Altivar 212 variable speed drives

for 3-phase asynchronous motors from 0.75 to 75 kW

Catalogue

March 2011

Schneider Electric

INDUSTRIAL AUTOMATION

All technical information about products listed in this catalogue are now available on:

www.schneider-electric.com

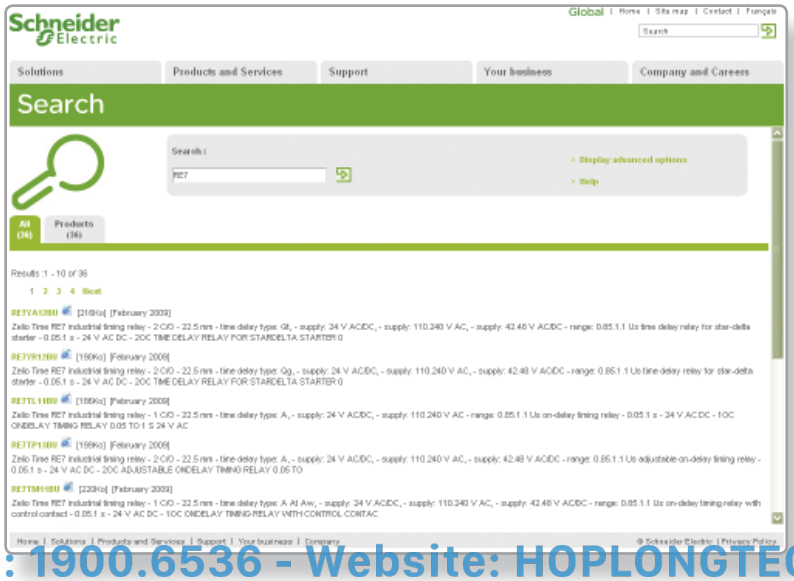
Browse the “product data sheet” to check out :

- characteristics,
- dimensions,
- curves, ...
- and also the links to the user guides and the CAD files.

1 From the home page, type the model number* into the “Search” box.

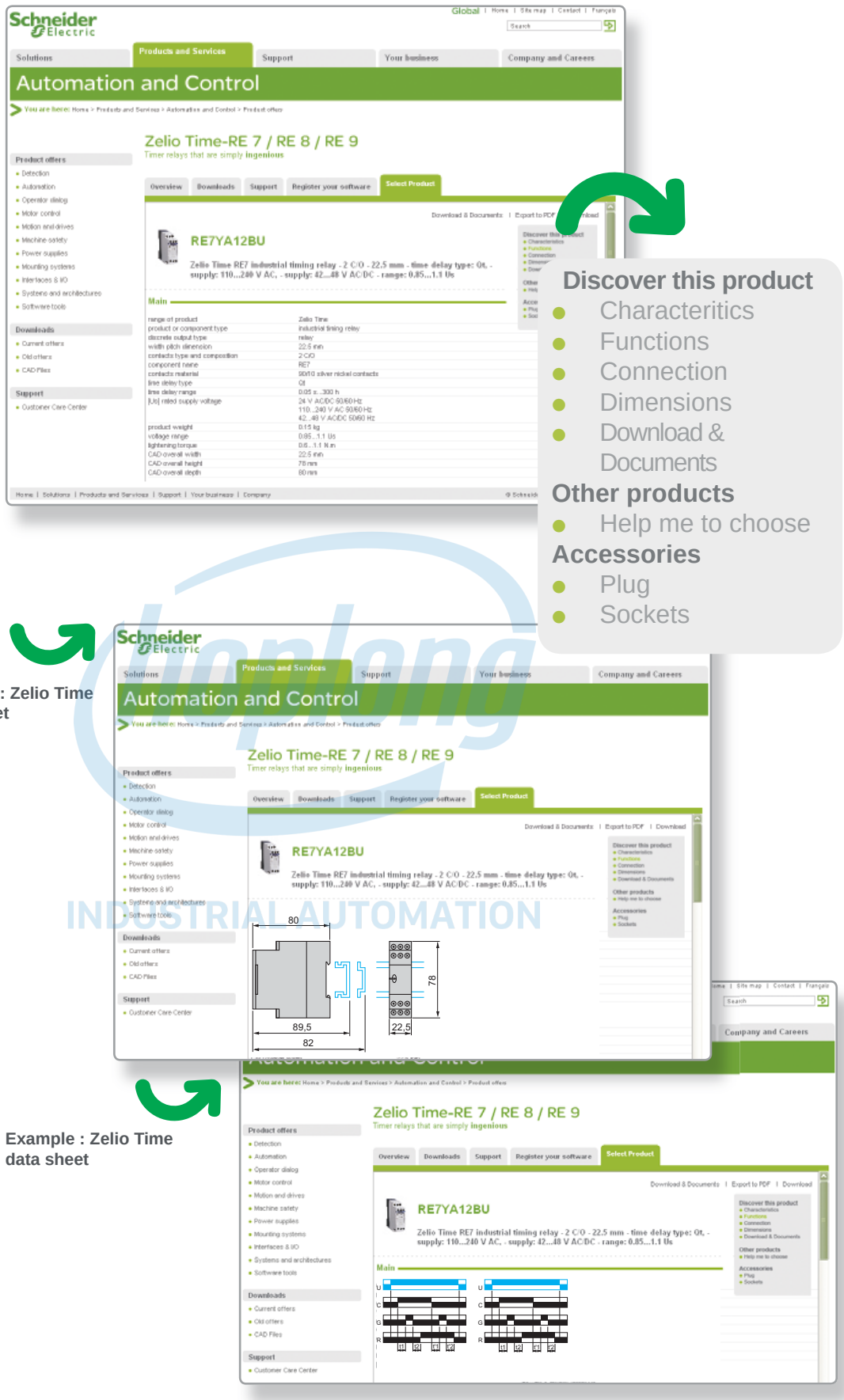
* type the model number without any blank, replace “●” by “*”

2 Under ”All” tab, click the model number that interests you.



3 The product data sheet displays:

Example : Zelio Time data sheet



Example : Zelio Time data sheet

Example : Zelio Time data sheet

☑ You can get this information in one single pdf file.

The new generation of dedicated HVAC drives

Contents

Altivar 212

Orientated towards performance, intelligence and building protection

Dedicated HVAC* variable speed drive for pumps, fans and compressors.
For 0.75 to 75kW - 1 to 100 hp motors.

Focused on Building Management Systems (BMS)

- Easy integration to building supervision network using embedded protocols.
- Instant detection of system failure: belt breakage, pump running dry, phase failure, etc.
- Preventive maintenance for reducing costs: fault alert, operating time, etc.
- Energy consumption monitoring.

Focused on user-friendliness

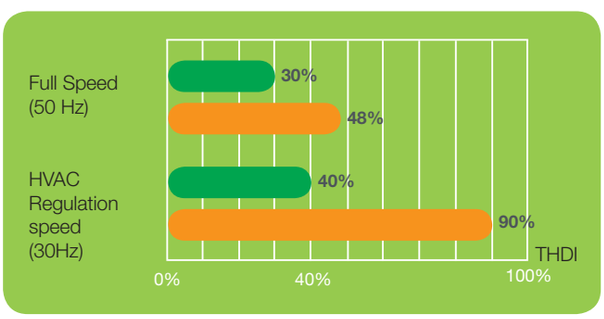
- Easy set-up, commissioning and diagnostics tools: remote graphic terminal (6 languages as standard), Multi-Loader, PC Software, Bluetooth capability and SoMove Mobile software.
- Compact size for better integration.

Focused on cost savings

- Reduced investment costs (embedded functionalities).
- Quick return on investment (energy saving).

Focused on protection & efficiency

- Continuity of service.
- Functions designed for buildings: fire mode, damper monitoring, mechanical protection, etc.
- Integrated EMC filter.
- Antiharmonic technology (THDI ≈ 30%).



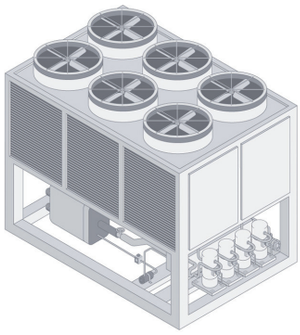
Altivar 212 antiharmonic technology
Drives with integrated DC choke

HVAC: Heating, Ventilation, Air Conditioning.

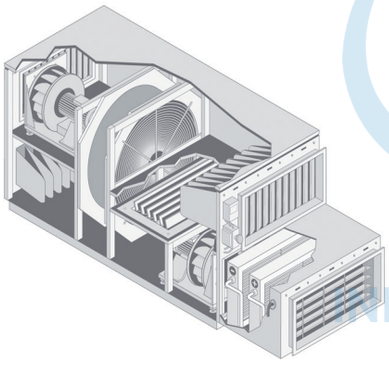
A single product...

Ventilation

Air cooling unit

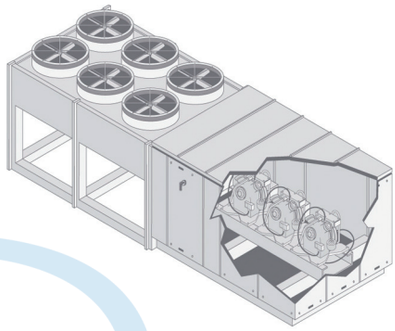


Air Handling Unit

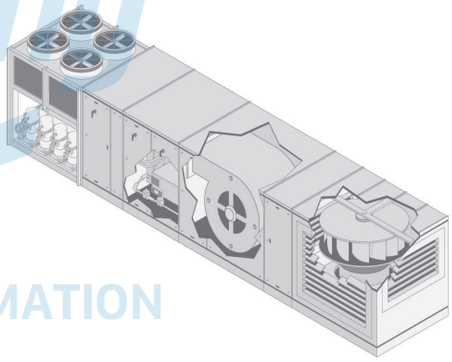


Heating and air conditioning

Condensation unit



Roof Top Unit: ventilation block



Comfort
- Reduce noise pollution (air flow, motor, etc.).

Security
- Detection of belt breakage.
- Smoke extraction: forced operation with fault inhibition.

Simplicity
- Automatic restart.
- Damper management.
- Preset speeds for a simple automatic control sequence.

Performance
- Optimise control when processing fluids.
- Use of PID regulator (temperature, flow rate, pressure, etc.).

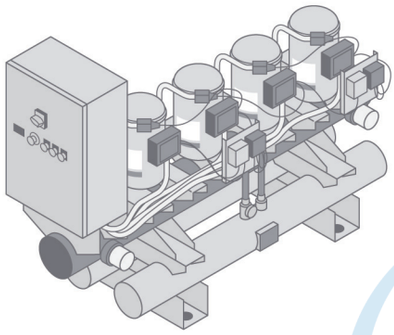
Cost savings
- Flow rates adjustment for better energy management.
- Energy saving mode.

Robustness
- Suppression of mechanical resonance.

Building management system
- Connection to building supervision network.

... for all your ventilation, air conditioning and pumping applications.

Pumping



Security
- Detection of underload/overload, pump running dry.
- Multi-motor configuration.

