RL01802	14	6.3
ATV71HD18Y	1	VW3A4554	13.2	6	22	1	31	-	90	RL02502	14	6.3
ATV71HD22Y	1	VW3A4554	13.2	6	22	1	31	-	90	RL02502	20	9.1
ATV71HD30Y	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL03502	16	7.3
ATV71HD37Y	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL04502	26	11.8
ATV71HD45Y	1	VW3A4555	24.3	11	22	0.5	60	-	94	RL05502	27	12
ATV71HD55Y	1	VW3A4556	35.3	16	22	0.3	107	-	260	RL08002	51	23
ATV71HD75Y	1	-	-	-	-	-	-	-	-	RL08002	51	23
ATV71HD90Y	1	-	-	-	-	-	-	-	-	RL10002	51	23
ATV71HC11Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL13002	57	26
ATV71HC13Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL16002	50	23
ATV71HC16Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL20002	67	30
ATV71HC20Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL20002	67	30
ATV71HC25Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL25002	106	48
ATV71HC31Y ⁽¹⁾	1	-	-	-	-	-	-	-	-	RL40002	155	70
ATV71HC40Y ⁽¹⁾	2	-	-	-	-	-	-	-	-	RL25002B14	106	48
ATV71HC50Y ⁽¹⁾	2	-	-	-	-	-	-	-	-	RL32002B14	125	57
ATV71HC63Y ⁽¹⁾	2	-	-	-	-	-	-	-	-	RL40002B14	155	70

(1) Use of a line choke is mandatory.

(2) See Short Circuit Current Ratings on pages 23-28 for more information about UL recognized line reactors.



Passive filters

Passive filters are used to reduce current harmonics with total harmonic distortion factors of less than 16% or 10%.

These performance levels can be improved still further and the harmonic distortion reduced to less than 10% or 5% if the filter is used with a DC choke.

The reactive power increases at no load or low load. To eliminate this reactive power, the filter capacitors can be disconnected via the drive (refer to the Programming Manual).

The passive filters provide IP 20 protection.

ATV71H●●●Y and ATV71H●●●S6X drives are not compatible with the use of passive filters. It is recommended or mandatory, depending on the rating, to use a line choke.

Applications

Reduction of current harmonics in order to use drives in the first environment (restricted distribution, for domestic use, sale conditional on the competence of the user and the distributor in terms of reduction of current harmonics).

Motor rating		For ATV 71 drives	Line Supply	Filter	Filter	Quantity per Drive	Part Number ⁽²⁾	Packaging Size		Weight	
			Line Current	Input Current	Output Current			L x L x H		Net	
kw	HP		A	A	A			inches	cm	lbs	kg
THDI 16% ⁽¹⁾											
0.75	1	ATV 71H075N4	2.5	6	6.2	1	VW3A46139	23.6 x 15.7 x 20.1	60 x 40 x 51	22	10
1.5	2	ATV 71HU15N4	3	6	6.2	1	VW3A46139	23.6 x 15.7 x 20.1	60 x 40 x 51	22	10
2.2	3	ATV 71HU22N4	5	6	6.2	1	VW3A46139	23.6 x 15.7 x 20.1	60 x 40 x 51	22	10
3	-	ATV 71HU30N4	6	6	6.2	1	VW3A46139	23.6 x 15.7 x 20.1	60 x 40 x 51	22	10
4	5	ATV 71HU40N4	7	10	10.4	1	VW3A46140	23.6 x 15.7 x 20.1	60 x 40 x 51	29.8	13.5
5.5	7.5	ATV 71HU55N4	10	10	10.4	1	VW3A46140	23.6 x 15.7 x 20.1	60 x 40 x 51	29.8	13.5
7.5	10	ATV 71HU75N4	13	14	14.5	1	VW3A46141	23.6 x 15.7 x 20.1	60 x 40 x 51	35.9	16.3
11	15	ATV 71HD11N4	19	19	19.5	1	VW3A46142	23.6 x 15.7 x 20.1	60 x 40 x 51	48.5	22
15	20	ATV 71HD15N4	24	25	26	1	VW3A46143	23.6 x 15.7 x 20.1	60 x 40 x 51	50.7	23
18	25	ATV 71HD18N4	32	31	32	1	VW3A46144	31.5 x 23.6 x 24	80 x 60 x 61	72.8	33
22	30	ATV 71HD22N4	35	36	37.5	1	VW3A46145	31.5 x 23.6 x 24	80 x 60 x 61	81.6	37
30	40	ATV 71HD30N4	44	48	50	1	VW3A46146	31.5 x 23.6 x 24	80 x 60 x 61	83.8	38
37	50	ATV 71HD37N4	58.7	60	62.5	1	VW3A46147	31.5 x 23.6 x 24	80 x 60 x 61	94.8	43
45	60	ATV 71HD45N4	68	73	76	1	VW3A46148	31.5 x 23.6 x 24	80 x 60 x 61	121.3	55
55	75	ATV 71HD55N4	82.6	95	99	1	VW3A46149	31.5 x 23.6 x 24	80 x 60 x 61	136.7	62
75	100	ATV 71HD75N4	108	118	122.5	1	VW3A46150	31.5 x 23.6 x 24	80 x 60 x 61	163.1	74

(1) Adding a DC choke can reduce THDI to <5%.

(2) Filters are rated for 460V 60Hz three phase power supply.

Altivar 71

variable speed drives

Input Power Options

Passive filters

Motor rating		For ATV 71 drives	Line Supply	Filter	Filter	Quantity per Drive	Part Number ⁽¹⁾	Packaging Size		Weight	
			Line Current	Input Current	Output Current			L x L x H		Net	
kw	HP		A	A	A			inches	cm	lbs	kg
THDI 10%											
0.75	1	ATV 71H075N4	2.5	6	6.2	1	VW3A46158	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
1.5	2	ATV 71HU15N4	3	6	6.2	1	VW3A46158	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
2.2	3	ATV 71HU22N4	4.2	6	6.2	1	VW3A46158	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
3	-	ATV 71HU30N4	6	6	6.2	1	VW3A46158	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
4	5	ATV 71HU40N4	7	10	10.4	1	VW3A46159	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
5.5	7.5	ATV 71HU55N4	10	10	10.4	1	VW3A46159	23.6 x 15.7 x 20.1	60 x 40 x 51	39.7	18
7.5	10	ATV 71HU75N4	13	14	14.5	1	VW3A46160	23.6 x 15.7 x 20.1	60 x 40 x 51	44.1	20
11	15	ATV 71HD11N4	19	19	19.5	1	VW3A46161	23.6 x 15.7 x 20.1	60 x 40 x 51	66.1	30
15	20	ATV 71HD15N4	24	25	26	1	VW3A46162	23.6 x 15.7 x 20.1	60 x 40 x 51	75	34
18	25	ATV 71HD18N4	32	31	32	1	VW3A46163	31.5 x 23.6 x 24	80 x 60 x 61	114.6	52
22	30	ATV 71HD22N4	35	36	37.5	1	VW3A46164	31.5 x 23.6 x 24	80 x 60 x 61	116.8	53
30	40	ATV 71HD30N4	44	48	50	1	VW3A46165	31.5 x 23.6 x 24	80 x 60 x 61	125.7	57
37	50	ATV 71HD37N4	58.7	60	62.5	1	VW3A46166	31.5 x 23.6 x 24	80 x 60 x 61	165.3	75
45	60	ATV 71HD45N4	68	73	76	1	VW3A46167	31.5 x 23.6 x 24	80 x 60 x 61	213.8	97
55	75	ATV 71HD55N4	82.6	95	99	1	VW3A46168	31.5 x 23.6 x 24	80 x 60 x 61	229.3	104
75	100	ATV 71HD75N4	108	118	122.5	1	VW3A46169	31.5 x 23.6 x 24	80 x 60 x 61	233.7	106
THDI 10%											
90	125	ATV 71HD90N4	134	154	160	1	VW3A46151	31.5 x 23.6 x 24	80x60x61	187.4	85
110	150	ATV 71HC11N4	163	183	190	1	VW3A46152	31.5 x 23.6 x 24	80x60x61	224.9	102
132	200	ATV 71HC13N4	192	231	240	1	VW3A46153	47.2 x 31.5 x 28.3	120x80x72	257.9	117
160	250	ATV 71HC16N4	235	231	240	1	VW3A46153	47.2 x 31.5 x 28.3	120x80x72	257.9	117
200	300	ATV 71HC20N4	300	355	369	1	VW3A46155	47.2 x 31.5 x 28.3	120x80x72	357.1	162
220	350	ATV 71HC25N4	330	355	369	1	VW3A46155	47.2 x 31.5 x 28.3	120x80x72	357.1	162
250	400	ATV 71HC25N4	400	436	450	1	VW3A46157	47.2 x 31.5 x 28.3	120x80x72	451.9	205
280	450	ATV 71HC28N4	440	436	450	1	VW3A46157	47.2 x 31.5 x 28.3	120x80x72	451.9	205
315	500	ATV 71HC31N4	470	231	240	2	VW3A46153	47.2 x 31.5 x 28.3	120x80x72	257.9	117
355	-	ATV 71HC40N4	530	291	316	2	VW3A46154	47.2 x 31.5 x 28.3	120x80x72	313.1	142
400	600	ATV 71HC40N4	590	291	316	2	VW3A46154	47.2 x 31.5 x 28.3	120x80x72	313.1	142
500	700	ATV 71HC50N4	730	380	395	2	VW3A46156	47.2 x 31.5 x 28.3	120x80x72	379.2	172
THDI 5%											
90	125	ATV 71HD90N4	134	154	160	1	VW3A46170	31.5 x 23.6 x 24	80x60x61	277.8	126
110	150	ATV 71HC11N4	163	183	190	1	VW3A46171	31.5 x 23.6 x 24	80x60x61	297.6	135
132	200	ATV 71HC13N4	192	231	240	1	VW3A46172	47.2 x 31.5 x 28.3	120x80x72	374.8	170
160	250	ATV 71HC16N4	235	231	240	1	VW3A46172	47.2 x 31.5 x 28.3	120x80x72	374.8	170
200	300	ATV 71HC20N4	300	355	369	1	VW3A46174	47.2 x 31.5 x 28.3	120x80x72	504.9	229
220	350	ATV 71HC25N4	330	355	369	1	VW3A46174	47.2 x 31.5 x 28.3	120x80x72	504.9	229
250	400	ATV 71HC25N4	400	436	450	1	VW3A46176	47.2 x 31.5 x 28.3	120x80x72	595.2	270
280	450	ATV 71HC28N4	440	436	450	1	VW3A46176	47.2 x 31.5 x 28.3	120x80x72	595.2	270
315	500	ATV 71HC31N4	470	231	240	2	VW3A46172	47.2 x 31.5 x 28.3	120x80x72	374.8	170
355	-	ATV 71HC40N4	530	291	316	2	VW3A46173	47.2 x 31.5 x 28.3	120x80x72	454.2	206
400	600	ATV 71HC40N4	590	291	316	2	VW3A46173	47.2 x 31.5 x 28.3	120x80x72	504.9	229
500	700	ATV 71HC50N4	730	380	395	2	VW3A46175	47.2 x 31.5 x 28.3	120x80x72	584.2	265

(1) Filters are rated for 460V 60Hz three phase power supply.

Integrated EMC filters

Altivar 71 drives (excluding the ATV71H●●●M3X) have built-in radio interference filters to comply with the EMC standard for adjustable speed electrical power drive systems IEC/EN 61800-3, edition 2, category C2 or C3 in environment 1 or 2 and the European Electromagnetic Compatibility Directive.

