

# Altivar 212 variable speed drives

for 3-phase asynchronous motors from 0.75 to 75 kW

Catalogue

March 2011





# The new generation of dedicated HVAC drives

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# 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

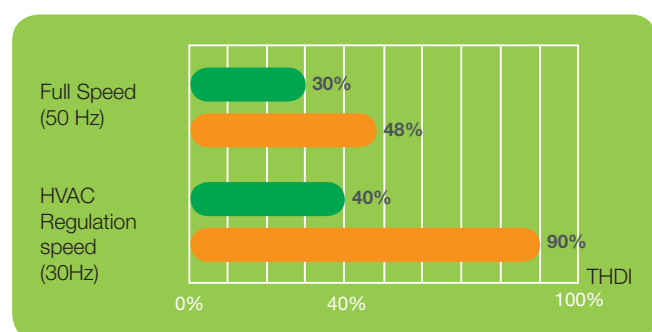
- Easy set-up, commissioning and diagnostics tools: remote graphic terminal (6 languages as standard), Multi-Loader, PC Software, Bluetooth capability and SoMove Mobile software.
- Compact size for better integration.

### 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  $\approx$  30%).



- Altivar 212 antiharmonic technology
- Drives with integrated DC choke

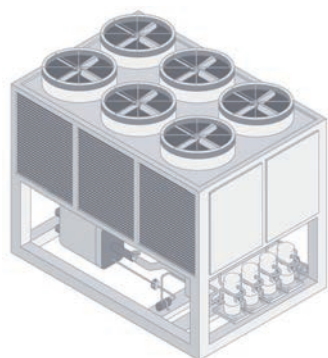


\*HVAC: Heating, Ventilation, Air Conditioning.

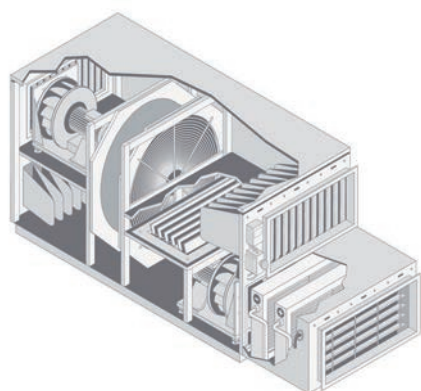
# A single product...

## Ventilation

### Air cooling unit



### Air Handling Unit



### Comfort

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

### Security

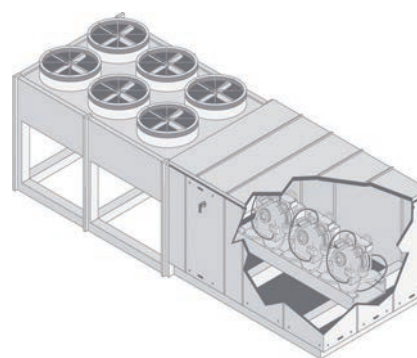
- Detection of belt breakage.
- Smoke extraction: forced operation with fault inhibition.

### Simplicity

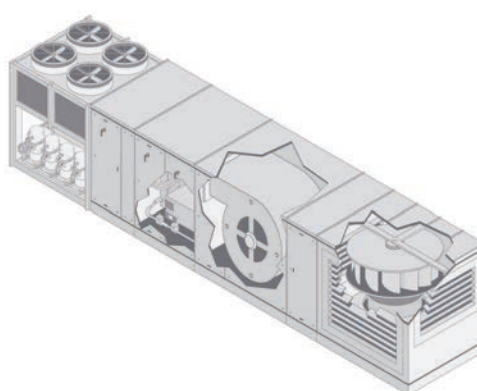
- Automatic restart.
- Damper management.
- Preset speeds for a simple automatic control sequence.

## Heating and air conditioning

### Condensation unit



### Roof Top Unit: ventilation block



### 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

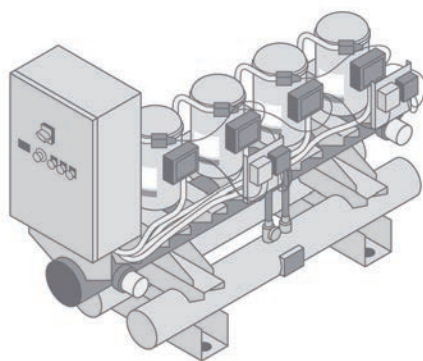
- Suppression of mechanical resonance.

### Building management system

- Connection to building supervision network.