Cost savings
- Limitation of operating time at low speed.
- Sleep/Wake up function.
- Pressure surge suppression for prolonging the life of the installation.

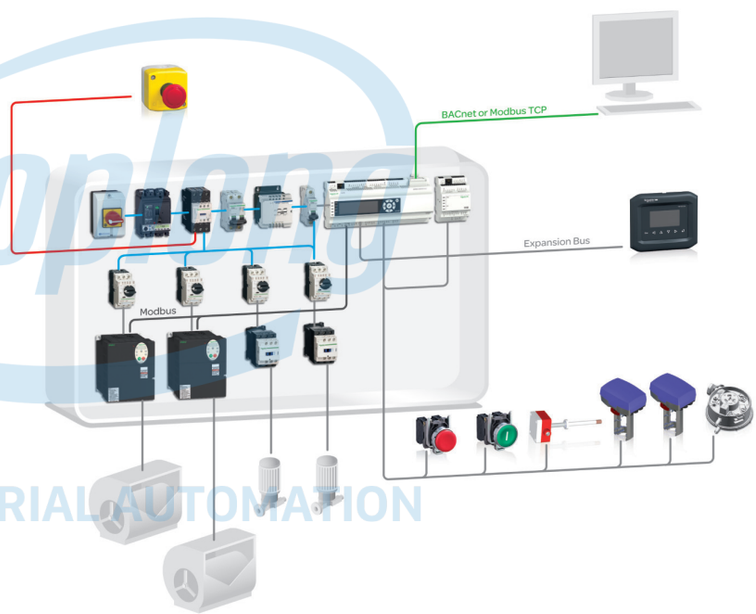
Simplicity
- Reference calibration and limitation.
- Preset speeds.
- Automatic compensation of the flow rate to precisely follow the system curve.

> THDI ≈ 30%
as standard

More user-friendliness and integration

The Altivar 212 provides maximum ease of use and security for system integrators and end-users. Set-up, operation and maintenance are simplified with its user-friendliness and enhanced communication.

More dialogue using the communication tools.



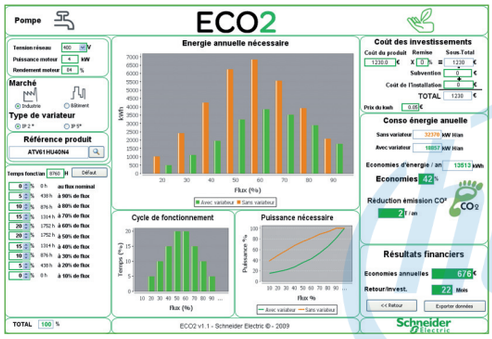
The Altivar 212 easily integrates in your automation architectures with Modbus, BacNet, APOGEE FLN P1 and MetaSys N2 as standard and Lonworks available as option.

The dual port enables a dialogue tool and a communication network to be connected at the same time.

Plug & Play

Save up to 70% on your energy bill!

Whatever the fluid (air, water), the Altivar 212 makes your buildings more comfortable, easier to manage and, at the same time, saves energy.

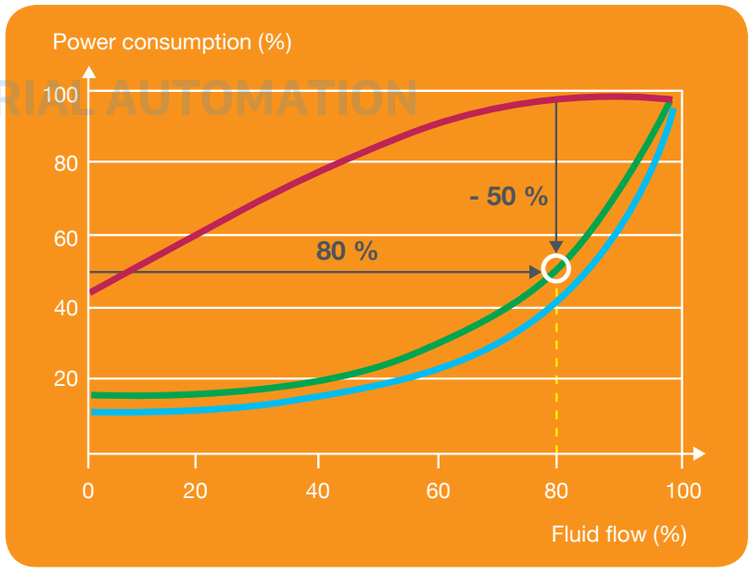


Calculate your potential energy savings

Eco2 is a software utility designed to calculate the energy savings attainable by using a variable speed drive selected from the Altivar range.
In a few clicks, Eco2 enables you to establish:

- The selection of the appropriate Altivar drive in relation to the application data.
- A comparison of the energy consumption with or without a drive.
- The calculation of possible savings from a financial and electrical viewpoint, as well as the contribution to reduced CO_2 emissions.
- The calculation of the return on investment time.

At 80% flow rate, the energy consumption drops 50%.
Using the Altivar 212, energy consumption is reduced on average by 30% when using the control mode dedicated to pumps and fans.



Traditional control system

Altivar 212 energy savings quadratic torque ratio

Altivar 212 standard torque ratio

Illustrative curves only (not contractual)

30% average reduction in energy consumption by using the control mode dedicated to pumps and fans.

IP 20 or IP 21 variable speed drives for asynchronous and synchronous motors

Type of machine			Simple machines		Pumps and fans (building (HVAC)) *(1)*
					
Power range for 50…60 Hz (kW) line supply			**0.18…4**	**0.18…15**	**0.75…75**
	Single-phase 100…120 V (kW)		0.18…0.75	–	–
	Single-phase 200…240 V (kW)		0.18…2.2	0.18…2.2	–
	Three-phase 200…230 V (kW)		–	–	–
	Three-phase 200…240 V (kW)		0.18…4	0.18…15	0.75…30
	Three-phase 380…480 V (kW)		–	–	0.75…75
	Three-phase 380…500 V (kW)		–	0.37…15	–
	Three-phase 500…600 V (kW)		–	–	–
	Three-phase 525…600 V (kW)		–	0.75…15	–
	Three-phase 500…690 V (kW)		–	–	–
Degree of protection			IP 20	IP 21	
Type of cooling			Heatsink		
Drive	Output frequency		0.1…400 Hz	0.1…500 Hz	0.5…200 Hz
	Type of control	Asynchronous motor	Standard (voltage/frequency) Performance (sensorless flux vector control) Pump/fan (Kn^2 quadratic ratio)	Standard (voltage/frequency) Performance (sensorless flux vector control) Energy saving ratio	Sensorless flux vector control Voltage/frequency ratio (2 points) Energy saving ratio
		Synchronous motor	–		
	Transient overtorque		150…170% of the nominal motor torque	170…200% of the nominal motor torque	120% of the nominal motor torque
Functions					
Number of functions			40	50	50
Number of preset speeds			8	16	7
Number of I/O	Analog inputs		1	3	2
	Logic inputs		4	6	3
	Analog outputs		1	1	1
	Logic outputs		1	–	–
	Relay outputs		1	2	2
Communication	Integrated		Modbus	Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet
	Available as an option		–	CANopen Daisy Chain, DeviceNet, PROFIBUS DP, Modbus TCP, Fipio	LonWorks
Cards (available as an option)			–		
Dialogue tools			IP 54 or IP 65 remote terminal	IP 54 or IP 65 remote terminal IP 54 remote graphic display terminal	IP 54 or IP 65 remote graphic display terminal
Configuration tools	Setup software		SoMove		PCSoft for ATV 212
	Configuration tools		Simple Loader, Multi-Loader		Multi-Loader
Standards and certifications			IEC 61800-5-1 IEC 61800-3 (environments 1 and 2, categories C1 to C3, cat. C1 with option for ATV 212) CE, UL, CSA, C-Tick, NOM, GOST		EN 55011: Group 1, class A and class B with option card. CE, UL, CSA, C-Tick, NOM
References			**ATV 12**	**ATV 312**	**ATV 212**
Catalogues			"Altivar 12 variable speed drives"	"Altivar 312 variable speed drives"	"Altivar 212 variable speed drives"

(1) Heating, Ventilation and Air Conditioning

Pumps and fans (industrial)	Complex machines	
		 
0.37…800	**0.37…630**	
–	–	
0.37…5.5	0.37…5.5	
–	–	
0.75…90	0.37…75	
0.75…630	0.75…500	
–	–	
2.2…7.5	1.5…7.5	
–	–	
2.2…800	1.5…630	
IP 20		
Heatsink or water-cooled system	Heatsink, base plate or water-cooled system	
0.1…500 Hz for the entire range 0.1…599 Hz up to 37 kW at 200…240 V ∿ and 380…480 V ∿	0.1…500 Hz for the entire range 0.1…599 Hz up to 37 kW at 200…240 V ∿ and 380…480 V ∿	
Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) Energy saving ratio	Flux vector control with or without sensor Voltage/frequency ratio (2 or 5 points) ENA System	
Vector control without speed feedback	Vector control with or without speed feedback	
120% of the nominal motor torque for 60 seconds	220% of the nominal motor torque for 2 seconds 170% for 60 seconds	
> 100	> 150	
8	16	
2…4	2…4	
6…20	6…20	
1…3	1…3	
0…8	0…8	
2…4	2…4	
Modbus and CANopen		
Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, INTERBUS, CC-Link, LONWORKS, METASYS N2, APOGEE FLN, BACnet	Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, INTERBUS, CC-Link	
I/O extension cards, “Controller Inside” programmable card, multi-pump cards, encoder interface cards	Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card	
IP 54 or IP 65 remote graphic display terminal		
SoMove		
Simple Loader, Multi-Loader		
IEC 61800-5-1 IEC 61800-3 (environments 1 and 2, categories C1 to C3), IEC 61000-4-2/4-3/4-4/4-5/4-6/4-11		
CE, UL, CSA, DNV, C-Tick, NOM, GOST		
ATV 61	**ATV 71**	
“Altivar 61 variable speed drives”	“Altivar 71 variable speed drives”	

IP 54 or IP 55 variable speed drives for asynchronous and synchronous motors

Type of machine			Simple machines	Pumps and fans (building (HVAC)) *(1)*
				
Power range for 50…60 Hz (kW) line supply			**0.18…15**	**0.75…75**
	Single-phase 200…240 V (kW)		0.18…2.2	–
	Three-phase 380…480 V (kW)		–	0.75…75
	Three-phase 380…500 V (kW)		0.37…15	–
Degree of protection			IP 55	IP 55
Variants			Enclosure user-definable up to 4 kW: Vario switch disconnector, LEDs, selector switch, potentiometer	–
Drive	Output frequency		0.1…500 Hz	0.1…200 Hz
	Type of control	Asynchronous motor	Sensorless flux vector control Voltage/frequency ratio	Sensorless flux vector control Voltage/frequency ratio (2 points) Energy saving ratio
		Synchronous motor	–	–
	Transient overtorque		170…200% of the nominal motor torque	120% of the nominal motor torque for 60 seconds
Functions Number of functions			50	50
Number of preset speeds			16	7
Number of I/O	Analog inputs		3	2
	Logic inputs		6	3
	Analog outputs		1	1
	Logic outputs		–	–
	Relay outputs		2	2
Communication	Integrated		Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet
	Available as an option		Modbus TCP, Fipio, PROFIBUS DP, DeviceNet	LonWorks
Cards (available as an option)			–	–
Dialogue tools			IP 65 remote terminal	IP 54 or IP 65 remote graphic display terminal
Configuration tools	Setup software		SoMove	PCSoft for ATV 212 drive
	Configuration tool		Simple Loader	Multi-Loader
Standards and certifications			IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3) CE, UL, CSA, C-Tick, GOST	
References			**ATV 31C**	**ATV 212W**
Catalogues			"Altivar 31C variable speed drives"	"Altivar 212 variable speed drives"