Drives	Maximum length of shielded cable ⁽¹⁾ according to							
	EN 55011 class A Gr1				EN 55011 class A Gr2			
	IEC/EN 61800-3 category C2				IEC/EN 61800-3 category C3			
	LF		HF		LF		HF	
	ft	m	ft	m	ft	m	ft	m
ATV71H037M3...HU22M3	32.8	10	16.4	5	-	-	-	-
ATV71HU30M3...HU75M3					32.8	10	16.4	5
ATV71H075N4...HU40N4	32.8	10	16.4	5	-	-	-	-
ATV71HU55N4...HD15N4	-	-	-	-	32.8	10	16.4	5
ATV71HD18N4...HC50N4	-	-	-	-	164	50	82	25
ATV71HU22Y...HD90Y	-	-	-	-	82	25	82	25
ATV71HC11Y...HC63Y	-	-	-	-	164	50	82	25

Switching frequency

Drives	Switching frequency	
	LF (low frequency)	HF (high frequency)
	kHz	kHz
ATV71H●●●M3	4	4.1...16
ATV71H075N4...HD30N4		
ATV71HD37N4...HD75N4	2...2.5	2.6...12
ATV71HD90N4...HC50N4	2...4	4.1...8
ATV71HU22Y...HD30Y	2.5...4	4.1...6
ATV71HD37Y...HC63Y	2.5	2.6...4.9

Additional EMC input filters

Applications

When used with ATV71H●●●M3, ATV71H●●●M3X, and ATV71●●●●N4, additional EMC input filters can be used to meet more stringent requirements and are designed to reduce conducted emissions on the line supply below the limits of standards EN 55011 group 1, class A or B and IEC/EN 61800/3 category C2 or C3.

For ATV71H●●●M3, ATV71HD11M3X...HD45M3X, and ATV71H075N4...HD75N4, additional EMC filters can be mounted beside or under the drive. They act as a support for the drives and are attached to them via tapped holes.

For ATV71HD55M3X, HD75M3X, and ATV71HD90N4...HC50N4, additional EMC filters can only be mounted beside the drive.

Use according to the line supply type

Use of these additional filters is only possible on TN (connected to neutral) and TT (neutral to ground) type networks. Standard IEC/EN 61800-3, appendix D2.1, states that on IT networks (isolated or impedance grounded neutral), filters can cause permanent insulation monitors to operate in a random manner.

In addition, the effectiveness of additional filters on this type of network 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.

(1) If motors are connected in parallel, it is the sum of all cable lengths that should be taken into account.

Additional EMC input filters (for ATV71H●●●M3, H●●●M3 and ATV71●●●N4 drives)

Drives	Maximum length of shielded cable ⁽¹⁾								In ⁽²⁾	If ⁽³⁾	Loss ⁽⁴⁾	Part number	Weight	
	EN 55011 class A Gr1				EN 55011 class B Gr1									
	IEC/EN 61800-3 category C2				IEC/EN 61800-3 category C1									
	LF		HF		LF		HF							
	ft	m	ft	m	ft	m	ft	m	A	mA	W		lbs	kg
Three-phase supply voltage: 200...240 V 50/60 Hz														
ATV71H037M3...HU15M3	328.1	100	164	50	164	50	65.6	20	12	4	10	VW3A4401	4.9	2.2
ATV71HU22M3...HU40M3	328.1	100	164	50	164	50	65.6	20	26	4.4	18	VW3A4402	8.8	4
ATV71HU55M3	328.1	100	164	50	164	50	65.6	20	35	3	24	VW3A4403	12.7	5.8
ATV71HU75M3	328.1	100	164	50	164	50	65.6	20	46	10	19	VW3A4404	15.4	7
ATV71HD11M3X, HD15M3X	328.1	100	164	50	164	50	82	25	72	33	34	VW3A4405	26.5	12
ATV71HD18M3X, HD22M3X	328.1	100	164	50	164	50	82	25	90	33	34	VW3A4406	33.1	15
ATV71HD30M3X... HD45M3X	328.1	100	164	50	164	50	82	25	180	80	58	VW3A4408	88.2	40
ATV71HD55M3X, HD75M3X	328.1	100	164	50	164	50	82	25	273	285	60	VW3A4410	55.1	25
Three-phase supply voltage: 380...480 V 50/60 Hz														
ATV71H075N4...HU22N4	328.1	100	164	50	164	50	65.6	20	12	7	5	VW3A4401	4.9	2.2
ATV71HU30N4, HU40N4	328.1	100	164	50	164	50	65.6	20	26	8	6	VW3A4402	8.8	4
ATV71HU55N4, HU75N4	328.1	100	164	50	164	50	65.6	20	35	7	14	VW3A4403	12.7	5.8
ATV71HD11N4	328.1	100	164	50	164	50	65.6	20	46	14	13	VW3A4404	15.4	7
ATV71HD15N4 (5), HD18N4	984.3	300	656.2	200	328.1	100	328.1	100	72	60	14	VW3A4405	26.5	12
ATV71HD22N4	984.3	300	656.2	200	328.1	100	328.1	100	90	60	11	VW3A4406	33.1	15
ATV71HD30N4, HD37N4	984.3	300	656.2	200	328.1	100	328.1	100	92	60	30	VW3A4407	37.5	17
ATV71HD45N4...HD75N4	984.3	300	656.2	200	328.1	100	328.1	100	180	140	58	VW3A4408	88.2	40
ATV71HD90N4...HC13N4	984.3	300	492.1	150	164	50	82	25	273	500	60	VW3A4410	48.5	22
ATV71HC16N4...HC28N4	984.3	300	492.1	150	164	50	82	25	546	500	125	VW3A4411	55.1	25
ATV71HC31...HC40N4	984.3	300	492.1	150	164	50	82	25	728	500	210	VW3A4412	55.1	25
ATV71HC50N4	984.3	300	492.1	150	164	50	82	25	1456	200	380	VW3A4413	75	34
For drives	Switching frequency													
	LF (low frequency)							HF (high frequency)						
	kHz							kHz						
ATV71H●●●M3	4							4.1...16						
ATV71H075N4...HD11N4														
ATV71HD11M3X, HD15M3X	3.5...4							4.1...12						
ATV71HD15N4...HD30N4														
ATV71HD18M3X...HD45M3X	2...2.5							2.6...12						
ATV71HD37N4...HD75N4														
ATV71HD55M3X, HD75M3X	2...4							4.1...8						
ATV71HD90N4...HC50N4	2...4							4.1...8						

(1) These limits 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 all cable lengths that should be taken into account.

(2) Nominal filter current.

(3) Maximum ground leakage current at 230 V and at 400 V 50 Hz on a TT system.

(4) Via heat dissipation.

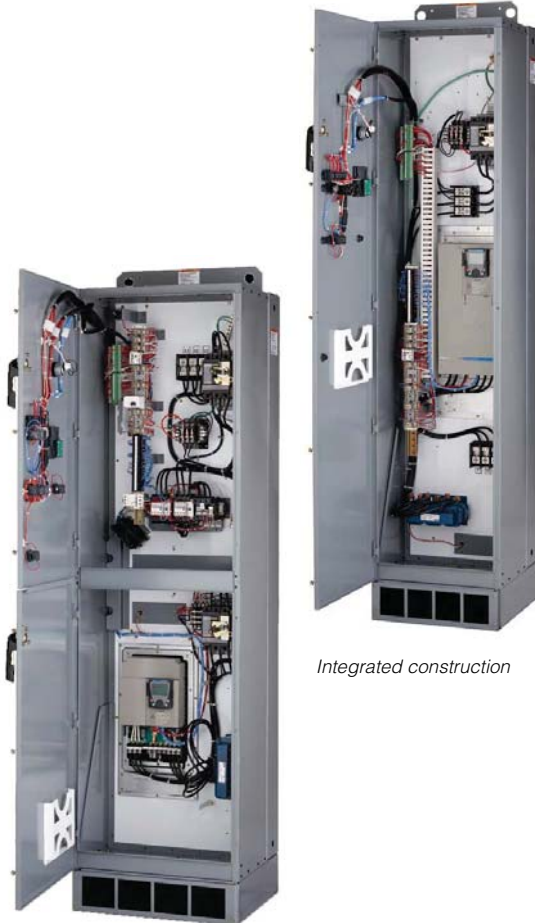
(5) It is possible to use a special filter VW3A4409 with a leakage current If (3) of 14 mA which enables a maximum motor cable length of 100 m.

dV/dt output filters

In applications where the impedance on either end of the motor cable run does not match, voltage pulses may be reflected back. As these reflected waves encounter other waves, their values add, causing high peak voltages. Voltage wave reflection and peak voltages increase with longer cable lengths, increased drive switching frequency, and faster voltage rise times, (dV/dt).

When installed, dV/dt filters increase the time it takes the voltage to rise, slowing the pulse transitions, reducing dV/dt, reducing voltage peaks, and protecting motor and cable insulation.

For drives	Nominal current	UL Recog- nized Part Number	Weight	
	A		lbs	kg
Three-phase supply voltage: 380...480 V 50/60 Hz				
ATV71H075N4	3	V1K3A00	8	4
ATV71HU15N4	4	V1K4A00	8	4
ATV71HU22N4	6	V1K6A00	8	4
ATV71HU30N4	8	V1K8A00	8	4
ATV71HU40N4	12	V1K12A00	8	4
ATV71HU55N4	16	V1K16A00	12	5
ATV71HU75N4	18	V1K18A00	12	5
ATV71HD11N4	27	V1K27A00	12	5
ATV71HD15N4	35	V1K35A00	12	5
ATV71HD18N4	45	V1K45A00	17	8
ATV71HD22N4	55	V1K55A00	16	7
ATV71HD30N4	80	V1K80A00	23	10
ATV71HD37N4	80	V1K80A00	23	10
ATV71HD45N4	110	V1K110A00	40	18
ATV71HD55N4	130	V1K130A00	55	25
ATV71HD75N4	160	V1K160A00	60	27
ATV71HD90N4	200	V1K200A00	60	27
ATV71HC11N4	250	V1K250A00	65	29
ATV71HC13N4	305	V1K305A00	80	36
ATV71HC16N4	362	V1K362A00	80	36
ATV71HC20N4	420	V1K420A00	95	43
ATV71HC25N4	480	V1K480A00	100	45
ATV71HC28N4	600	V1K600A00	130	59
ATV71HC31N4	750	V1K750A00	135	61



Barriered construction

Integrated construction

Introduction

Schneider Electric has offered packaged drive solutions for industry for over 30 years. The M-Flex™ enclosed drive features the Altivar 71 adjustable frequency power converters to provide a robust, packaged adjustable-speed solution for industrial and municipal process applications where high functionality of features are required. M-Flex enclosed drive controllers offer a platform of standard, engineered and special features to meet the most demanding application and specification requirements. M-Flex enclosed drive controllers are low-voltage products available in the following ratings:

Constant torque (Heavy-duty ratings - 150% current limit):

- Altivar 71 power converter
- 1 hp to 450 hp, 460 V
- 1 hp to 40 hp, 208 V/230 V

M-Flex enclosed drive controllers are available in Type 1 general purpose or Type 12/12K drip-/dust-proof enclosures in integrated or barriered designs. Integrated enclosures can be wall or floor mounted, depending on size. They provide a circuit breaker disconnect and enough room for power peripherals, including isolation and bypass contactors, all within the same enclosure. Barriered enclosures separate power and control circuits, such as bypass, from drive control. The separate compartments allow for maximum flexibility if servicing a drive in bypass operation.

Applications

The M-Flex enclosed offer is well suited to applications requiring a heavy duty enclosed drive in the following market segments:

MMM

- Belt conveyors
- Slurry pumps
- Tension equipment
- Puller car
- Positive displacement pumps
- Winches

Oil and Gas

- Pumping
- Compressors
- Booster stations

WWW

- Agitators
- Blowers
- Centrifuges
- Positive displacement pumps

OTHER INDUSTRIAL

- Chippers
- Mills
- Mixers
- Presses
- Winders

The Altivar 71 drive's advanced functions boost performance levels and make machines more versatile so they can be used for a large number of applications.



