Presentation

Variable speed drives



Ventilation application



Air conditioning application



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 60330/5).

Drives:	Options:	Communication:	Motor starters:	
page 60331/2	page 60331/5	page 60332/2	page 60333/2	
2		Schneider	version: 1.1	60330-EN.indd

Presentation (continued)

Variable speed drives

Altivar 212



ATV 212HD22N4





ATV 212W075N4, ATV 212W075N4C



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 212HeeeM3X)
 380...480 V three-phase, 0.75 kW to 75 kW, IP 21 (ATV 212HeeeN4)
- 380...480 V three-phase, 0.75 kW to 75 kW, IP 21 (ATV 212H000)
 380...480 V three-phase, 0.75 kW to 75 kW, UL Type 12/IP 55
- (ATV 212WeeN4 and ATV 212WeeN4C)

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 2120001** and **ATV 212W00014** 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 212000N4**, category C1 for **ATV 212W00N4C**.

ATV 212HeeeM3X 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 60331/8 and 60331/9).

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 feature	es
Description	Performance
Degree of protection conforming to EC/EN 61800-5-1 & EC/EN 60529	ATV 212HeeeM3X and ATV 212HeeeN4 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 81e or VW3 A9 20e kit, see page 60331/4 ATV 212WeeeN4 and ATV 212WeeeN4C drives: UL Type 12/IP 55
Ambient air emperature	ATV 212HeeeM3X and ATV 212HeeeN4 drives: - 10+ 50°C without derating, + 60°C with derating (2)
around the device	ATV 212WeeeN4 and ATV 212WeeeN4C 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
ogic 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 ogic 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 2) View the derating cu	harmonic distortion ırves on our website: www.schneider-electric.com.



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

Schneider Blectric

version: 1.1

Variable speed drives

Altivar 212



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

Drives:	Options:	Communication:	Motor starters:	
page 60331/2	page 60331/5	page 60332/2	page 60333/2	
4		Schneider Electric	version: 1.1	60330-EN.indo

Presentation (continued)

Variable speed drives

Altivar 212



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 60331/4).

They are designed to operate in an enclosure at an ambient temperature of $+40^{\circ}$ C or $+50^{\circ}$ C depending on the model, without derating, or from $+50^{\circ}$ C or $+60^{\circ}$ 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 60331/5.

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 60331/4.

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 60331/6.

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 60331/6.

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 60331/6.

Example of dialogue and configura he Altivar 212 range	4 Figure 1
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3

Drives:	Options:	Communication:	Motor starters:		
page 60331/2	page 60331/5	page 60332/2	page 60333/2		
60330-EN.indd		Schneider Gelectric	version: 1.1		5