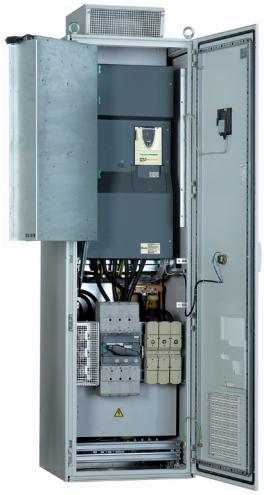
(1) Heating, Ventilation and Air Conditioning

Pumps and fans (industrial)		Complex machines	
			
0.75…90		**0.75…75**	
–			
0.75…90		0.75…75	
–			
IP 54			
–	Equipped with a Vario switch disconnector	–	Equipped with a Vario switch disconnector
0.1…599 Hz from 0.75 to 45 kW 0.1…500 Hz from **55…90 kW**		0.1…599 Hz from 0.75 to 37 kW 0.1…500 Hz from 45 to 75 kW	
Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) Energy saving ratio		Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) ENA System	
Vector control without speed feedback		Vector control with or without speed feedback	
110% of the nominal motor torque for 60 seconds		220% of the nominal motor torque for 2 seconds 170% for 60 seconds	
>100		>150	
8		16	
2…4		2…4	
6…20		6…20	
1…3		1…3	
0…8		0…8	
2…4		2…4	
Modbus and CANopen			
Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, LonWorks, METASYS N2, APOGEE FLN, BACnet		Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link	
I/O extension cards, “Controller Inside” programmable card, multi-pump cards, encoder interface cards		Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card	
IP 54 or IP 65 remote graphic display terminal			
SoMove			
Simple Loader, Multi-Loader			
IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3), IEC 61000-4-2/4-3/4-4/4-5/4-6/4-11 CE, UL, CSA, DNV, C-Tick, NOM, GOST			
ATV 61W	**ATV 61E5**	**ATV 71W**	**ATV 71E5**
“Altivar 61 variable speed drives”		“Altivar 71 variable speed drives”	

Variable speed drives
Altivar 61 Plus and Altivar 71 Plus
Integrated solutions

Type of machine		**Pumps and fans** (industrial)		
				
Power range for 50…60 Hz (kW) line supply		**90…630**	**90…800**	**630…2400**
	Three-phase 380…415 V	90...630	90...630	630...1400
	Three-phase 500 V	–	90...630	630...1800
	Three-phase 690 V	–	110...800	800...2400
Main characteristics		With enhanced protection		With enhanced protection and integrated cooling circuit
Variants		Ready to use	Standard offer Modular with integrated options User-definable on request	
Drive	Output frequency	0.1...500 Hz		
	Type of control – Asynchronous motor	Sensorless flux vector control Voltage/frequency ratio 2 or 5 points Energy saving ratio		
	Synchronous motor	Flux vector control without speed feedback		
	Transient overtorque	120% of the nominal motor torque for 60 seconds		
Communication	Embedded	Modbus and CANopen		
	As an option	Modbus TCP, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link LonWorks, METASYS N2, APOGEE FLN, BACnet		
Cards (available as an option)		“Controller Inside” programmable card Multi-pump cards		
Degree of protection		IP 54 with separate air flows, **ATV 61ES5**	IP 23 compact version, **ATV 61EXC2** IP 54 compact version, **ATV 61EXC5** IP 54 with separate air flows, **ATV 61EXS5**	With integrated air-cooled circuit: IP 23: **ATV 61EXA2** IP 54: **ATV 61EXA5** With external water-cooled system: IP 55, on request
References		**ATV 61 Plus**		
Catalogues		"Altivar 61 variable speed drives"		

Complex machines
(industrial and infrastructure)



90…500	**90…630**	**500…2000**
90…500	90…500	500…1300
–	90…500	500…1500
–	110…630	630…2000
With enhanced protection		With enhanced protection and integrated cooling circuit
Ready to use	Standard offer Modular with integrated options User-definable on request	
0.1…500 Hz		
Flux vector control with or without sensor Voltage/frequency ratio (2 or 5 points) ENA System		
Vector control with or without speed feedback		
220% of the nominal motor torque for 2 seconds 170% of the nominal motor torque for 60 seconds		
Modbus and CANopen		
Modbus TCP, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link		
“Controller Inside” programmable card		
IP 54 with separate air flows, **ATV 71ES5**	IP 23 compact version, **ATV 71EXC2** IP 54 compact version, **ATV 71EXC5** IP 54 with separate air flows, **ATV 71EXS5**	IP 23, with integrated air-cooled circuit, **ATV 71EXA2** IP 54, with integrated air-cooled circuit, **ATV 71EXA5** IP 55, with external water-cooled system (on request)

ATV 71 Plus

"Altivar 71 variable speed drives"

Variable speed drives
Altivar 212

PF105302

Ventilation application

L_000060

Air conditioning application

PF62862

Pumping application

Presentation

The Altivar 212 drive is a frequency inverter for 0.75 kW to 75 kW three-phase asynchronous motors.

It has been designed for the most common fluid management applications (HVAC “Heating, Ventilation and Air Conditioning”) in buildings the service sector:
- Ventilation
- Heating and air conditioning
- Pumping

Its design is based on eco-energy with a reduction in energy consumption of up to 70% compared to a conventional control system.
It is eco-friendly and complies with directives such as RoHS, WEEE, etc.relating to environmental protection.

The Altivar 212 is operational from the moment the power is turned on; it can be used to achieve your building's maximum energy efficiency (see the “Energy gain” curve on the previous pages).

Optimisation of building management

The Altivar 212 drive has been designed to considerably improve building management by:
- Simplifying circuits by removing flow control valves and dampers,
- Offering flexibility and ease of adjustment for installations, thanks to its compatibility with building management system connectivity
- Reducing noise pollution (noise caused by air flow and motor)

Its various standard versions make it possible to reduce installation costs by integrating EMC filters, categories C1 to C3 depending on the model, which has the following advantages:
- More compact size
- Simplified wiring, thus reduced cost

The Altivar 212 offer helps to reduce equipment costs while optimizing its performance.

Compliance with international standards and certifications

The Altivar 212 offer has been designed to conform to the strictest international standards and in accordance with recommendations relating to electrical industrial control devices, including the Low Voltage Directive and IEC/EN 61800-5-1.

It takes into account observing requirements in respect of electromagnetic compatibility and conforms to international standard IEC/EN 61800-3 (immunity and conducted and radiated EMC emissions).

The entire range has obtained CE marking according to the European Low Voltage (2006/95/EC) and EMC (2004/108/EC) Directives.

The range is UL, CSA, C-Tick and NOM certified.

Flexible communication adapted to building management

The Altivar 212 drive can easily be adapted to all building management systems thanks to its numerous functions and communication protocols integrated as standard: Modbus, METASYS N2®, APOGEE FLN P1® and BACnet®.

With protocols offered as standard and the LonWorks® communication card offered as an option, the Altivar 212 drive is optimized for the building market (HVAC).

Quick and easy dialogue to make your installations easier to use

Numerous dialogue and configuration tools are also included in the Altivar 212 offer, making running installations quick, easy and cost-effective (see page 15).

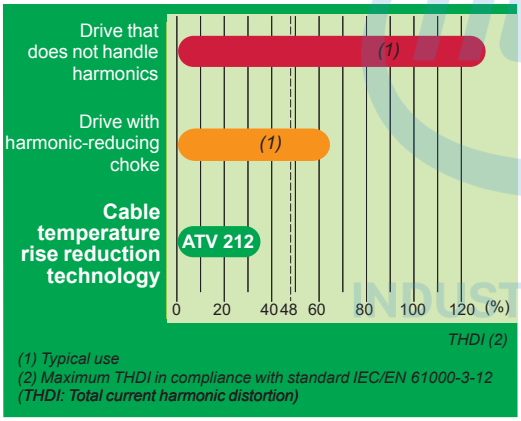
Drives: page 16 | Options: page 19 | Communication: page 24 | Motor starters: page 26

Variable speed drives
Altivar 212


ATV 212HD22N4


ATV 212H075M3X


ATV 212W075N4,
ATV 212W075N4C



An innovative technology for managing current harmonics: cable temperature rise reduction technology

An offer dedicated to HVAC (Heating, Ventilation and Air Conditioning)

The Altivar 212 range of variable speed drives extends across a range of motor power ratings from 0.75 kW to 75 kW with the following types of power supply:
- 200…240 V three-phase, 0.75 kW to 30 kW, IP 21 (**ATV 212H●●●M3X**)
- 380…480 V three-phase, 0.75 kW to 75 kW, IP 21 (**ATV 212H●●●N4**)
- 380…480 V three-phase, 0.75 kW to 75 kW, UL Type 12/IP 55 (**ATV 212W●●●N4** and **ATV 212W●●●N4C**)

Altivar 212 drives are compact IP 21 or UL Type 12/IP 55 products which meet electromagnetic compatibility requirements and reduce current harmonics, causing minimal temperature rise in the cables.

Compliance with electromagnetic compatibility (EMC) requirements for the protection of equipment

The built-in EMC filters in **ATV 212●●●●N4** and **ATV 212W●●●N4C** drives and compliance with EMC requirements simplify installation and provide a very economical means of ensuring devices meet the criteria to receive the CE mark.

The EMC filters can be used to meet the requirements of the IEC/EN 61800-3, category C2 or C3 for **ATV 212●●●●N4,** category C1 for **ATV 212W●●●N4C**.

ATV 212H●●●M3X drives have been designed without an EMC filter. Filters are available as an option and can be installed by the user to reduce emission levels (see pages 22 and 23).

Innovative technology for managing harmonics

Thanks to its cable temperature rise reduction technology, the Altivar 212 drive offers immediate, disturbance-free operation. This technology avoids having to resort to additional options such as a line choke or DC choke to deal with current harmonics.
This makes it possible to obtain a THDI *(1)* of less than 35%, a much lower value than the 48% level of THDI imposed by standard IEC/EN 61000-3-12.

With the Altivar 212 range, you avoid the cost of adding a line choke or DC choke, you reduce the time spent on wiring, you optimize the enclosure size and you reduce the losses.
This technology can also triple the service life of the DC capacitors.

Better management of motor disturbance

The Altivar 212 offers optional motor chokes which can increase the maximum cable lengths between the drive and the motor and limit disturbance at the motor terminals.