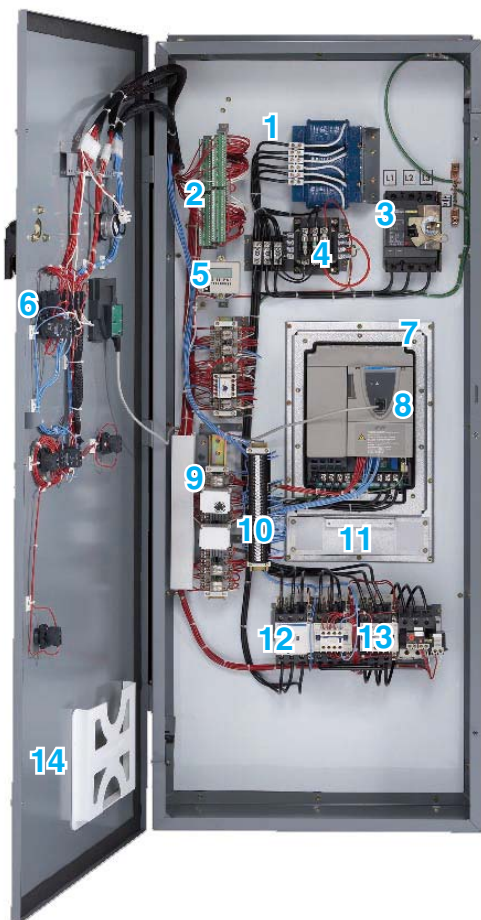
MMM



WWW



Oil and Gas



- 1** 3% AC line reactor
- 2** Customer interface terminal blocks (TB1)
- 3** Circuit breaker disconnect
- 4** 120 VAC control transformer
- 5** 3-15 PSI input (if used)
- 6** 22 mm dedicated door mounted operators
- 7** Heatsink/flange assembly
- 8** Altivar 61 or 71 power converter
- 9** Control relay/logic rail
- 10** Customer interface terminal blocks (TB2)
- 11** Fan assembly with front access (for maintenance and replacement)
- 12** Line contactor (if used)
- 13** Isolation and bypass contactors (if used)
- 14** Document pocket

Product

Key benefits

- Custom performance – customized to provide optimal performance to meet specific industrial, municipal and high-end commercial application requirements.
- Ease of use – features easy-to-use graphic terminal display and operators mounted on enclosure doors, which are pre-programmed by the factory to save set-up time and money when commissioning.
- Simple installation – available with either pre-punched conduit knockouts or top and bottom removable conduit plates to save time and prevent metal filings inside enclosure during installation.
- Structural integrity – UL 508C listed to exceed minimum UL short circuit requirements and enhance personnel safety under short circuit conditions for both drive and bypass mode.
- Increased functionality – offered with both integral and barriered enclosures for flexibility in meeting specific application needs. A circuit breaker disconnect provides coordinated short circuit rating at 100,000 A.
- Reliable operation – fully-rated (AC3 duty) motor isolation and bypass contactors with electrical and mechanical and electrical interlocks prevent accidental voltage feedback. An integrated AC line reactor provides transient protection from surge and over voltage conditions while minimizing line harmonics.

Seismic qualification for new generation of building codes

All M-Flex enclosed drive controllers meet IBC and ASCE 7 seismic qualification requirements in accordance with the ICC ES AC156 shaker table testing protocol. Many states and jurisdictions are beginning enforcement of the seismic guidelines for installed equipment contained in the IBC. The M-Flex enclosed drive controllers were subjected to actual shaker table tests, not just theoretical calculations for seismic ratings or obsolete requirements of the UBC. The M-Flex enclosed drive controller meets the structural integrity when installed to our published guidelines, and can be specified for use in applications that require an $I_p = 1.5$, which means operational status can be restored subsequent to a seismic event.

Construction methodology

- Assembled in the U.S.
- 100,000 A symmetrical SCCR
- ANSI #49 powder-coat steel enclosures
- Dedicated plenum for air flow
- White back panels for improved visibility
- Seismic qualification

Components used

- Altivar 61 and 71 drives
- Powerpact™ H and J-Frame circuit breakers
- AC line reactor – 3% standard (5% optional)
- XB5 22 mm push buttons and operators
- TeSys™ D-Line contactors
- Type R industrial control relays
- PowerLogic™ power circuit monitors

Altivar 71

variable speed drives

M-Flex

Specifications

Input voltage	460 V \pm 10%, 230 V \pm 10%, 208 V \pm 10%
Displacement power factor	98% through speed range
Input frequency	60 Hz \pm 5%
Output voltage	Three-phase output Maximum voltage equal to input voltage
Galvanic isolation	Galvanic isolation between power and control (input, output, and power supplies)
Frequency range of power converter	0.1 Hz to 500 Hz (factory setting of 60 Hz)
Torque/overtorque	VT: 110% of nominal motor torque for 60 s CT: 150% of nominal motor torque for 60 s
Current (transient)	VT: 110% of controller rated current for 60 s CT: 150% of controller rated current for 60 s
Switching frequency	Selectable from 0.5 kHz to 16 kHz ⁽¹⁾ Factory setting: VT: 8 kHz for 208 V, 203 V, and 1 hp to 100 hp @ 460 V 2 kHz for 125 hp to 500 hp @ 460 V CT: 4 kHz (2 kHz for 100 hp to 450 hp @ 460 V) The drive reduces the switching frequency automatically in the event of excessive heatsink temperature
Speed reference	AI1: 0 V to +10 V, Impedance = 30 k Ω . Can be used for speed potentiometer, 1k Ω to 10 k Ω AI2: Factory setting: 4 mA to 20 mA, Impedance = 242 Ω (reassignable, x-y range with graphic display keypad). Factory modification J10 allows 0 Vdc to 10 Vdc reference signal to AI2, Z = 30 k Ω
Frequency resolution in analog reference	0.1 for 100 Hz (11 bits)
Speed regulation	V/f control: equal to the motor's rated slip SFVC: 10% of the motor's rate slip from 20% to 100% of nominal motor torque
Efficiency	97% at full load typical
Reference sample time	2 ms \pm 0.5 ms
Acceleration and deceleration ramps	0.1 s to 999.9 s (definition in 0.1 s increments)
Drive controller protection	<ul style="list-style-type: none"> Thermal protection of power converter Phase loss of AC mains Circuit breaker rated at 100 kAIC Conforming to ANSI/IEEE C62.41 Category A and B
Motor protection	Class 10 electronic overload protection Class 20 electromechanical overload protection with bypass ⁽²⁾
Graphic display keypad	8 lines, 240 pixels by 160 pixels. Supports display of bar charts. Save and download up to 4 configuration files. Display is rated up to 60° C (140° F) Maximum operating temperature with IP54 protection
Temperature	Storage for all enclosures: -13° F to +149° F (-25° C to +65° C). Operation: +14° F to +104° F (-10° C to 40° C). For 1 hp to 100 hp drives (208 V, 230 V & 460 V) operating between 40° C and 50° C, derate the current 2% per °C above 40° C. For 125 hp to 500 hp (460 V) operating between 40° C and 50° C, derate the current 3.3% per °C above 40° C
Humidity	95% with no condensation or dripping water, conforming to IEC60068-2-78
Altitude	3,300 ft (1000 m) maximum without derating Derating of the current by 1% for each additional 330 ft (100 m)
Enclosure	Type 1: all controllers Type 1G: 125 hp to 500 hp VT or 100 hp to 450 hp CT @ 460 V only Type 12/12K: all except 125 hp to 500 hp VT and 100 hp to 450 hp CT @ 460 V
Pollution degree	Type 1, 1G: Pollution degree 2 per NEMA ICS-1 Annex A and IEC 60664-1 Type 12/12K: Pollution degree 3 per NEMA ICS-1 and IEC 60664-1
Operational test vibration	Conforming to IEC 60721-3-3-3M3 amplitude 1.5 mm peak to peak from 3 Hz to 13 Hz 1 g from 13 Hz to 200 Hz
Transit test to shock	Conforming to National Safe Transit Association and International Safe Transit Association test for packages
Operational shock	15 g, 11 ms
Seismic qualification	IBC, ASCE 7 ICC ES AC 156 shaker table acceptance protocol, ground and roof top applications with an importance factor of 1.5
Codes and standards	UL listed per UL 508C under category NMMS (Power Conversion Equipment) Conforms to applicable NEMA ICS, NFPA, and IEC standards Manufactured under ISO 9001 standards Factory modification G10 provides Canadian cUL certification

(1) On 1 hp to 75 hp CT and 1 hp to 100 hp VT controllers, above 4 kHz CT/8 kHz VT, select the next largest size drive controller. If the duty cycle does not exceed 60% (36 s maximum for a 60 s cycle), this is not necessary.

(2) Class 10 electromechanical for 1 hp @ 460 V.

8839 MFD N G 4 V W A07 A

1 2 3 4 5 6 7 8 9

Class

- 1** Combination device
8839 = Circuit breaker disconnect

Type

- 2** Design
MFD = M-Flex™ controller

3

Horsepower rating
C = 1 L = 25 U = 150
D = 2 M = 30 W = 200
E = 3 N = 40 X = 250
F = 5 P = 50 Y = 300
G = 7.5 Q = 60 Z = 350
H = 10 R = 75 4 = 400
J = 15 S = 100 5 = 450
K = 20 T = 125 6 = 500

4

Enclosure environmental rating
G = Type 1 general purpose
A = Type 12/12K dust/drip proof
B = Type 1 with gasket/fan filter
Replace ● with desired enclosure rating

5

Voltage code
2 = 208 V, 60 Hz
3 = 230 V/240 V, 60 Hz
4 = 460 V/480 V, 60 Hz

6

Application type
C = Constant torque (150% current limit)

Power circuit type

- 7** R = Barriered bypass – RVAT
S = Barriered bypass – soft start
T = Isolation & transfer
W = Combination device (drive only)
Y = Integrated bypass (IEC)
Z = Barriered bypass – full voltage

Mods

- 8** Modifications
(120+ options are available)
A07 = Hand-Off-Auto selector switch with manual speed potentiometer
H10 = Seismic qualified
E301 = ANSI #61 enclosure paint
SPL = Special features (specified)

Series

- 9** Series designation
A = Altivar® 61/71 power converter platform

M-Flex

HP Reference Code	HP Ratings	Controller Output Current	Enclosure Frame Size	Power Circuits					
				Constant Torque - Heavy Duty Rating (150% current Limit)					
				Power Circuit W	Power Circuit Y	Power Circuit S	Power Circuit Z	Power Circuit T	Power Circuit R

208V, 60 Hz

C	1	4.6 A	C	C●2CW	C●2CY	-	C●2CZ	C●2CT	-
D	2	7.5 A		D●2CW	D●2CY	-	D●2CZ	D●2CT	-
E	3	10.6 A		E●2CW	E●2CY	-	E●2CZ	E●2CT	-
F	5	16.7 A		F●2CW	F●2CY	-	F●2CZ	F●2CT	-
G	7.5	24.2 A	D	G●2CW	G●2CY	-	G●2CZ	G●2CT	-
H	10	30.8 A		H●2CW	H●2CY	-	H●2CZ	H●2CT	-
J	15	46.2 A	E	J●2CW	J●2CY	-	J●2CZ	J●2CT	-
K	20	59.4 A		K●2CW	K●2CY	-	K●2CZ	K●2CT	-
L	25	74.8 A		L●2CW	L●2CY	-	L●2CZ	L●2CT	-
M	30	88 A	F	M●2CW	M●2CY	-	M●2CZ	M●2CT	-
N	40	114 A		N●2CW	N●2CY	-	N●2CZ	N●2CT	-