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

## Pumping



### Security

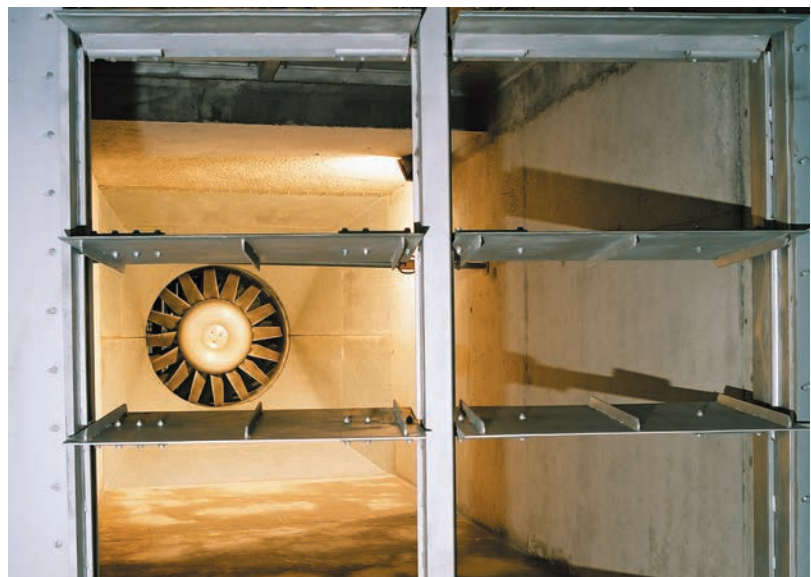
- Detection of underload/overload, pump running dry.
- Multi-motor configuration.

### 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  $\approx$  30%**  
as standard

# More user-friendliness and integration

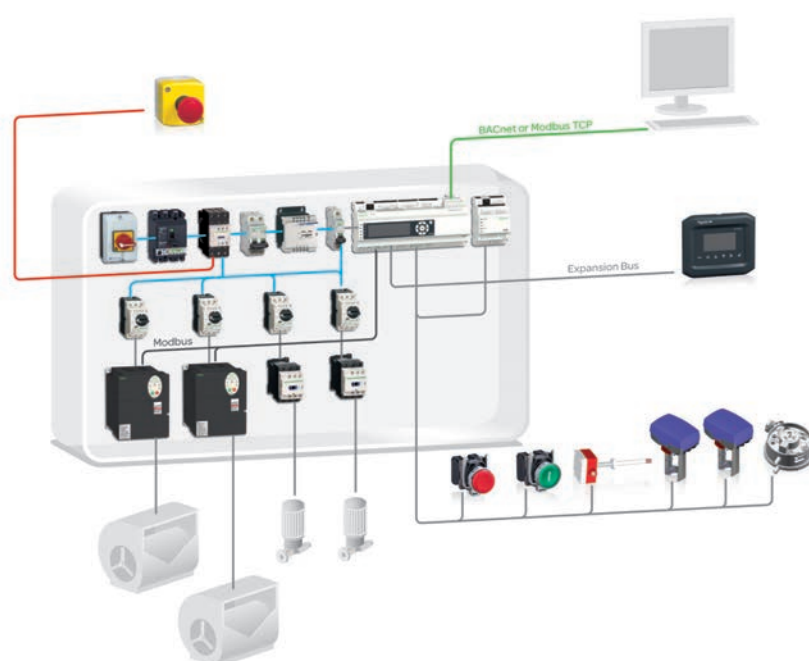
The Altivar 212 provides maximum ease of use and security for system integrators and end-users. Set-up, operation and maintenance are simplified with its user-friendliness and enhanced communication.



More dialogue using the communication tools.



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



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.

## > 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.

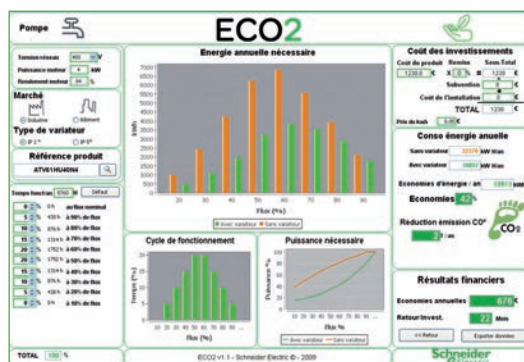


## Calculate your potential energy savings

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<sub>2</sub> emissions.
- The calculation of the return on investment time.