Special features

Description	Performance
Degree of protection conforming to IEC/EN 61800-5-1 & IEC/EN 60529	**ATV 212H●●●M3X** and **ATV 212H●●●N4** drives: IP 21 & IP 41 on upper part IP 20 without blanking plate on upper part of cover UL Type 1 with the VW3 A31 81● or VW3 A9 20● kit, see page 18
	ATV 212W●●●N4 and **ATV 212W●●●N4C** drives: UL Type 12/IP 55
Ambient air temperature around the device	**ATV 212H●●●M3X** and **ATV 212H●●●N4** drives: - 10…+ 50°C without derating, + 60°C with derating *(2)*
	ATV 212W●●●N4 and **ATV 212W●●●N4C** drives: - 10…+ 40°C without derating, + 50°C with derating *(2)*
Environmental conditions	Conforming to IEC 60721-3-3 classes 3C1 and 3S2
Analog inputs	■ 1 switch-configurable current or voltage analog input which is configurable as a logic input ■ 1 voltage analog input, configurable as an analog input or as a PTC probe input
Analog output	1 switch-configurable current or voltage output
Logic inputs	■ Three 24 V ⎓ programmable logic inputs, compatible with level 1 PLC, IEC/EN 61131-2 standard ■ 1 positive logic input (Source) ■ 1 negative logic input (Sink)
Configurable relay logic outputs	■ 1 output, one “N/C” contact and one “N/O” contact with common point ■ 1 output, one “N/O” contact

(1) THDI: Total current harmonic distortion
(2) View the derating curves on our website: www.schneider-electric.com.

Variable speed drives
Altivar 212

PF108761

Example of an application requiring the use of dedicated building functions

Integrated functions for simplified use of buildings

Due to its numerous integrated functions, the Altivar 212 drive gets building applications up and running immediately, while ensuring the reliability of equipment with its protection functions.

Dedicated functions for ventilation applications

- Noise reduction due to the switching frequency, which is adjustable up to 16 kHz during operation
- Automatic catching of a spinning load with speed detection
- Adaptation of current limiting according to speed
- Reference calibration and limitation
- Continuity of service is assured by means of the forced operation function with configurable fault inhibition, direction of operation and references.

Protection functions

- Smoke extraction system (forced operation with fault inhibition)
- Damper control with motor stopping if the ventilation shutters are closed
- Machine protection via skip frequency function (resonance suppression).

Dedicated functions for pumping applications

- Sleep/wake-up

Protection functions

- Protection against overloads and overcurrents in continuous operation (pump jamming)
- Machine mechanical protection with control of operating direction
- Protection of the installation by means of underload and overload detection

Universal functions designed specifically for building applications

- Energy saving ratio
- Auto-tuning
- Integrated PID regulator with preset references and automatic/manual (“Auto/Man.”) mode
- Automatic ramp adaptation, ramp switching, ramp profile
- Switching between sets of motor rating data (Multimotor)
- Switching of command channels (references and run command) using the LOC/REM key
- Preset speeds
- Monitoring, measurement of energy consumption
- Electricity and service hours meter

Protection functions

- Motor and drive thermal protection, via a built-in PTC thermistor probe
- Protection via management of multiple faults and configurable alarms

Variable speed drives
Altivar 212

PF100821

Side-by-side mounting of Altivar 212 drives

Easy and inexpensive to mount, appropriate to each application

The compact nature of the Altivar 212 range simplifies installation and reduces costs by optimizing the size of enclosures (whether floor-standing or wall-mounted).

Altivar 212 drives can be mounted in a variety of ways to adapt to the needs of an installation. They can be mounted side by side, and can also be wall-mounted in compliance with UL Type 1 requirements using kits **VW3 A31 81●** and **VW3 A9 20●** (see page 18).
They are designed to operate in an enclosure at an ambient temperature of + 40°C or + 50°C depending on the model, without derating, or from + 50°C or + 60°C depending on the model, with derating.

Please refer to the mounting recommendations on our website: www.schneider-electric.com.

Numerous dialogue and configuration tools

The Altivar 212 range offers a wide range of dialogue and configuration tools that make it quick, easy and cost-effective to run installations.

Drive Navigator 3

The Altivar 212 drive 1 has a remote graphic display terminal (Drive Navigator), common to all Schneider Electric's variable speed drive ranges.
This terminal is very user-friendly when performing startup and maintenance operations thanks to its full-text screen, online help screens and text in the user's language (6 factory-installed languages available).

It can be remotely mounted on an enclosure door with IP 54 or IP 65 degree of protection. See page 19.

Example of dialogue and configuration tools associated with the Altivar 212 range

PCSoft software workshop

The PCSoft software workshop integrates configuration, setup and maintenance functions. It connects directly to the Modbus port on the drive. See page 18.

SoMove Mobile software 2

SoMove Mobile software is a mobile phone application. It can be used to edit the Altivar 212 drive parameters from a mobile phone, save configurations, import them from a PC and export them to a PC.
It can be used with the door closed thanks to the Bluetooth® interface.
See page 20.

Multi-Loader configuration tool 4

The Multi-Loader tool enables configurations to be copied from a PC or a drive and duplicated on another drive. The Altivar 212 drives must be powered-up.
See page 20.

Quick menu tool

The Altivar 212 drive offers a quick setup function in the form of its Quick menu, which includes the 10 key installation parameters (acceleration, deceleration, motor parameters, etc.).

A documented offer

The Altivar 212 range is also presented on a DVD-ROM which includes all the Schneider Electric documentation on variable speed drives and soft start/soft stop units.

The DVD-ROM includes the technical documentation (programming manuals, installation manuals, quick reference guides), brochures and catalogues.
See page 20.

Variable speed drives
Altivar 212
IP 21 drives

PF100600

ATV 212H075M3X
EMC plate not mounted

PF100609

ATV 212HD15N4
EMC plate not mounted

PF100605

ATV 212HD55N4
EMC plate not mounted

IP 21 drives (frequency range from 0.5 to 200 Hz)

Motor		Line supply				Altivar 212					
Power indicated on rating plate		Line current *(1)*		Apparent power	Maximum prospective line Isc	Max. continuous output current (In) *(2)*	Maximum transient current for 60 s	Dissipated power at maximum output current	THDI *(3)*	Reference	Weight
		200 V	240 V	240 V		230 V		240 V			
kW	*HP*	A	A	kVA	kA	A	A	W	%		kg
Three-phase supply voltage: 200…240 V 50/60 Hz, without EMC filter *(4)*											
0.75	*1*	3.3	2.7	1.1	5	4.6	5.1	63	31.3	**ATV 212H075M3X**	1.800
1.5	*2*	6.1	5.1	2.1	5	7.5	8.3	101	31.6	**ATV 212HU15M3X**	1.800
2.2	*3*	8.7	7.3	3	5	10.6	11.7	120	30.7	**ATV 212HU22M3X**	1.800
3	–	–	10	4.2	5	13.7	15.1	146	32.4	**ATV 212HU30M3X**	3.050
4	*5*	14.6	13	5.4	5	18.7	19.3	193	31.1	**ATV 212HU40M3X**	3.050
5.5	*7.5*	20.8	17.3	7.2	22	24.2	26.6	249	30.7	**ATV 212HU55M3X**	6.100
7.5	*10*	27.9	23.3	9.7	22	32	35.2	346	30.8	**ATV 212HU75M3X**	6.100
11	*15*	42.1	34.4	14.3	22	46.2	50.8	459	35.5	**ATV 212HD11M3X**	11.550
15	*20*	56.1	45.5	18.9	22	61	67.1	629	33.3	**ATV 212HD15M3X**	11.550
18.5	*25*	67.3	55.8	23.2	22	74.8	82.3	698	32	**ATV 212HD18M3X**	11.550
22	*30*	80.4	66.4	27.6	22	88	96.8	763	35	**ATV 212HD22M3X**	27.400
30	*40*	113.3	89.5	37.2	22	117	128.7	1085	32.1	**ATV 212HD30M3X**	38.650

Motor		Line supply				Altivar 212					
Power indicated on rating plate		Max. line current *(1)*		Apparent power	Maximum prospective line Isc	Max. continuous output current (In) *(2)*	Maximum transient current for 60 s	Dissipated power at maximum output current	THDI *(3)*	Reference	Weight
		380 V	480 V	380 V		*(5)*		380 V			
kW	*HP*	A	A	kVA	kA	A	A	W	%		kg
Three-phase supply voltage: 380…480 V 50/60 Hz, with integrated category C2 or C3 EMC filter *(4)*											
0.75	*1*	1.7	1.4	1.1	5	2.2	2.4	55	32.8	**ATV 212H075N4**	2.000
1.5	*2*	3.2	2.5	2.1	5	3.7	4	78	30.9	**ATV 212HU15N4**	2.000
2.2	*3*	4.6	3.6	3	5	5.1	5.6	103	30.5	**ATV 212HU22N4**	2.000
3	–	6.2	4.9	4.1	5	7.2	7.9	137	31.2	**ATV 212HU30N4**	3.350
4	*5*	8.1	6.4	5.3	5	9.1	10	176	30.6	**ATV 212HU40N4**	3.350
5.5	*7.5*	10.9	8.6	7.2	22	12	13.2	215	30.5	**ATV 212HU55N4**	3.350
7.5	*10*	14.7	11.7	9.7	22	16	17.6	291	30.9	**ATV 212HU75N4**	6.450
11	*15*	21.1	16.8	13.9	22	22.5	24.8	430	30.4	**ATV 212HD11N4**	6.450
15	*20*	28.5	22.8	18.7	22	30.5	33.6	625	30.9	**ATV 212HD15N4**	11.650
18.5	*25*	34.8	27.8	22.9	22	37	40.7	603	30.5	**ATV 212HD18N4**	11.650
22	*30*	41.1	32.6	27.3	22	43.5	47.9	723	31.9	**ATV 212HD22N4S** ▲	11.650
22	*30*	41.6	33.1	27.3	22	43.5	47.9	626	30.7	**ATV 212HD22N4**	26.400
30	*40*	56.7	44.7	37.3	22	58.5	64.4	847	30	**ATV 212HD30N4**	26.400
37	*50*	68.9	54.4	45.3	22	79	86.9	976	30.3	**ATV 212HD37N4**	38.100
45	*60*	83.8	65.9	55.2	22	94	103.4	1253	30.2	**ATV 212HD45N4**	38.100
55	*75*	102.7	89	67.6	22	116	127.6	1455	32.7	**ATV 212HD55N4**	55.400
75	*100*	141.8	111.3	93.3	22	160	176	1945	31.1	**ATV 212HD75N4**	55.400

Dimensions (overall)

Drives *(5)*		W x H x D	
		EMC plate mounted	EMC plate not mounted
ATV 212H●●●M3X	**ATV 212H●●●N4**	mm	mm
ATV 212075M3X…U22M3X	ATV 212075N4…U22N4	107 x 192 x 150	107 x 143 x 150
ATV 212U30M3X, U40M3X	ATV 212U30N4…U55N4	142 x 232 x 150	142 x 184 x 150
ATV 212U55M3X, U75M3X	ATV 212U75N4, D11N4	180 x 307 x 170	180 x 232 x 170
ATV 212D11M3X…D18M3X	ATV 212D15N4…D22N4S	245 x 405 x 190	245 x 330 x 190
ATV 212D22M3X	ATV 212D22N4, D30N4	240 x 542 x 214	240 x 420 x 214
–	ATV 212D37N4, D45N4	240 x 663 x 244	240 x 550 x 244
ATV 212D30M3X	ATV 212D55N4, D75N4	320 x 723 x 290	320 x 605 x 290

(1) Typical value for the indicated motor power and for the maximum prospective line Isc.
(2) These values are given for a nominal switching frequency of 12 kHz up to ATV 212HD15M3X and up to ATV 212HD15N4 or 8 kHz for ATV 21HD18M3X…HD30M3X and ATV 212HD18N4…HD75N4, for use in continuous operation. The switching frequency can be set between 6 and 16 kHz for all ratings. Above 8 kHz or 12 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. The nominal motor current must not exceed this derating value. See the derating curves on our website www.schneider-electric.com.
(3) Total current harmonic distortion in accordance with IEC/EN 61000-3-12.
(4) Drives are supplied with an EMC plate, for customer assembly.
(5) Value given at 380 V (IEC)/460 V (NEC).