230 V, 60 Hz

C	1	4.6 A	C	C●3CW	C●3CY	-	C●3CZ	C●3CT	-
D	2	7.5 A		D●3CW	D●3CY	-	D●3CZ	D●3CT	-
E	3	10.6 A		E●3CW	E●3CY	-	E●3CZ	E●3CT	-
F	5	16.7 A		F●3CW	F●3CY	-	F●3CZ	F●3CT	-
G	7.5	24.2 A	D	G●3CW	G●3CY	-	G●3CZ	G●3CT	-
H	10	30.8 A		H●3CW	H●3CY	-	H●3CZ	H●3CT	-
J	15	46.2 A	E	J●3CW	J●3CY	-	J●3CZ	J●3CT	-
K	20	59.4 A		K●3CW	K●3CY	-	K●3CZ	K●3CT	-
L	25	74.8 A		L●3CW	L●3CY	-	L●3CZ	L●3CT	-
M	30	88 A	F	M●3CW	M●3CY	-	M●3CZ	M●3CT	-
N	40	114 A		N●3CW	N●3CY	-	N●3CZ	N●3CT	-

460 V, 60 Hz

C	1	2.1 A	C	C●4CW	C●4CY	-	C●4CZ	C●4CT	-
D	2	3.4 A		D●4CW	D●4CY	-	D●4CZ	D●4CT	-
E	3	4.8 A		E●4CW	E●4CY	-	E●4CZ	E●4CT	-
F	5	7.6 A		F●4CW	F●4CY	-	F●4CZ	F●4CT	-
G	7.5	11 A		G●4CW	G●4CY	-	G●4CZ	G●4CT	-
H	10	14 A		H●4CW	H●4CY	-	H●4CZ	H●4CT	-
J	15	21 A		J●4CW	J●4CY	-	J●4CZ	J●4CT	-
K	20	27 A		K●4CW	K●4CY	-	K●4CZ	K●4CT	-
L	25	34 A		L●4CW	L●4CY	-	L●4CZ	L●4CT	-
M	30	40 A	E	M●4CW	M●4CY	-	M●4CZ	M●4CT	-
N	40	52 A		N●4CW	N●4CY	N●4CS	N●4CZ	N●4CT	N●4CR
P	50	65 A		P●4CW	P●4CY	P●4CS	P●4CZ	P●4CT	P●4CR
Q	60	77 A	F	Q●4CW	Q●4CY	Q●4CS	Q●4CZ	Q●4CT	Q●4CR
R	75	96 A		R●4CW	R●4CY	R●4CS	R●4CZ	R●4CT	R●4CR
S	100	124 A		S●4CW	S●4CY	S●4CS	S●4CZ	S●4CT	S●4CR
T	125	156 A	H	T●4CW	T●4CY	T●4CS	T●4CZ	T●4CT	T●4CR
U	150	180 A	I	U●4CW	U●4CY	U●4CS	U●4CZ	U●4CT	U●4CR
W	200	240 A		W●4CW	W●4CY	W●4CS	W●4CZ	W●4CT	W●4CR
X	250	302 A		X●4CW	-	X●4CS	X●4CZ	X●4CT	X●4CR
Y	300	361 A	J	Y●4CW	-	Y●4CS	Y●4CZ	Y●4CT	Y●4CR
Z	350	414 A		Z●4CW	-	Z●4CS	Z●4CZ	Z●4CT	Z●4CR
4	400	477 A		4●4CW	-	4●4CS	4●4CZ	4●4CT	4●4CR
5	450	515 A		5●4CW	-	5●4CS	5●4CZ	5●4CT	5●4CR

Modifications

The M-Flex enclosed drive can be customized to meet your exact requirements. The options below are a portion of over 120 options available to integrate into your M-Flex. For a more detailed description of the options below and information on additional options, follow the link on the button to the M-Flex Instruction Bulletin.

Selecting some options excludes other options. For assistance in selecting and configuring your device, please contact your nearest Schneider Electric representative.

A07	Hand-Off-Auto selector switch with manual speed potentiometer	D10	Omit door mounted graphic display keypad
B07	Hand-Off-Auto selector switch, Start/Stop push-buttons with manual speed potentiometer	E10	Smoke purge relay
C07	Start/Stop push-buttons with manual speed potentiometer	F10	Additional control power VA
D07	Start/Stop push-buttons, Forward-Reverse selector switch with manual speed potentiometer	G10	CSA / cUL certification
E07	Hand-Off-Auto selector, Local-Remote selector switch with manual speed potentiometer	H10	Seismic qualified
F07	Communication-Hand-Off-Auto selector switch with manual speed potentiometer	I10	Permanent wire markers (sleeve type)
N07	No Door Mounted Operators (wired for remote operation)	J10	0–10 Vdc Auto speed reference (programming)
A08	Power On, Fault, AFC Run, Auto pilot lights	K10	1 Additional N.O. auxiliary drive run contact
B08	Power On, Fault, AFC Run, Bypass pilot lights	L10	1 Additional N.C. auxiliary drive fault contact
C08	Power On, Fault, AFC Run pilot lights	M10	1 N.O. Auxiliary bypass run contact
D08	Power On, Fault, AFC Forward, AFC Reverse pilot lights	N10	
E08	Power On, Fault, AFC Run, Hand, Auto pilot lights	O10	1 N.O. Auxiliary auto mode contact
F08	Power On, Fault, AFC Run, Communication pilot lights	P10	AFC Fault reset push-button
B09	Modbus/Uni-Telway™ communication card	Q10	Push-to-Test pilot lights
D09	Ethernet TCP/IP communication card	R10	Auto transfer to bypass
F09	DeviceNet™ communication card	S10	Motor elapsed time meter
G09	Profibus DP communication card	T10	Emergency stop mushroom head push-button
H09	I/O Extension card	U10	Motor space heater sequencing circuit (light duty)
A10	5% AC line reactor	V10	Seal water solenoid
B10	Line contactor	W10	Check valve sequencing circuit (gravity type)
C10	3–15 PSI transducer	X10	ID engraved nameplates
		Y10	Harmonic filter provisions
		Z10	24 Vdc power supply

M-Flex™ Enclosed AC Drives Class 8839 Type MFD with or without options			Dimensions			Weights	Construction Data		
HP/Voltage (CT)	Power Circuit Configuration	Enclosure Size	Height (in)	Width (in)	Depth (in)	lbs.	Wall or Floor Mount	Environment	Operating Handle
1 hp to 20 hp @ 460 V 1 hp to 5 hp @ 208 V/230 V	Power circuit W combination device or power circuit Y integrated bypass	C	49	20	14.81	175	Wall	Type 1 or Type 12/12K	3" metal rotary
7.5 hp to 10 hp @ 208 V/230 V		D	63	25	14.81	243	Wall		
25 hp to 40 hp @ 460 V 15 hp to 20 hp @ 208 V/230 V		E	93.87	20	20.38	170.5	Floor		6" metal rotary
50 hp to 75 hp @ 460 V 25 hp to 40 hp @ 208 V/230 V		F	93.87	25	20.38	249.1	Floor		
1 hp to 20 hp @ 460 V 1 hp to 10 hp @ 208 V/230 V	Power circuits Z, S, T or R barriered designs with 2 disconnects	Barriered C/D	93.87	20	20.38	379	Floor		3" metal rotary
25 hp to 40 hp @ 460 V 15 hp to 20 hp @ 208 V/230 V		Barriered E	93.87	25	20.38	512	Floor		6" metal rotary
50 hp to 75 hp @ 460 V 25 hp to 40 hp @ 208 V/230 V		Barriered F	93.87	30	20.38	684	Floor		
100 hp @ 460 V	Power circuit W ⁽¹⁾	H	94.58	25	20	489	Floor	Type 1 or Type 1A filtered	Flange
125 hp to 200 hp @ 460 V	Power circuit W ^(2,3)	I	94.58	30	20	657	Floor		
250 hp to 450 hp @ 460 V	Power circuit W ^(4,5)	J	94.58	35	20	969	Floor		

(1) Integrated bypass for 125 hp offered in 20 in. wide section adder (45 in. total width). Barriered bypass offered in 25 in. wide section adder (50 in. total width) – standard product configuration

(2) Integrated bypass for 150 hp to 200 hp offered in 20 in. wide section adder (50 in. total width). Barriered bypass offered in 25 in. wide section adder (55 in. total width) – standard configuration

(3) Integrated bypass for 250 hp offered in 20 in. wide section adder (50 in. total width). Barriered bypass offered in 30 in. wide section adder (60 in. total width) – factory engineered configuration

(4) Integrated bypass for 300 hp to 400 hp not available. Barriered bypass offered in 30 in. wide section adder (65 in. total width) – factory engineered configuration

(5) Integrated bypass for 450 hp to 500 hp not available. Barriered bypass offered in 35 in. wide section adder (70 in. total width) – factory engineered configuration

Power Circuit – Description

R – Barriered bypass with autotransformer reduced voltage starter

S – Barriered bypass with soft start

T – Isolation and transfer (separate starter)

W – Combination drive with disconnect means only

Y – Integrated-bypass drive with full-voltage starter in same enclosure compartment

Z – Barriered-bypass drive with full-voltage starter in separate enclosure compartment



Introduction

Schneider Electric Altivar™ Plus enclosed drives feature the Altivar 71 adjustable frequency drives providing a robust, packaged, adjustable speed solution for commercial, industrial, and municipal applications. These drives combine the reliability and ease of use of the Altivar drives family with proven, validated, and tested drive system designs.

Constant torque

- 125-700 hp, 460 Vac
- 125-700 hp, 600 Vac

Altivar Plus enclosed drives are:

- Pre-engineered, ready-to-use solutions in highly efficient designs
- Tested and validated before shipment to ensure smooth installation
- Modular and compact to maximize space utilization
- Easy to set up and commission with intuitive operator interface
- UL Type 12 enclosures
- Reliable: proven Altivar drives technology maximized productivity and quality
- Flexible for programming and communication requirements: graphic display keypad with customizable display and many field-bus option for easy integration into existing automation systems
- Flexible for control systems: large swiveling control panel for customization of drive controls
- Easy to maintain: inverter mounted on rails
- Flexible for application requirements: incoming/outgoing section configurable to your needs
- Equipped with technical support: global expertise combined with a responsive local support and service for unsurpassed reliability

Applications

Altivar Plus enclosed drives are designed for a variety of applications including:

Mining, Minerals, & Metals

- Feeders/conveyors
- Hoisting applications
- Crushers, slurry pumps
- Tunnel boring machines

Oil & Gas

- Drilling rigs
- Jack and slurry pumps
- Oil-line and submersible pumps

Water/Wastewater

- Mixers
- Distribution and chemical pumps
- Centrifuges
- Compressors

Other

- Marine
- Energy



- [1](#) Schneider Electric enclosure
- [2](#) Swiveling control panel
- [3](#) Fused disconnect
- [4](#) Line contactor (optional)
- [5](#) Top mount ventilation
- [6](#) Control transformer
- [7](#) Altivar power converter
- [8](#) Power converter mounted on rail system
- [9](#) Motor connection
- [10](#) dV/dt motor filter (optional)
- [11](#) Bottom entry

Product

Standard features

Altivar Plus enclosed drives include:

- Pre-engineered, ready-to-use solutions in highly efficient designs
- UL Type 12 enclosures
- Large swiveling control panel for customization of drive controls
- Rail-mounted inverter for easy maintenance
- Altivar Plus enclosed drive with ATV71
 - 125–700 hp, 460 Vac
 - 125–700 hp, 575 Vac
- Fused disconnect with current limiting fuses
- Slide out inverters
- Bottom wire entry

List of standard features:

- UL/cUL Listed per UL508A
- 100 kA short circuit rating (460 V)
- Disconnect handle with lock/out tag-out provisions
- Non bypass
- 3% line reactor
- Hand-Off-Auto selector switch and manual speed potentiometer
- 0–10 Vdc or 4–20 mA speed reference input
- 0–10 Vdc or 4–20 mA programmable output
- Door mounted graphic display keypad
- Auto-Start relay (120 Vac control)
- One form “C” AFC RUN mode contact
- One form “C” AFC TRIP mode contact
- Permanent wire markers
- 4 in. Plinth

Additional options

- 5% Line Reactor
- Surge Suppressor
- dV/dt Filter
- Harmonic Filter
- Softstart Bypass
- Full Voltage Bypass
- Line Contactor
- Top Entry Cubicle
- 8 in. plinth

Altivar 71

variable speed drives

Altivar Plus

125-700 hp Specifications

Electrical Specifications

Input mains voltage	480 Vac $\pm 10\%$, 600 Vac $\pm 10\%$ (other voltages on request)
Short circuit current rating (AC symmetrical)	100 kA (some selected power options may reduce the short circuit rating, consult Schneider Electric for details)
Control voltage	24 Vdc (regulated, supplied by drive); 115 Vac $+10\%/-15\%$ (control power transformer included)
Displacement power factor	98% through speed range (in AFC operation mode)
Input frequency	50/60 Hz $\pm 5\%$
Output voltage	Three-phase output; maximum voltage equal to input voltage
Galvanic isolation	Galvanic isolation between power and control (inputs, outputs, and power supplies)
Output frequency range of drive	0.1 to 500 Hz (factory setting of 60 Hz)
Torque/over-torque	VT: 110% of nominal motor torque for 60 s; CT: 150% of nominal motor torque for 60 s
Current (transient)	VT: 110% of drive rated current for 60 s; CT: 150% of drive rated current for 60 s
Switching frequency	Selectable from 0.5 to 8 kHz. Factory setting: 2.5 kHz The drive reduces the switching frequency automatically in the event of excessive heat sink temperature.

Environmental Specifications

Storage temperature	-13 to +149 °F (-25 to +70 °C).
Operating temperature	+14 to +104 °F (-10 to 40 °C). For 125 hp and higher (460 V) operating between 40 and 50 °C, derate the current 3.3% per °C above 40 °C.
Humidity	95% with no condensation or dripping water, conforming to IEC 60068-2-78.
Altitude	Class 10 electronic overload protection Class 20 electromechanical overload protection with bypass ⁽²⁾
Graphic display keypad	8 lines, 240 pixels by 160 pixels. Supports display of bar charts. Save and download up to 4 configuration files. Display is rated up to 60° C (140° F) Maximum operating temperature with IP54 protection
Temperature	Storage for all enclosures: -13° F to +149° F (-25° C to +65° C). Operation: +14° F to +104° F (-10° C to 40° C). For 1 hp to 100 hp drives (208 V, 230 V & 460 V) operating between 40° C and 50° C, derate the current 2% per °C above 40° C. For 125 hp to 500 hp (460 V) operating between 40° C and 50° C, derate the current 3.3% per °C above 40° C
Humidity	95% with no condensation or dripping water, conforming to IEC60068-2-78
Altitude	3,300 ft (1000 m), without derating and: <ul style="list-style-type: none"> ■ All 460 V equipment, derate the current by 1% for each additional 330 ft (100 m) up to 9,842 ft. (3000 m) maximum ■ All 575 V equipment, derate the current by 1% for each additional 330 ft (100 m) up to 6,560 ft. (2000 m) maximum ■ When an integral softstart bypass (D08) is selected, derate the current by 2.2% for each additional 330 ft (100 m) up to 6,560 ft. (2000 m) maximum
Enclosure	UL Type 12: Dust-tight (ventilated)
Pollution degree	Pollution degree 2 or 3 per NEMA ICS-1 Annex A and IEC 60664-1
Operational test vibration	Conforming to IEC 60721-3-3-3M3 amplitude; 1.5 mm peak to peak from 3 to 13 Hz; 1 g from 13 to 200 Hz
Transit test to shock	Conforming to National Safe Transit Association and International Safe Transit Association test for packages.
Operational shock	15 g, 11 ms
Codes and standards	UL/cUL Listed per UL 508A; IEEE519 Compliant (harmonic input filter required); Conforms to applicable NEMA ICS, NFPA, and IEC standards; Manufactured under ISO 9001 standards.

Operation and Control

Speed reference	AI1: 0 to +10 V, Impedance = 30 k Ω . Can be used for speed potentiometer, 1–10 k Ω . AI2: Factory setting: 4 to 20 mA. Impedance = 242 Ω (reassignable, X–Y range with graphic display keypad).
Frequency resolution in analog reference	0.1 for 100 Hz (11 bits)
Speed regulation	V/f control: equal to the motor's rated slip. SFVC: 10% of the motor's rate slip from 20% to 100% of nominal motor torque.
Efficiency	95% (or greater) at full load typical
Reference sample time	2 ms ± 0.5 ms
Acceleration and deceleration ramps	Drive: 0.1 to 999.9 s (definition in 0.1 s increments); Softstarter: 1 to 60 s (definition in 1 s increments)
Graphic display keypad	Self diagnostics with trip indication messages in three languages; also refer to the Programming Manual(s) available online at www.schneider-electric.com .

Protection

System protection	<ul style="list-style-type: none"> ■ Thermal protection of drive, input passive filter, and starter ■ Phase loss of AC mains ■ Fuse protected
Motor protection	Class 10 electronic overload protection (drive) Class 20 bypass overload protection (with bypass)

ATV 71 EXC5 C16 N4 E7 U W A09 A10 B11

1 2 3 4 5 6 7 8 9 10 11

1 Drive Style
ATV = Altivar Plus

2 Product Line
71 = Altivar 71

3 Drive System
EXC5 = Compact drive system

4 Power Rating

Code	kW	HP at 460 V	HP at 575 V
D90	90	125	-
C11	110	150	125
C13	130	200	150
C16	160	250	175
C20	200	300	200
C22	220	350	-
C25	250	400	250
C28	280	450	-
C31	315	500	350
C40	400	600	450
C50	500	700	550
C63	630	900	700
C80	800	-	800

5 Voltage
N4 = 380-460
Y6 = 575-600

6 Cubicle
E7 = Type 12

7 Design
U = Design for UL/cUL

8 Power Circuit⁽¹⁾
W = Without bypass
Y = Integrated bypass
(1) Up to 250 HP

9 Control
A09 = Hand-Off-Auto selector switch; manual speed potentiometer.
B09 = Hand-Off-Auto selector switch; Start-Stop push buttons; manual speed potentiometer
F09 = Comm-Auto-Off-Hand switch; manual speed potentiometer

10 Lights
A10 = Power On (Red), AFC Run (Green), AFC Trip (Yellow)
B10 = Power On (Red), AFC Run (Green), AFC Trip (Yellow)
F10 = Power On (Red), AFC Run (Green), AFC Trip (Yellow), Comm (Yellow)

11 Option Card
B11 = Modbus/Uni-Telway communication card
D11 = Ethernet TCP/IP communication card
F11 = DeviceNet communication card
G11 = Profibus DP communication card
L11 = Interbus S communication card
R11 = Ethernet IP communication card

12 Miscellaneous Options
A12 = 5% line reactor
B12 = Surge arrestor
C12 = 8 in. (200 mm) plinth
D12 = I/O extension card
E12 = dV/dt motor filter
F12 = Passive filter
L12 = Line contactor
M12 = Top entry cubicle

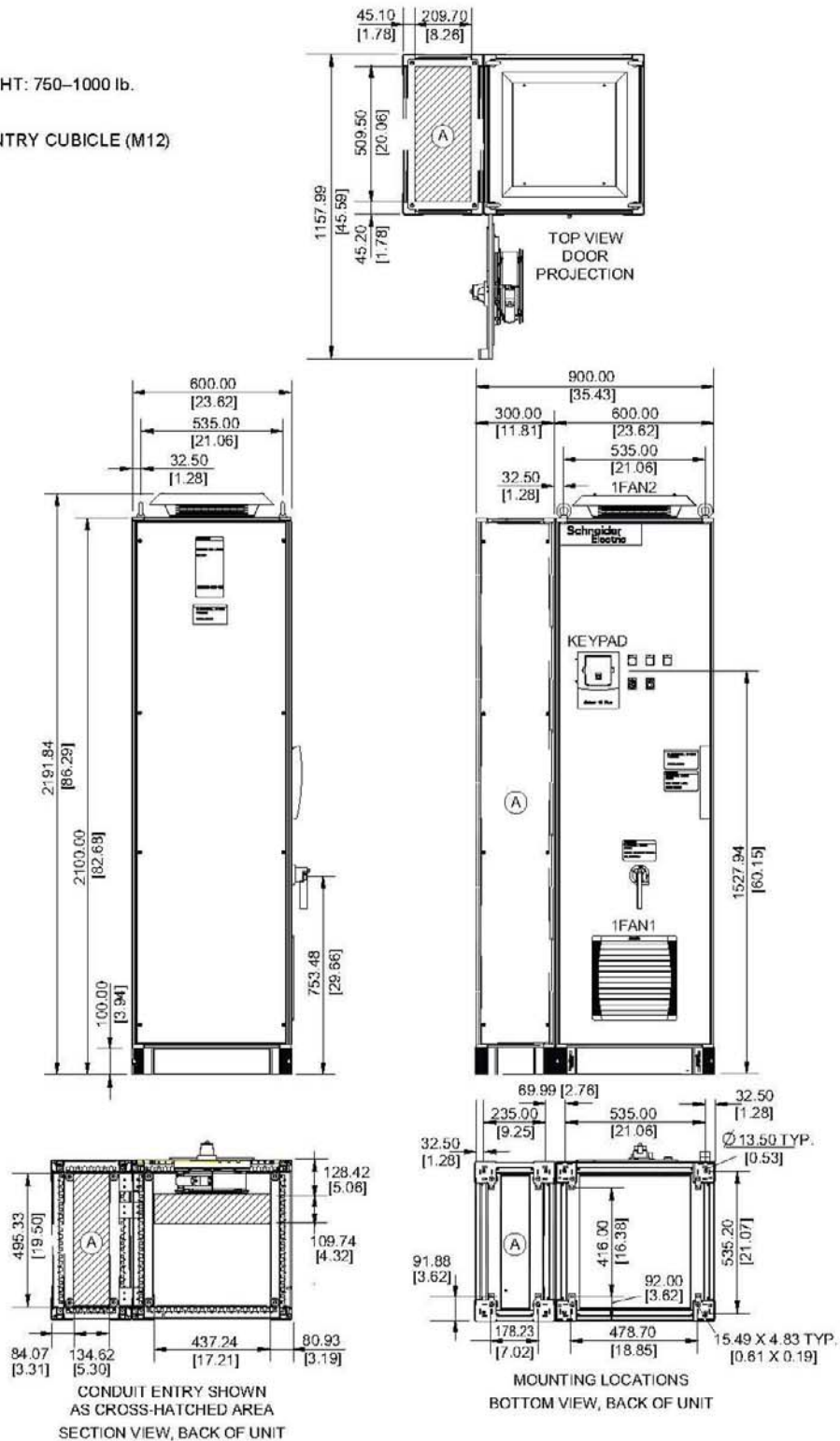
HP Reference Code	HP Ratings	Enclosure Frame Size	Power Circuits		
			Constant Torque - Heavy Duty Rating (150% current limit)		
			Power Circuit W	Power Circuit Y	Power Circuit S
460 V, 60 Hz					
D90	125	A	D90N4E7UW	D90N4E7UY	D90N4E7US
C11	150		C11N4E7UW	C11N4E7UY	C11N4E7US
C13	200		C13N4E7UW	C13N4E7UY	C13N4E7US
C16	250	B	C16N4E7UW	C16N4E7UY	C16N4E7US
C20	200		C20N4E7UW	C20N4E7UY	C20N4E7US
C22	350		C22N4E7UW	C22N4E7UY	C22N4E7US
C25	400		C25N4E7UW	C25N4E7UY	C25N4E7US
C28	450	C	C28N4E7UW	C28N4E7UY	C28N4E7US
C31	500		C31N4E7UW	C31N4E7UY	C31N4E7US
C40	600		C40N4E7UW	C40N4E7UY	C40N4E7US
C50	700		C50N4E7UW	C50N4E7UY	C50N4E7US
C63	900		C63N4E7UW	C63N4E7UY	C63N4E7US
575 V, 60 Hz					
C11	125	A	C11Y6E7UW	C11Y6E7UY	C11Y6E7US
C13	150		C13Y6E7UW	C13Y6E7UY	C13Y6E7US
C16	175		C16Y6E7UW	C16Y6E7UY	C16Y6E7US
C20	200	B	C20Y6E7UW	C20Y6E7UY	C20Y6E7US
C25	250		C25Y6E7UW	C25Y6E7UY	C25Y6E7US
C31	350		C31Y6E7UW	C31Y6E7UY	C31Y6E7US
C40	450	C	C40Y6E7UW	C40Y6E7UY	C40Y6E7US
C50	550		C50Y6E7UW	C50Y6E7UY	C50Y6E7US
C63	700		C63Y6E7UW	C63Y6E7UY	C63Y6E7US
C80	800		C80Y6E7UW	C80Y6E7UY	C80Y6E7US