▲ Marketed 2nd half 2011

Variable speed drives
Altivar 212
UL Type 12/IP 55 drives


PF100613

ATV 212W075N4


PF100617

ATV 212WD22N4,
ATV 212WD22N4C

UL Type 12/IP 55 drives (frequency range from 0.5 to 200 Hz)

Motor		Line supply				Altivar 212				
Power indicated on rating plate		Line current (1)		Apparent power	Maximum prospective line Isc	Max. continuous output current (In) (2)	Maximum transient current for 60 s	THDI (3)	Reference	Weight
		380 V	480 V	380 V		380/460 V (IEC/NEC)				
kW	HP	A	A	kVA	kA	A	A	%		kg
Three-phase supply voltage: 380…480 V 50/60 Hz, with integrated category C2 or C3 EMC filter										
0.75	1	1.7	1.4	1.1	5	2.2	2.4	32.8	**ATV 212W075N4**	7.000
1.5	2	3.2	2.5	2.1	5	3.7	4	30.9	**ATV 212WU15N4**	7.000
2.2	3	4.6	3.6	3	5	5.1	5.6	30.5	**ATV 212WU22N4**	7.000
3	–	6.2	4.9	4.1	5	7.2	7.9	31.2	**ATV 212WU30N4**	9.650
4	5	8.1	6.4	5.3	5	9.1	10	30.6	**ATV 212WU40N4**	9.650
5.5	7.5	10.9	8.6	7.2	22	12	13.2	30.5	**ATV 212WU55N4**	9.650
7.5	10	14.7	11.7	9.7	22	16	17.6	30.9	**ATV 212WU75N4**	10.950
11	15	21.2	16.9	14	22	22.5	24.8	30.9	**ATV 212WD11N4**	30.300
15	20	28.4	22.6	18.7	22	30.5	33.6	30.4	**ATV 212WD15N4**	30.300
18.5	25	34.9	27.8	23	22	37	40.7	30.5	**ATV 212WD18N4**	37.400
22	30	41.6	33.1	27.3	22	43.5	47.9	30.7	**ATV 212WD22N4**	49.500
30	40	56.7	44.7	37.3	22	58.5	64.4	30	**ATV 212WD30N4**	49.500
37	50	68.9	54.4	45.3	22	79	86.9	30.3	**ATV 212WD37N4**	57.400
45	60	83.8	65.9	55.2	22	94	103.4	30.2	**ATV 212WD45N4**	57.400
55	75	102.7	89	67.6	22	116	127.6	32.7	**ATV 212WD55N4**	61.900
75	100	141.8	111.3	93.3	22	160	176	31.1	**ATV 212WD75N4**	61.900
Three-phase supply voltage: 380…480 V 50/60 Hz, with integrated category C1 filter										
0.75	1	1.7	1.4	1.1	5	2.2	2.4	32.8	**ATV 212W075N4C**	7.500
1.5	2	3.2	2.6	2.1	5	3.7	4	30.9	**ATV 212WU15N4C**	7.500
2.2	3	4.6	3.7	3	5	5.1	5.6	30.5	**ATV 212WU22N4C**	7.500
3	–	6.2	5	4.1	5	7.2	7.9	31.2	**ATV 212WU30N4C**	10.550
4	5	8.2	6.5	5.4	5	9.1	10	30.6	**ATV 212WU40N4C**	10.550
5.5	7.5	11	8.7	7.2	22	12	13.2	30.5	**ATV 212WU55N4C**	10.550
7.5	10	14.7	11.7	9.7	22	16	17.6	30.9	**ATV 212WU75N4C**	11.850
11	15	21.1	16.7	13.9	22	22.5	24.8	30.9	**ATV 212WD11N4C**	36.500
15	20	28.4	22.8	18.7	22	30.5	33.6	30.4	**ATV 212WD15N4C**	36.500
18.5	25	34.5	27.6	22.7	22	37	40.7	30.5	**ATV 212WD18N4C**	45.000
22	30	41.1	33.1	27.1	22	43.5	47.9	30.7	**ATV 212WD22N4C**	58.500
30	40	58.2	44.4	38.3	22	58.5	64.4	30	**ATV 212WD30N4C**	58.500
37	50	68.9	54.4	45.3	22	79	86.9	30.3	**ATV 212WD37N4C**	77.400
45	60	83.8	65.9	55.2	22	94	103.4	30.2	**ATV 212WD45N4C**	77.400
55	75	102.7	89	67.6	22	116	127.6	32.7	**ATV 212WD55N4C**	88.400
75	100	141.8	111.3	93.3	22	160	176	31.1	**ATV 212WD75N4C**	88.400

Dimensions (overall)

Drives	W x H x D
ATV 212W	**mm**
075N4 (C)…U22N4 (C)	215 x 297 x 192
U30N4 (C)…U75N4 (C)	230 x 340 x 208
D11N4 (C), D15N4 (C)	290 x 560 x 315
D18N4 (C)	310 x 665 x 315
D22N4 (C), D30N4 (C)	284 x 720 x 315
D37N4 (C), D45N4 (C)	284 x 880 x 343
D55N4 (C), D75N4 (C)	362 x 1000 x 364

(1) Typical value for the indicated motor power and for the maximum prospective line Isc.
(2) These values are given for a nominal switching frequency of 12 kHz up to ATV 212WD15N4 and up to ATV 212WD15N4C or 8 kHz for ATV 212WD18N4…WD75N4 and ATV 212WD18N4C…WD75N4C, for use in continuous operation.
The switching frequency can be set between 6 and 16 kHz for all ratings. Above 8 kHz or 12 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. The nominal motor current must not exceed this derating value. See the derating curves on our website www.schneider-electric.com.
(3) Total current harmonic distortion in accordance with IEC/EN 61000-3-12.

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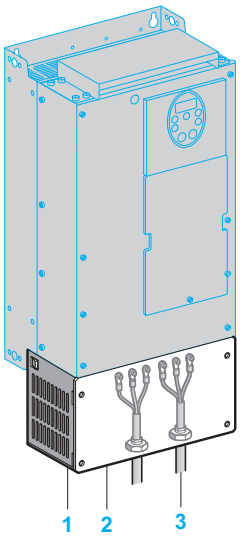
Variable speed drives
Altivar 212
Accessories

DF511742



UL Type 1 conformity kit

UL Type 1 conformity kit (for mounting outside the enclosure)

When the drive is mounted directly on a wall outside the enclosure, this kit can be used to ensure UL Type 1 conformity when connecting the cables via a tube.
The shielding is connected inside the kit.
The kit consists of:
- All the mechanical parts **1** including a pre-cut plate **2** for connecting the tubes **3**
- Fixing accessories
- A manual

References

For drives	Reference	Weight kg
ATV 212H075M3X…HU22M3X ATV 212H075N4…HU22N4	**VW3 A31 814**	0.500
ATV 212HU30M3X, HU40M3X ATV 212HU30N4…HU55N4	**VW3 A31 815**	0.500
ATV 212HU55M3X, HU75M3X ATV 212HU75N4, HD11N4	**VW3 A31 816**	0.900
ATV 212HD11M3X…HD18M3X ATV 212HD15N4…HD22N4S	**VW3 A31 817**	1.200
ATV 212HD22M3X ATV 212HD22N4, HD30N4	**VW3 A9 206**	4.000
ATV 212HD37N4, HD45N4	**VW3 A9 207**	5.000
ATV 212HD30M3X ATV 212HD55N4, HD75N4	**VW3 A9 208**	7.000

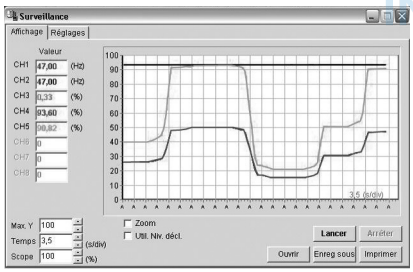
⊔ Rail mounting kit

This kit enables easy installation of ATV 212H075M3X…HU22M3X and ATV 212H075N4…HU22N4 drives by mounting them directly on a 35 mm wide ⊔ rail.

Reference

For drives	Reference	Weight kg
ATV 212H075M3X…HU22M3X ATV 212H075N4…HU22N4	**VW3 A31 852**	0.350

DF511744



"Monitoring" function in PCSoft software workshop

PCSoft software workshop

This PC software workshop is a user-friendly tool for setting up Altivar 212 drives.
It includes various functions such as:
- Configuration preparation
- Setup
- Maintenance

It can be downloaded free of charge from our website www.schneider-electric.com.
It operates in the following PC environments and configurations:
- Microsoft Windows® 98, Microsoft Windows® 2000, Microsoft Windows® XP
- Pentium® 233 MHz or higher, hard disk with 10 MB available, 32 MB RAM
- 256 colour, 640 x 480 pixels or higher definition monitor

Connection

The PCSoft software workshop must be connected directly to the Modbus port on the drive using the PC serial port connection kit.

Reference

Designation	Composition	Reference	Weight kg
PC serial port connection kit for point-to-point Modbus connection	■ One 3 m cable with two RJ45 connectors ■ One RS 232/RS 485 converter with one 9-way female SUB-D connector and one RJ45 connector	**VW3 A8 106**	0.350

Presentation: page 12
Options: page 19
Communication: page 24
Motor starters: page 26

Variable speed drives
Altivar 212 drives
Option: dialogue tool

PF600255

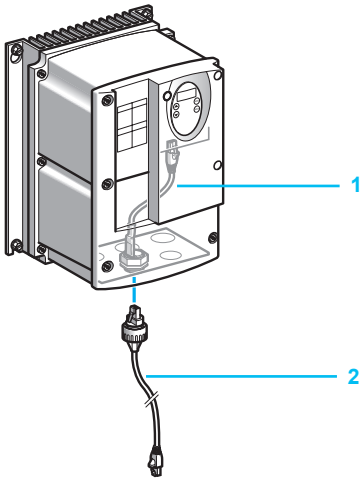
Remote graphic display terminal

DF600259

Remote mounting accessories for graphic display terminal

DF600260

Remote location of the graphic display terminal 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

Remote graphic display terminal

This graphic display terminal, common to all Schneider Electric's variable speed drive ranges, provides a user-friendly interface for configuration, debugging and maintenance. In particular, it is possible to transfer and store up to 4 configuration files.
Used as a portable unit or mounted on an enclosure door, it can also be connected to several drives using remote mounting accessories **(see below)** or multidrop connection accessories (see page 24).