Figure 5: Frame Size A Enclosure:
125–250 HP VT and 125–200 HP CT @ 460 V, 125–200 HP VT and 125–175 HP CT @ 575 V
Circuit Breaker for 460 V, Fusible Disconnect for 575 V

DIMENSIONS: $\frac{\text{mm}}{[\text{in.}]}$

APPROXIMATE WEIGHT: 750–1000 lb.

(A) OPTIONAL TOP ENTRY CUBICLE (M12)



Altivar 71

variable speed drives

Altivar Plus

125-700 hp Dimensions

Figure 7: Frame Size B Enclosure:
 350–500 HP VT and 250–450 HP CT @ 460 V, 250–450 HP VT and 200–350 HP CT @ 575 V
 Fusible Disconnect for 460 V and 575 V

DIMENSIONS: mm
 [in.]

APPROXIMATE WEIGHT: 1100–1600 lb.

Ⓐ OPTIONAL TOP ENTRY CUBICLE (M12)

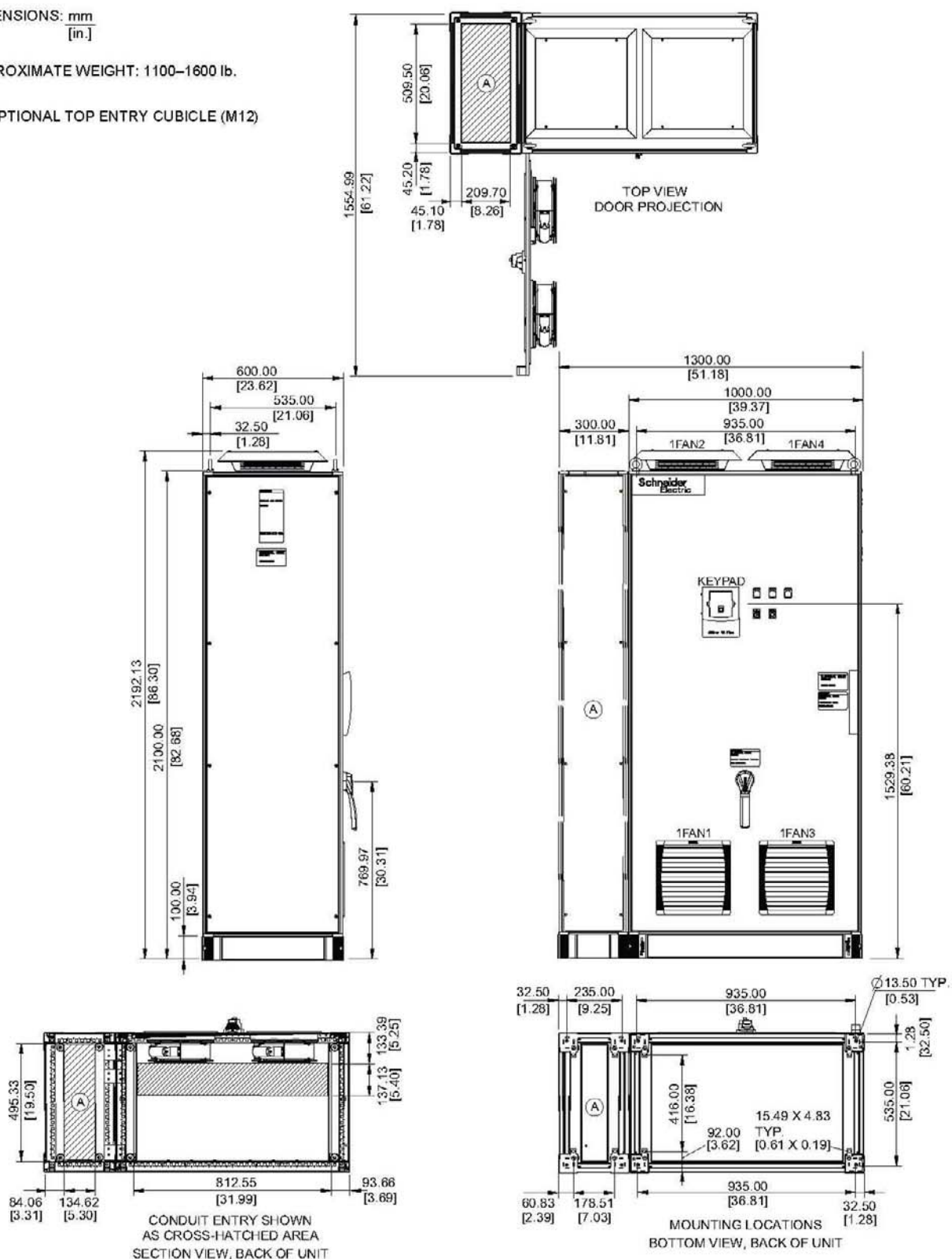
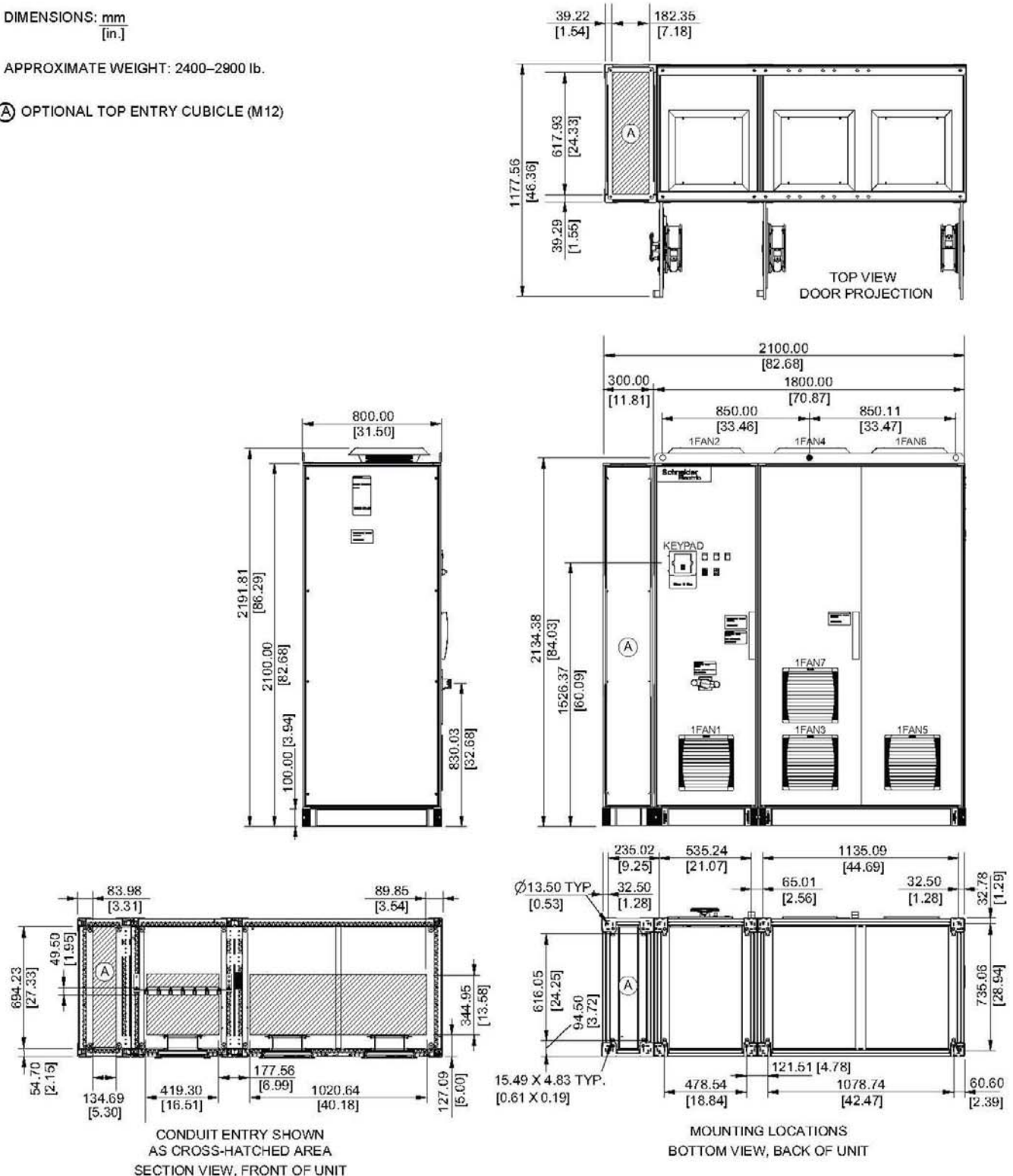


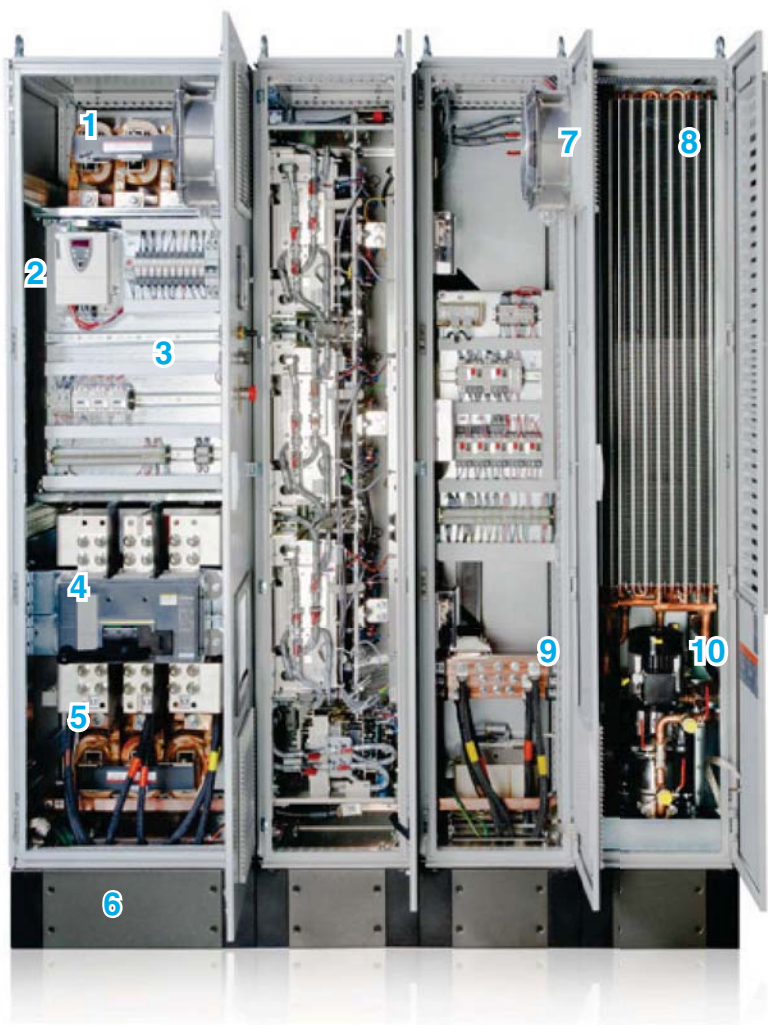
Figure 9: Frame Size C Enclosure:
 600–900 HP VT and 500–700 HP CT @ 460 V, 550–800 HP VT and 450–700 HP CT @ 575 V
 Circuit Breaker for 460 V and 575 V

DIMENSIONS: mm
 [in.]

APPROXIMATE WEIGHT: 2400–2900 lb.

Ⓐ OPTIONAL TOP ENTRY CUBICLE (M12)





- 1** Line reactor
- 2** Operator interface
- 3** Swiveling control panel
- 4** Circuit breaker
- 5** Line connection
- 6** Plinth
- 7** Cubicle fans
- 8** Heat exchanger
- 9** Motor connection
- 10** Cooling

Product

Standard features

- 5 % line reactor
- 100,000 amps SCCR
- dV/dt motor filter
- Bottom wire entry
- Push button control options
- Pilot light combinations
- Communication cards
- I/O extension cards
- Encoder cards
- Controller inside card

Altivar 71

variable speed drives

Altivar Plus

700-2100 hp Specifications

Input

Voltage 400 V, 500 V, 690 V	380–480 V -15/+10% for TT, TN or IT mains 500 V -15%, 690 V +10% for TT, TN or IT mains (500–690 V not qualified for Corner Grounded Networks)
Frequency	50/60 Hz±5%
Overvoltage class	Class III according to EN 61800-5-1

Output

Control method	Sensorless vector control, V/f characteristic
Voltage	Three-phase AC 0–100% mains voltage, dynamic voltage stabilization
Overload	Power 1 (ATV71): 50% for 60 s per 10 minutes, 65% for 2 s
Pulse frequency	2.5 kHz, adjustable from 2–4.9 kHz
Frequency / base frequency	0–300 Hz / 25–300 Hz, adjustable (up to 500 Hz) ²
Short circuit protection	All poles protected against short circuit and ground fault by means of overcurrent switch-off
Design	Floor-standing cubicle
Frequency resolution, digital	0.01 Hz / 50 Hz, frequency stability: ±0.01% / 50 Hz
Speed accuracy	V/f mode: Slip frequency VC without feedback: 0.3 x slip frequency VC with feedback: 0.01% of maximum frequency

Cooling liquid

Cooling

Coolant	Liquid mixture consisting of 99.75% deionized water and 0.25% Nalcotrac 100 with a freezing point of 0 °C (+32 °F).
Temperature of coolant	Maximum +70 °C (+158 °F)
Pressure of the cooling circuit	Operating pressure: 2.0 bar (29.4 psi) at a pressure drop of 1.2 bar (17.6 psi) Maximum pressure: 4.0 bar (58.8 psi) filling pressure

Mechanical strength

Mechanical vibration	According to IEC/EN 60068-2-6 1.5 mm at 3–10 Hz, 0.6 g at 10–200 Hz (3M3 according to IEC/EN 60721-3-3)
Shock	According to IEC/EN 60068-2-27 4 g for 11 ms (3M2 according to IEC/EN 60721-3-3)

Ambient conditions

Operating temperature	> 0 to +40 °C (> +32 to +104 °F) 3K3 according to IEC/EN 60721-3-3 up to +50 °C (+122 °F) with derating
Storage / transport temperature	-25 to +70 °C (-13 to +158 °F) with cooling circuit evacuated.
Protection degree of the incoming and outgoing cubicles	IP23/IP54 with internal cooling circuit and air cooling IP55 with internal cooling circuit and water cooling IP23/IP54 with internal cooling circuit and air cooling IP55 with internal cooling circuit and water cooling
Environmental class / humidity	Class 3K3 in accordance with IEC/EN 60721-3-3 / no condensation Maximum 95% relative humidity
Altitude 400 V, 500 V, 690 V	Up to 1000 m (3,281 ft), no derating necessary 1% decrease per 100 m (328.1 ft) up to 3000 m (9,843 ft) 1% decrease per 100 m (328.1 ft) up to 2400 m (7,874 ft)
Allowed pollution	Pollution degree 3 according to EN 61800-5-1 3C2 and 3S2 according to EN 60721-3-3
Protection class	Class 1 according to EN 61800-5-1

Safety functions

Safety features	The function "Safe Torque Off STO" (Power Removal) allows a controlled shut-down and switch-off of the power supply when at standstill. It helps prevent any unintended start of the motor according to ISO 13849-1, category 3, and IEC/EN 61800-5-2.
Protection of the machine	The function "Safe Torque Off STO" (Power Removal) allows a controlled shut-down and switch-off of the power supply when at standstill. It helps prevent any unintended start of the motor according to IEC/EN 61508, SIL2 capability, and IEC/EN 61800-5-2.
Response time	≤ 100 ms in STO (Safe Torque Off)

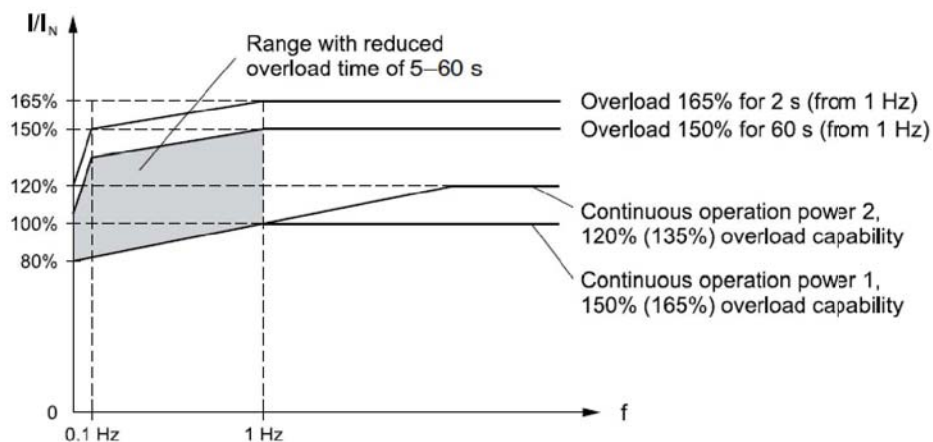
Standards

Basic standard	The devices are constructed in accordance with the requirements of UL 508A and CSA C22 2 No. 14.
Insulation	Galvanic insulation from the control electronics in accordance with EN 61800-5-1 PELV (Protective Extra Low Voltage)
Standards	UL Listed under UL 508A; cUL Listed under CSA C22 2 No. 14

To protect the power semiconductors (IGBTs) against thermal overloads, the carrier frequency is automatically reduced at operation below 3 Hz. If the overload time exceeds 60 seconds, the drive will trip.

During operation at output frequencies < 1 Hz, the overload capability is restricted and the overload time is lower than 60 s.

- at 0.0 Hz, the overload time is only 5 s
- at 0.5 Hz, overload time is approximately 32 s
- from 1.0 Hz, overload time is 60 s



Altivar 71

variable speed drives

Altivar Plus

700-2100 hp Selection Table

ATV71 EXA1 C50 N4 E4 U

1 Drive Style
ATV 71 = Altivar 71 Plus

2 Drive System
EXA2 = Type 1
EXA5 = Type 12

3 Power Rating
C = Multiplier 10
M = Multiplier 100

4 Voltage
N4 = 380-460 V
Y = 575-600 V

5 Cubicle
E1 = Sarel S 6000, standard design with air cooling, size 23 & 24 (size 23 also has external water cooling in IP55)
E4 = Rittal TS8, standard design with air cooling, size 23 & 24 (size 23 also has external water cooling in IP55)

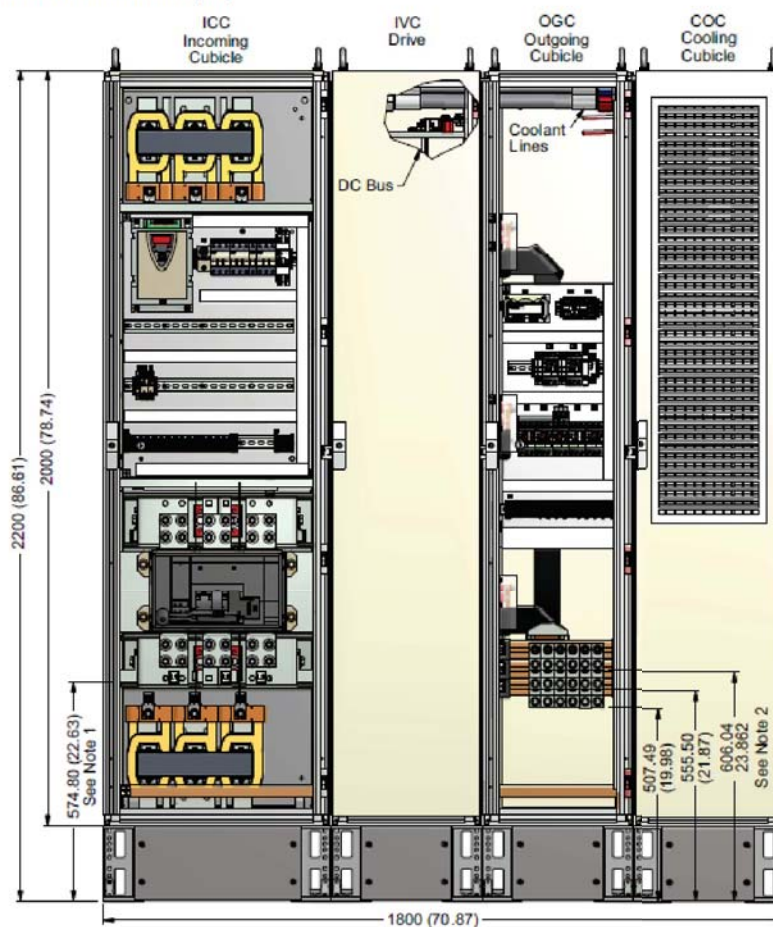
6 Design
U = Design for U.S.