It is supplied with six languages installed (Chinese, English, French, German, Italian and Spanish). The available languages can be modified using the Multi-Loader configuration tool (VW3 A8 121, page 20).
Its maximum operating temperature is 60°C, and it features IP 54 protection; this can be increased to IP 65 when mounted on an enclosure door.

Description

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

2 **Assignable function** keys F1, F2, F3, F4:
- Dialogue functions: direct access, help screens, navigation
- Application functions: “Local Remote”, preset speed

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

4 Motor local control keys:
- RUN: starts the motor
- STOP/RESET : stops the motor/resets drive faults
- FWD/REV: reverses the direction of rotation of the motor

5 **Navigation button:** for quick, easy access to the drop-down menus
- Rotate ±: goes to the next/previous line, increases/decreases the value
- Press: saves the current value (ENT)

References

Designation	Item no.	Length m	Reference	Weight kg
Remote graphic display terminal A remote-mounting cable VW3 A1 104 R●●● and an RJ45 adaptor VW3 A1 105 must be provided	6	–	**VW3 A1 101**	0.180
Accessories for mounting the graphic display terminal remotely				
Remote cables equipped with 2 RJ45 connectors	7	1	**VW3 A1 104 R10**	0.050
		3	**VW3 A1 104 R30**	0.150
		5	**VW3 A1 104 R50**	0.250
		10	**VW3 A1 104 R100**	0.500
Female/female RJ45 adaptor	8	–	**VW3 A1 105**	0.010
Remote mounting kit for mounting on an enclosure door IP 54 degree of protection	9	–	**VW3 A1 102**	0.150
Door for remote mounting kit VW3 A1 102 Can be used to provide IP 65 degree of protection	10	–	**VW3 A1 103**	0.040
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	1	0.3	**VW3 A0 1500**	0.050
		0.6	**VW3 A0 1502**	0.100
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	2	3	**VW3 A0 1501**	0.130

Variable speed drives
Altivar 212
Option: configuration tools, documentation

Configuration with SoMove Mobile software for mobile phones via Bluetooth® wireless connection

SoMove Mobile software for mobile phones

The SoMove Mobile software converts any compatible mobile phone into a remote graphic display terminal, offering an identical Human-Machine Interface (see page 19).
Particularly suitable for on-site or remote maintenance operations, the SoMove Mobile software can be used to edit and save configurations, import them from a PC and export them to a PC, or a drive, via the Bluetooth® wireless link.
It communicates via Bluetooth® wireless link with the drive, which is equipped with the Modbus-Bluetooth® adaptor (**VW3 A8 114**).
It requires a mobile phone with minimum features, please consult our website www.schneider-electric.com.

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

References

Designation	Reference	Weight kg
SoMove Mobile software for mobile phones	Download from our website www.schneider-electric.com	–
Modbus-Bluetooth® adaptor Enables any non-Bluetooth® device to communicate using this technology. It comprises: ■ 1 Bluetooth® adaptor (range 10 m, class 2) with an RJ45 connector ■ For SoMove: 1 x 0.1 m cable with 2 RJ45 connectors ■ … *(1)*	**VW3 A8 114**	0.155

Multi-Loader configuration tool

The Multi-Loader tool enables several configurations to be copied from a PC or a drive and loaded onto another drive; the Altivar 212 drives must be powered-up.

PF100626

Configuration with the Multi-Loader tool connected to the Altivar 212 drive

Reference

Designation	Reference	Weight kg
Multi-Loader configuration tool Supplied with: ■ 1 cable equipped with 2 RJ45 connectors ■ 1 cable equipped with one type A USB connector and one mini B USB connector ■ 1 x SD memory card ■ 1 x female/female RJ 45 adaptor ■ 4 AA/LR6 1.5 V batteries ■ 1 anti-shock protection ■ 1 carrying handle	**VW3 A8 121**	–

Documentation

The Altivar 212 range is also presented on a DVD-ROM which includes all the Schneider Electric technical documentation on variable speed drives and soft start/soft stop units.

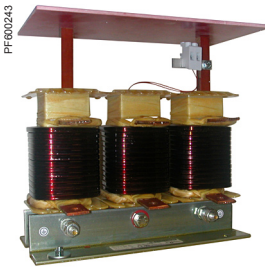
The DVD-ROM includes the technical documentation (programming manuals, installation manuals, quick reference guides), brochures and catalogues.

The content of the DVD-ROM is also available on our website www.schneider-electric.com.

Designation	Reference	Weight kg
"Description of the Motion & Drives offer" DVD-ROM	**VW3 A8 200**	0.100

(1) Also includes other components for connecting compatible Schneider Electric devices.

Variable speed drives
Altivar 212
Management of motor disturbance
Option: motor chokes (output filters)


PF600243

VW3 A5 103

Motor chokes

The motor choke enables operation with motor cables longer than the maximum standard permitted lengths.

It is also used to:
- Limit overvoltages at the motor terminals
- Filter interference caused by opening a contactor placed between the filter and the motor
- Reduce the motor earth leakage current

Choke performance is ensured by not exceeding the cable lengths given below. For an application with several motors connected in parallel, the cable length must include all cabling. If a cable longer than that recommended is used, the motor chokes may overheat.

References

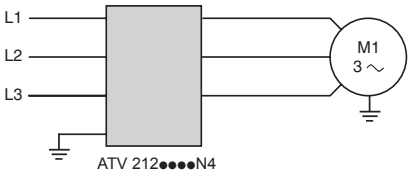
For drives	Maximum motor cable length			Losses	Nominal current	Sold in lots of	Unit reference	Weight
	For a maximum switching frequency	Shielded cable	Unshielded cable					
	kHz	m	m	W	A			kg
Three-phase supply voltage: 200…240 V 50/60 Hz								
ATV 212H075M3X…HD11M3X	6	100	150	350	90	–	**VW3 A5 103**	10.000
ATV 212HD15M3X	6	100	150	430	215	3	**VW3 A5 104**	15.500
ATV 212HD18M3X…HD30M3X	6	150	300	430	215	3	**VW3 A5 104**	15.500
Three-phase supply voltage: 380…480 V 50/60 Hz								
ATV 212H075N4…HD11N4 ATV 212W075N4…WD11N4 ATV 212W075N4C…WD11N4C	6	100	150	350	90	–	**VW3 A5 103**	10.000
ATV 212HD15N4 ATV 212WD15N4 ATV 212WD15N4C	6	100	150	430	215	3	**VW3 A5 104**	15.500
ATV 212HD18N4, HD75N4 ATV 212WD18N4, WD75N4 ATV 212WD18N4C, WD75N4C	6	150	300	430	215	3	**VW3 A5 104**	15.500

IP 20 protection kit

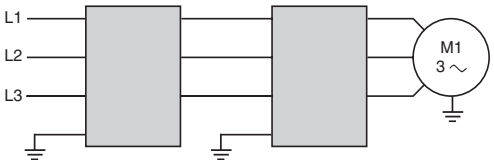
VW3 A5 10● motor chokes provide IP 00 degree of protection as standard.
This kit gives the VW3 A5 104 choke IP 20 degree of protection.

Designation	For motor choke	Reference	Weight kg
Mechanical kit including an IP 20 cover and cable clips	VW3 A5 104	**VW3 A9 612**	–

Variable speed drives
Altivar 212
Management of electromagnetic compatibility
Integrated EMC filters and optional additional filters



ATV 212●●●●N4
ATV 212W●●●N4C
with integrated
filter



Additional
EMC filter

ATV 212H●●●M3X
ATV 212H●●●N4

PF100624

Mounting the filter beside the Altivar 212 drive

PF100625

Mounting the filter under the Altivar 212 drive

Integrated EMC filters

Altivar 212 drives, except for ATV 212H●●●M3X, have integrated radio interference input filters to comply with the EMC standard for variable speed electrical power drive "products" IEC/EN 61800-3, edition 2, category C1, C2 or C3 in environment 1 or 2 and to comply with the European EMC (electromagnetic compatibility) directive.

Drives	Maximum length of shielded cable *(1)* according to			Leakage current *(2)*
	EN 55011 class B Gr1	EN 55011 class A Gr1		
	IEC/EN 61800-3	IEC/EN 61800-3		
	Category C1	Category C2	Category C3	
	m	m	m	mA
IP 21 drives				
ATV 212H075N4…HU22N4	–	20	20	4.5
ATV 212HU30N4…HU55N4	–	5	20	5.8
ATV 212HU75N4, HD11N4	–	5	20	2.9
ATV 212HD15N4, HD18N4	–	5	20	4.8
ATV 212HD22N4S	–	–	5	25.3
ATV 212HD22N4, HD30N4	–	–	20	25.3
ATV 212HD37N4, HD45N4	–	–	20	21.5
ATV 212HD55N4, HD75N4	–	–	100	9.1
UL Type 12/IP 55 drives				
ATV 212W075N4…WU22N4	–	5	–	4.5
ATV 212WU30N4…WU55N4	–	5	20	5.8
ATV 212WU75N4	–	5	10	2.9
ATV 212WD11N4, WD15N4	–	5	10	13.3
ATV 212WD18N4	–	5	20	9.4
ATV 212WD22N4, WD30N4	–	5	–	25.3
ATV 212WD37N4, WD45N4	–	–	20	21.5
ATV 212WD55N4, WD75N4	–	–	100	9.1
ATV 212W075N4C…WU22N4C	20	20	20	18.4
ATV 212WU30N4C…WU55N4C	20	50	50	42.8
ATV 212WU75N4C	20	50	50	37.2
ATV 212WD11N4C, WD15N4C	20	50	50	81
ATV 212WD18N4C	20	50	50	77.2
ATV 212WD22N4C, WD30N4C	20	50	50	84.5
ATV 212WD37N4C, WD45N4C	20	50	50	53.6
ATV 212WD55N4C, WD75N4C	20	20	50	56.9

Additional EMC input filters

Applications

Additional EMC input filters enable drives to meet more stringent requirements: they 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 C1, C2 or C3.

The additional EMC filters can be mounted beside or under the drive. The drive's power supply is then connected directly via the filter output cable.

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

(1) Maximum lengths for shielded cables connecting motors to drives for a switching frequency of 6 to 16 kHz. If motors are connected in parallel, the sum of the cable lengths must be taken into account.
(2) Maximum earth leakage current at 480 V 60 Hz on a TT system.

Variable speed drives
Altivar 212
Management of electromagnetic compatibility
Option: additional EMC input filters

Additional EMC input filters (continued)

Use according to the type of line supply

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

Standard IEC/EN 61800-3, appendix D2.1, states that on IT systems (isolated or impedance earthed neutral), filters can cause permanent insulation monitors to operate in a random manner.
In addition, the effectiveness of additional filters on this type of system depends on the type of impedance between neutral and earth, and therefore cannot be predicted.
If a machine has to be installed on an IT system, the solution would be to insert an isolation transformer and connect the machine locally on a TN or TT system.

ATV 212●●●●N4 and ATV 212W●●●N4C drives have integrated EMC filters. These filters can be easily disconnected for use on the line supply and, if necessary, reconnected just as easily (see the User Manual).

PF511750

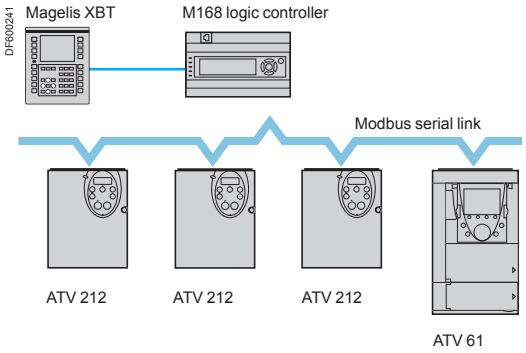
VW3 A31 404

References

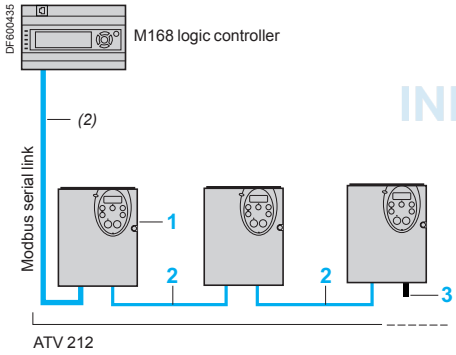
For drives	Maximum length of shielded cable *(1)* according to		In *(2)*	If *(3)*	Loss *(4)*	Reference	Weight
	EN 55011 class B Gr1	EN 55011 class A Gr1					
	IEC/EN 61800-3 category C1	IEC/EN 61800-3 category C2 or C3					
	m	m	A	mA	W		kg
Three-phase supply voltage: 200…240 V 50/60 Hz							
ATV 212H075M3X	20	20	15	6.7	0.47	**VW3 A31 404**	1.000
ATV 212HU15M3X	20	20	15	6.7	1.6	**VW3 A31 404**	1.000
ATV 212HU22M3X	20	20	15	6.7	3.3	**VW3 A31 404**	1.000
ATV 212HU30M3X	20	20	25	17.8	3.6	**VW3 A31 406**	1.650
ATV 212HU40M3X	20	20	25	17.8	6.2	**VW3 A31 406**	1.650
ATV 212HU55M3X	–	20	47	20.6	3.7	**VW3 A31 407**	3.150
ATV 212HU75M3X	–	20	47	20.6	6.8	**VW3 A31 407**	3.150
ATV 212HD11M3X	–	20	83	14.5	9.1	**VW3 A31 408**	5.300
ATV 212HD15M3X	–	20	83	14.5	16	**VW3 A31 408**	5.300
ATV 212HD18M3X	–	20	83	14.5	23.1	**VW3 A31 408**	5.300
ATV 212HD22M3X	–	100	90	40.6	27.1	**VW3 A4 406**	15.000
ATV 212HD30M3X	–	20	180	86.3	23.1	**VW3 A4 408**	40.000
Three-phase supply voltage: 380…480 V 50/60 Hz							
ATV 212H075N4	20	50	15	13.8	0.13	**VW3 A31 404**	1.000
ATV 212HU15N4	20	50	15	13.8	0.45	**VW3 A31 404**	1.000
ATV 212HU22N4	20	50	25	13.8	0.9	**VW3 A31 404**	1.000
ATV 212HU30N4	20	50	25	37	1	**VW3 A31 406**	1.650
ATV 212HU40N4	20	50	25	37	1.6	**VW3 A31 406**	1.650
ATV 212HU55N4	20	50	25	37	3	**VW3 A31 406**	1.650
ATV 212HU75N4	20	90	47	42.8	1.9	**VW3 A31 407**	3.150
ATV 212HD11N4	20	90	47	42.8	3.9	**VW3 A31 407**	3.150
ATV 212HD15N4	20	50	49	42.8	9.2	**VW3 A31 409**	4.750
ATV 212HD18N4, HD22N4S	20	50	49	42.8	13.8	**VW3 A31 409**	4.750
ATV 212HD22N4	–	100	90	84.5	7.3	**VW3 A4 406**	15.000
ATV 212HD30N4	–	100	90	84.5	13.5	**VW3 A4 406**	15.000
ATV 212HD37N4	100	100	92	106	16	**VW3 A4 407**	17.000
ATV 212HD45N4	100	100	92	106	23	**VW3 A4 407**	17.000
ATV 212HD55N4	100	100	180	193	18	**VW3 A4 408**	40.000
ATV 212HD75N4	100	100	180	193	34	**VW3 A4 408**	40.000

(1) The above table gives the maximum lengths for shielded cables connecting motors to drives for a switching frequency of 6 to 16 kHz. 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, the sum of the cable lengths must be taken into account.
(2) Nominal filter current.
(3) Maximum earth leakage current at 230 V and at 480 V 60 Hz on a TT system.
(4) Via heat dissipation.

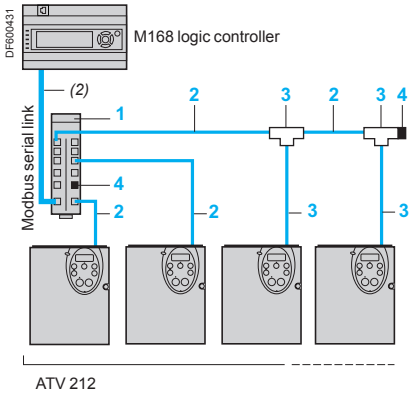
Variable speed drives
Altivar 212
Communication buses and networks



Example of configuration on the Modbus serial link



Optimized solution for daisy chain connection to the Modbus serial link



Connection via splitter box with RJ45 connectors on Modbus serial link

Communication dedicated to building management

The Altivar 212 drive is designed to suit the configurations found in communicating installations created for buildings (HVAC) *(1)*.

It is easily integrated in building management systems thanks to its integrated communication protocols. In addition, the LonWorks communication card offered as an option **provides the user with an open and interoperable system.**

Integrated communication protocols

The Altivar 212 drive integrates a standard card which supports the Modbus, METASYS N2, APOGEE FLN P1 and BACnet communication protocols.

For optimum management flexibility, two communication ports, located on the front of the drive, with the door open, enable simultaneous connection to a communication network and an HMI terminal.

Description

The Altivar 212 drive has been designed to simplify connections to communication networks by offering directly accessible connections:

■ An RJ45 communication port for the Modbus serial link:
this network port is mainly assigned to the remote graphic display terminal (Drive Navigator).

It is also used to connect:
- The Multi-Loader configuration tool
- The Bluetooth® serial link
- A Magelis industrial HMI terminal

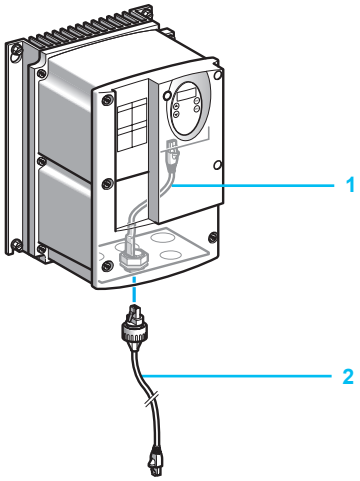
■ A screw terminal block for Modbus, METASYS N2, APOGEE FLN P1 and BACnet networks (optimized solution for daisy chain connection).
This screw terminal block is assigned to control and signalling by a PLC or by another type of controller.

The characteristics of the communication ports are available on our website: www.schneider-electric.com.

Description		Item no.	Length m	Unit reference	Weight kg
Connection accessories for Modbus serial link (optimized solution for daisy chain connection)					
RS 485 double shielded twisted pair Modbus cable Supplied without connector		1	100	**TSX CSA 100**	–
Modbus drop cable 1 RJ45 connector and one stripped end		2	3	**VW3 A8 306 D30**	0.150
Line termination For screw terminals *(3)*	R = 120 Ω C = 1 nf	3	–	**VW3 A8 306 DRC**	0.200
	R = 150 Ω	3	–	**VW3 A8 306 DR**	0.200
Other connection accessories for Modbus serial link					
Modbus splitter box 10 RJ45 connectors and 1 screw terminal block		1	–	**LU9 GC3**	0.500
Cordsets for Modbus serial link equipped with 2 RJ45 connectors		2	0.3	**VW3 A8 306 R03**	0.025
			1	**VW3 A8 306 R10**	0.060
			3	**VW3 A8 306 R30**	0.130
Modbus T-junction boxes with integrated cable		3	0.3	**VW3 A8 306 TF03**	0.190
			1	**VW3 A8 306 TF10**	0.210
Line terminator *(3)* For RJ45 connector		4	–	**VW3 A8 306 RC**	0.010

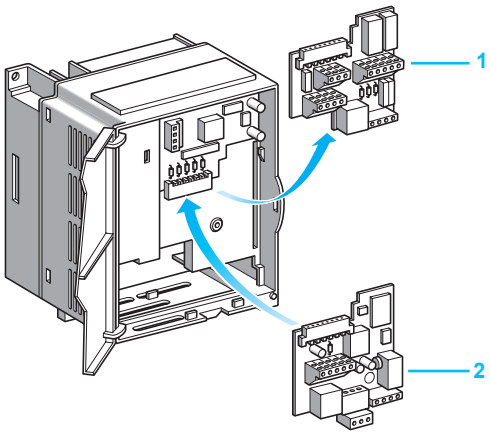
(1) Heating, Ventilation and Air Conditioning.
(2) Cable dependent on the type of controller or PLC.
(3) Sold in lots of 2.

Variable speed drives
Altivar 212
Communication buses and networks



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

LonWorks communication card VW3 A21 212



Replacement of the drive standard card 1 with the LonWorks communication card 2

Integrated communication protocols (continued)

Description	Item no.	Length m	Reference	Weight kg
RJ45 connection accessories with IP 55 degree of protection				
Internal IP 55 cable 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	1	0.3	**VW3 A0 1500**	0.050
		0.6	**VW3 A0 1502**	0.100
IP 55 cordsets equipped with an RJ45 connector and an IP 55 RJ45 base. They can be used to connect a drive equipped with a VW3 A0 150● cable	2	3	**VW3 A0 1501**	0.130

Optional LonWorks communication card

The Altivar 212 drive can also be connected to the LonWorks network by using the communication card 2 available as an option. It is connected by replacing the standard card 1 on the drive.

The connections are identical to those on the standard card:
- An RJ45 communication port for the Modbus serial link:

this network port is mainly assigned to the remote graphic display terminal (Drive Navigator).
It is also used to connect:
- The Multi-Loader configuration tool
- The Bluetooth® serial link
- A Magelis industrial HMI terminal

- A screw terminal block for the Modbus serial link and the LonWorks network (optimized solution for daisy chain connection).