HP Reference Code	HP Ratings	Controller Output Current	Enclosure Frame Size	Power Circuit	
				Power Circuit E1	Power Circuit E4
460 V					
C	700	920 A	23	C50N4E1	C50N4E4
	900	1100 A		C63N4E1	C63N4E4
	1000	1260 A	24	C71N4E1	C71N4E4
	1250	1580 A		C90N4E1	C90N4E4
M	1550	1860 A		M11N4E1	M11N4E4
	1800	2000 A		M13N4E1	M13N4E4
575 V					
C	700	675 A	23	C63YE1	C63YE4
	800	840 A		C80YE1	C80YE4
M	1000	1050 A	24	M10YE1	M10YE4
	1250	1230 A		M12YE1	M12YE4
	1600	1580 A		M15YE1	M15YE4
	1900	1860 A		M18YE1	M18YE4
	2100	2020 A		M20YE1	M20YE4

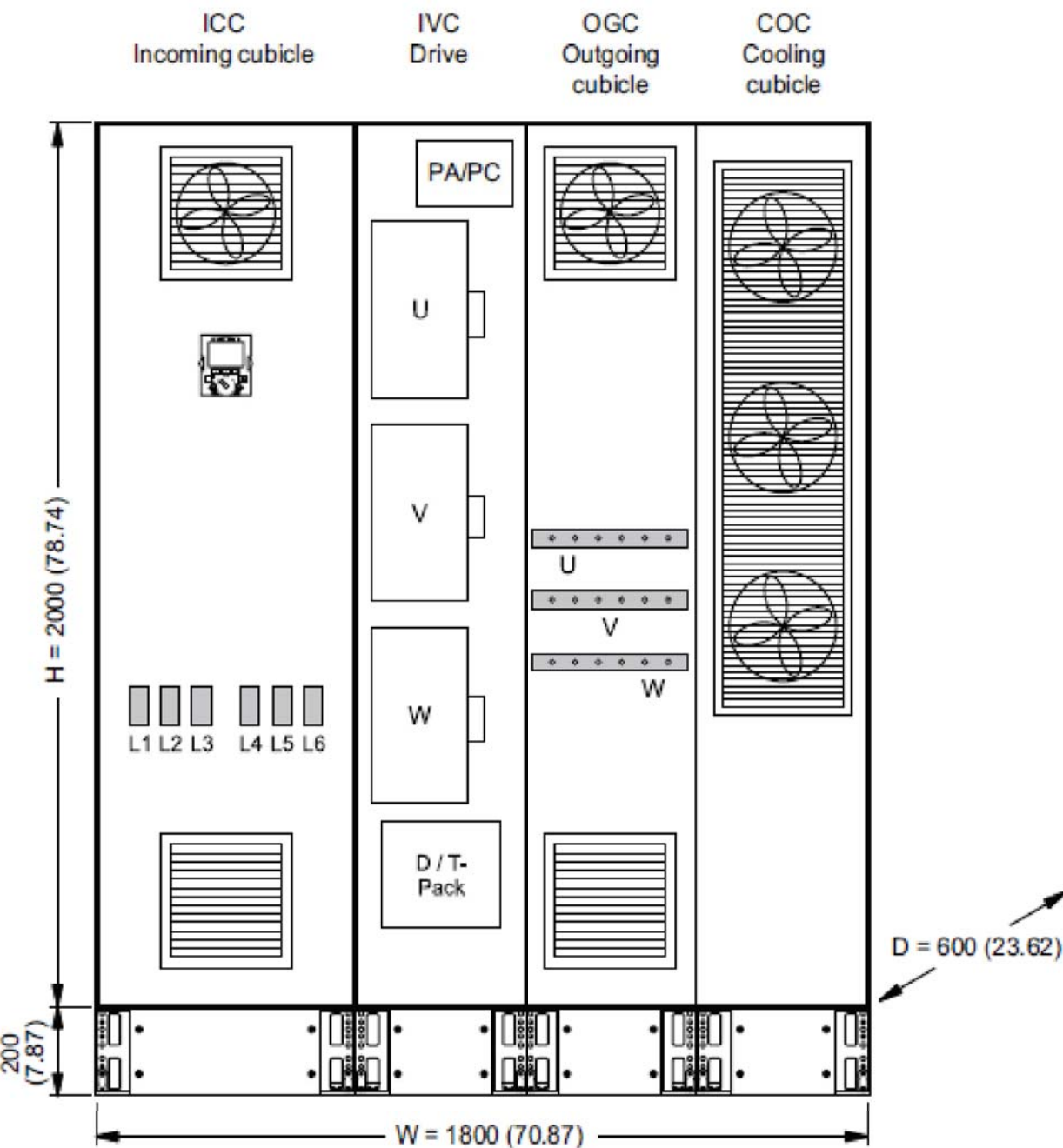
Altivar 71 variable speed drives

Altivar Plus 700-2100 hp Dimensions

Dimensions are in mm (in.).



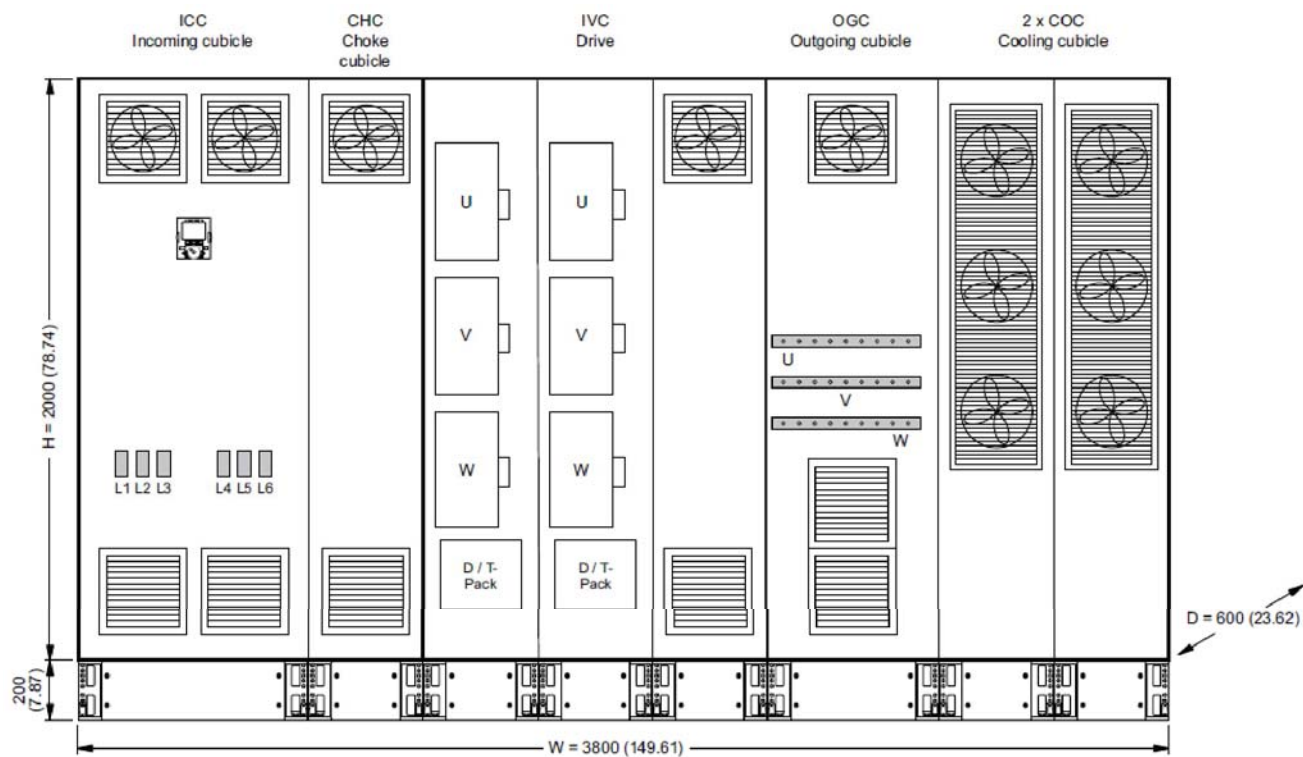
Dimensions are in mm (in.).



Altivar 71 variable speed drives

Altivar Plus 700-2100 hp Dimensions

Frame Size 24





Quality Assurance

This document communicates a summary of the processes, procedures and quality assurance that are in place for the manufacturing of the Altivar 71. Altivar 71 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 each unit. The sequence of testing is monitored. Each test station requires a successful bar code scan on entry to validate that 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 ATV71 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 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 performed 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 model to the left.

(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 fault register and drive speed are monitored conditions during the load cycle. A detected fault or failure to attain commanded speed results in a test failure.

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 I
- CPU version check
- DC bus level check
- Fan operation test
- Nominal load characteristic check
- Over current 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 71. 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.

Schneider Electric provides services from system design and consulting, to maintenance support, modernization of your installation, and project delivery. Schneider Electric provides the people, tools, and processes to help maximize your business's infrastructure.

Our expertise enables you to cut costs, reduce energy consumption, and keep your systems up and running through routine maintenance, added enhancements, and migrations to new state-of-the-art functionality.

> Start-up and commissioning

Expert installation support to provide assistance in the start-up of your new system. Service includes a comprehensive power-up and diagnostic check on system components to minimize risk and optimize operation.

> Technical training

Training offered on-site, off-site, or online for Schneider Electric automation products taught by professional instructors with up-to-date knowledge of our latest hardware and software.

> Remote technical support

Comprehensive online and phone support from experts specially trained on Schneider Electric drive products, helping to reduce downtime and costs and optimize your system's life cycle.

> On-site technical support

Support service to perform regular maintenance, upgrades, and conversion assistance, small application and programming assistance, on-the-job training, equipment repair, support and troubleshooting, even in emergency situations.

> Preventative maintenance

Maintenance programs to scan for, and proactively detect, potential issues or problems with your automation system to help you avoid the costs of unscheduled downtime and short equipment service life. Also serves to extend the life of your installed base by using our services to properly maintain your equipment.

> Industrial repair services

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

Save money and reduce downtime through our parts management program. An on-site assessment is performed to determine parts and inventory levels needed to ensure proper system operation and reduce downtime and inventory costs.

> Migration and modernization

Realize the productivity benefits of the latest Schneider Electric automation technology by using our assessment tools to identify and implement replacement of your legacy automation products, regardless of brand. We make extensive use of existing hardware and wiring for a cost-effective solution with minimal downtime.

> Software renewals

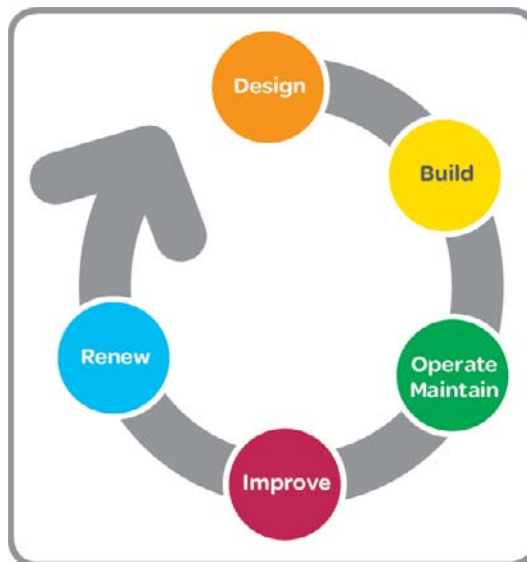
Access the latest software, firmware, and custom options to ensure you always have the latest functionality available to optimize your system's life cycle.

> Extended warranty

Extend your Schneider Electric standard manufacturer warranty from one year to five years. Protection plans are tailored to your needs reducing costs and out-of-service time.

> When it comes to your automation equipment, we can help you

- Increase productivity
- Improve reliability and safety
- Mitigate risk and limit downtime
- Keep equipment up to date
- Extend the life of your installed base
- Cut costs and increase savings
- Improve your return on investment



Talk to someone you can trust

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:

- Meet the needs of a broad range of industries, including HVAC, pump, material handling, hoisting, packaging and many more.
- Reduce your energy costs using proprietary energy-saving technologies available only from Schneider Electric.
- Improve your up-time by simplifying installation, commissioning and maintenance by providing advanced diagnostics, industry-leading voltage ride thru capability and seismic qualified products.

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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 8:00 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**

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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, claims, and order management)

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

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Schneider Electric Industries SAS

Schneider Electric USA, Inc.
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Knightdale, NC 27545

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8800CT1401
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