This screw terminal block is assigned to control and signalling by a PLC or by another type of controller.

The Altivar 212 drive can be controlled using the LonWorks 6010 (Variable Speed Motor Drive) and LonWorks 0000 (Node Object) profiles.

An xif description file is supplied on the documentation DVD-ROM (see page 18) or can be downloaded from our website: www.schneider-electric.com.

Reference		
Description	**Reference**	**Weight kg**
LonWorks communication card *(1)*	**VW3 A21 212**	0.200

Functions

All the drive functions can be accessed via the network:
- Control
- Monitoring
- Adjustment
- Configuration

The speed control and reference may come from different sources:
- I/O terminals
- Communication network
- Drive Navigator

The advanced functions of the Altivar 212 enable switching of these drive control sources to be managed in accordance with the application requirements.

Communication is monitored according to criteria specific to 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 or braked stop
- Maintain last command received

(1) The user manual is supplied on CD-ROM or can be downloaded from our website: www.schneider-electric.com.

Variable speed drives
Altivar 212
Motor starters: 200…240 V and 380…415 V supply voltages

+

+

GV2 L20
+
LC1 D09
+
ATV 212HU40M3X

Applications

Circuit-breaker/contactor/drive combinations can be used to ensure continuous service of the installation with optimum safety.
The type of circuit-breaker/contactor combination selected can reduce maintenance costs in the event of a motor short-circuit by minimizing the time required to make the necessary repairs and the cost of replacement equipment.

Motor starters for IP 21 drives

Motor		Drive	Circuit-breaker			Line contactor
Power *(1)*		Reference	Reference *(2)*	Rating	Im	Reference *(3) (4)*
kW	*HP*			A	A	
Three-phase supply voltage: 200…240 V 50/60 Hz						
0.75	*1*	**ATV 212H075M3X**	**GV2 L08**	4	–	**LC1 D09••**
1.5	*2*	**ATV 212HU15M3X**	**GV2 L10**	6.3	–	**LC1 D09••**
2.2	*3*	**ATV 212HU22M3X**	**GV2 L14**	10	–	**LC1 D09••**
3	–	**ATV 212HU30M3X**	**GV2 L16**	14	–	**LC1 D09••**
4	*5*	**ATV 212HU40M3X**	**GV2 L20**	18	–	**LC1 D09••**
5.5	*7.5*	**ATV 212HU55M3X**	**GV2 L22**	25	–	**LC1 D09••**
7.5	*10*	**ATV 212HU75M3X**	**GV2 L32**	32	–	**LC1 D18••**
11	*15*	**ATV 212HD11M3X**	**GV3 L50**	50	–	**LC1 D32••**
15	*20*	**ATV 212HD15M3X**	**GV3 L65**	65	–	**LC1 D40••**
18.5	*25*	**ATV 212HD18M3X**	**NSX100•MA100**	100	600	**LC1 D80••**
22	*30*	**ATV 212HD22M3X**	**NSX100•MA100**	100	600	**LC1 D80••**
30	*40*	**ATV 212HD30M3X**	**NSX160•MA150**	150	1350	**LC1 D115••**
Three-phase supply voltage: 380…415 V 50/60 Hz						
0.75	*1*	**ATV 212H075N4**	**GV2 L07**	2.5	–	**LC1 D09••**
1.5	*2*	**ATV 212HU15N4**	**GV2 L08**	4	–	**LC1 D09••**
2.2	*3*	**ATV 212HU22N4**	**GV2 L10**	6.3	–	**LC1 D09••**
3	–	**ATV 212HU30N4**	**GV2 L10**	6.3	–	**LC1 D09••**
4	*5*	**ATV 212HU40N4**	**GV2 L14**	10	–	**LC1 D09••**
5.5	*7.5*	**ATV 212HU55N4**	**GV2 L16**	14	–	**LC1 D09••**
7.5	*10*	**ATV 212HU75N4**	**GV2 L20**	18	–	**LC1 D09••**
11	*15*	**ATV 212HD11N4**	**GV2 L22**	25	–	**LC1 D09••**
15	*20*	**ATV 212HD15N4**	**GV2 L32**	32	–	**LC1 D18••**
18.5	*25*	**ATV 212HD18N4**	**GV3 L40**	40	–	**LC1 D32••**
22	*30*	**ATV 212HD22N4S**	**GV3 L50**	50	–	**LC1 D32••**
22	*30*	**ATV 212HD22N4**	**GV3 L50**	50	–	**LC1 D32••**
30	*40*	**ATV 212HD30N4**	**GV3 L65**	65	–	**LC1 D40••**
37	*50*	**ATV 212HD37N4**	**NS80HMA80**	80	480	**LC1 D80••**
45	*60*	**ATV 212HD45N4**	**NSX100•MA100**	100	600	**LC1 D115••**
55	*75*	**ATV 212HD55N4**	**NSX160•MA150**	150	1350	**LC1 D115••**
75	*100*	**ATV 212HD75N4**	**NSX250•MA220**	220	1980	**LC1 F185••**

(1) Standard power ratings for 4-pole motors, 230 V for ATV 212H•••M3X or 400 V for ATV 212H•••N4 in 50/60 Hz. The values expressed in HP conform to the NEC (National Electrical Code).
(2) Breaking capacity of GV2, GV3, NS80HMA or NSX circuit-breakers according to standard IEC 60947-2 (in the reference, replace the dot with the letter corresponding to the circuit-breaker breaking performance (B, F, N, H, S or L)):

Circuit-breaker	Icu (kA) for 240 V	Icu (kA) for 400 V
GV2 L07	–	100
GV2 L08…GV2 L14	100	100
GV2 L16, GV2 L20	100	50
GV2 L22, GV2 L32	50	50
GV3 L40	–	50
GV3 L50, GV3 L65	100	50
NS80HMA	–	70

Circuit-breaker		Icu (kA)					
		B	F	N	H	S	L
NSX100•MA, NSX160•MA	240 V	40	85	85	100	120	150
NSX100•MA…NSX250•MA	400 V	25	36	50	70	100	150

(3) Composition of contactors:
LC1 D09 to LC1 D115: 3 poles + 1 "N/O" auxiliary contact and 1 "N/C" auxiliary contact.
LC1 F185: 3 poles. To add auxiliary contacts or other accessories, please refer to the "Motor-starter solutions - Motor control and protection components" catalogue.
(4) Replace •• with the control circuit voltage reference given in the table below:

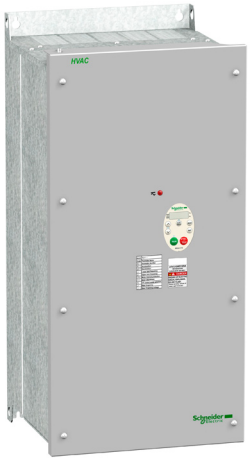
Contactor (∿)		24 V	48 V	110 V	220 V	230 V	240 V
LC1 D09…D115	50/60 Hz	**B7**	**E7**	**F7**	**M7**	**P7**	**U7**
LC1 F185	40…400 Hz (LX9 coil)	–	**E7**	**F7**	**M7**	**P7**	**U7**

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

Variable speed drives
Altivar 212
Motor starters: 380…415 V supply voltage

+

+



GV3 L40
+
LC1 D25
+
ATV 212WD18N4

Motor starters for UL type 12/IP 55 drives

Motor Power *(1)*		Drive Reference	Circuit-breaker Reference *(2)*	Rating	Im	Line contactor Reference *(3) (4)*
kW	HP			A	A	
Three-phase supply voltage: 380…415 V 50/60 Hz						
0.75	*1*	**ATV 212W075N4** **ATV 212W075N4C**	**GV2 L07**	2.5	–	**LC1 D09●●**
1.5	*2*	**ATV 212WU15N4** **ATV 212WU15N4C**	**GV2 L08**	4	–	**LC1 D09●●**
2.2	*3*	**ATV 212WU22N4** **ATV 212WU22N4C**	**GV2 L10**	6.3	–	**LC1 D09●●**
3	–	**ATV 212WU30N4** **ATV 212WU30N4C**	**GV2 L10**	6.3	–	**LC1 D09●●**
4	*5*	**ATV 212WU40N4** **ATV 212WU40N4C**	**GV2 L14**	10	–	**LC1 D09●●**
5.5	*7.5*	**ATV 212WU55N4** **ATV 212WU55N4C**	**GV2 L16**	14	–	**LC1 D09●●**
7.5	*10*	**ATV 212WU75N4** **ATV 212WU75N4C**	**GV2 L20**	18	–	**LC1 D09●●**
11	*15*	**ATV 212WD11N4** **ATV 212WD11N4C**	**GV2 L22**	25	–	**LC1 D09●●**
15	*20*	**ATV 212WD15N4** **ATV 212WD15N4C**	**GV2 L32**	32	–	**LC1 D18●●**
18.5	*25*	**ATV 212WD18N4** **ATV 212WD18N4C**	**GV3 L40**	40	–	**LC1 D25●●**
22	*30*	**ATV 212WD22N4** **ATV 212WD22N4C**	**GV3 L50**	50	–	**LC1 D32●●**
30	*40*	**ATV 212WD30N4** **ATV 212WD30N4C**	**GV3 L65**	65	–	**LC1 D40●●**
37	*50*	**ATV 212WD37N4** **ATV 212WD37N4C**	**NS80HMA80**	80	480	**LC1 D80●●**
45	*60*	**ATV 212WD45N4** **ATV 212WD45N4C**	**NSX100●MA100**	100	600	**LC1 D80●●**
55	*75*	**ATV 212WD55N4** **ATV 212WD55N4C**	**NSX160●MA150**	150	1350	**LC1 D115●●**
75	*100*	**ATV 212WD75N4** **ATV 212WD75N4C**	**NSX250●MA150**	150	1350	**LC1 D115●●**

(1) Standard power ratings for 400 V 50/60 Hz 4-pole motors.
The values expressed in HP conform to the NEC (National Electrical Code).
(2) Breaking capacity of GV2, GV3, NS80HMA or NSX circuit-breakers according to standard IEC 60947-2 (in the reference, replace the dot with the letter corresponding to the circuit-breaker breaking performance (B, F, N, H, S or L)):

Circuit-breaker	Icu (kA) for 400 V
GV2 L07…GV2 L14	100
GV2 L16…GV2 L32 **GV3 L40…GV3 L65**	50
NS80HMA	70

Circuit-breaker		Icu (kA)					
		B	F	N	H	S	L
NSX●●●●MA	400 V	25	36	50	70	100	150

(3) Composition of contactors:
LC1 D09 to LC1 D115: 3 poles + 1 "N/O" auxiliary contact and 1 "N/C" auxiliary contact.
(4) Replace ●● with the control circuit voltage reference given in the table below:

Contactor (∿)		24 V	48 V	110 V	220 V	230 V	240 V
LC1 D09…D115	50/60 Hz	**B7**	**E7**	**F7**	**M7**	**P7**	**U7**

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