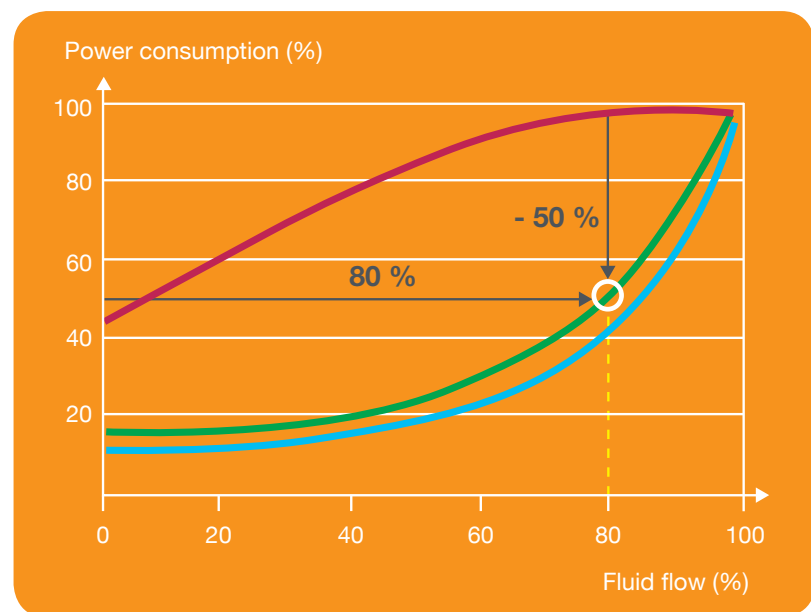


At 80% flow rate, the energy consumption drops 50%. Using the Altivar 212, energy consumption is reduced on average by 30% when using the control mode dedicated to pumps and fans.

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 1001...20 V (kW) | 0.180...0.75                                                                                                                             | —                                                                                                   | —                                                                                           |  |
|                                             | Single-phase 2002...40 V (kW) | 0.182...0.2                                                                                                                              | 0.182...0.2                                                                                         | —                                                                                           |  |
|                                             | Three-phase 200...230 V (kW)  | —                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
|                                             | Three-phase 200...240 V (kW)  | 0.184...                                                                                                                                 | 0.181...0.5                                                                                         | 0.753...0                                                                                   |  |
|                                             | Three-phase 3804...80 V (kW)  | —                                                                                                                                        | —                                                                                                   | 0.757...0.5                                                                                 |  |
|                                             | Three-phase 3805...00 V (kW)  | —                                                                                                                                        | 0.371...0.5                                                                                         | —                                                                                           |  |
|                                             | Three-phase 500...600 V (kW)  | —                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
|                                             | Three-phase 525...600 V (kW)  | —                                                                                                                                        | 0.751...0.5                                                                                         | —                                                                                           |  |
|                                             | Three-phase 500...690 V (kW)  | —                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
| Degree of protection                        |                               | IP 20                                                                                                                                    |                                                                                                     | IP 21                                                                                       |  |
| Type of cooling                             |                               | Heat sink                                                                                                                                |                                                                                                     |                                                                                             |  |
| Drive                                       | Output frequency              | 0.14...00 Hz                                                                                                                             | 0.15...00 Hz                                                                                        | 0.52...00 Hz                                                                                |  |
|                                             | Type of control               | Standard (voltage/frequency)<br>Performance (sensorless flux vector control)<br>Pump/fan (Kn <sup>2</sup> quadratic ratio)               | Standard (voltage/frequency)<br>Performance (sensorless flux vector control)<br>Energy saving ratio | Sensorless flux vector control<br>Voltage/frequency ratio (2 points)<br>Energy saving ratio |  |
|                                             | Speed synchronous motor       | —                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
| Transient over torque                       |                               | 1501...70% of the nominal motor torque                                                                                                   | 1702...00% of the nominal motor torque                                                              | 120% of the nominal motor torque                                                            |  |
| Functions                                   |                               | 40                                                                                                                                       | 50                                                                                                  | 50                                                                                          |  |
| Number of functions                         |                               | 8                                                                                                                                        | 16                                                                                                  | 7                                                                                           |  |
| Number of pre-sets                          |                               | 1                                                                                                                                        | 3                                                                                                   | 2                                                                                           |  |
| Number of I/O                               | Analog inputs                 | 4                                                                                                                                        | 6                                                                                                   | 3                                                                                           |  |
|                                             | Logic inputs                  | 1                                                                                                                                        | 1                                                                                                   | 1                                                                                           |  |
|                                             | Analog outputs                | 1                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
|                                             | Logic outputs                 | 1                                                                                                                                        | 2                                                                                                   | 2                                                                                           |  |
| Relay outputs                               |                               | 1                                                                                                                                        | —                                                                                                   | —                                                                                           |  |
| Communication                               |                               | Modbus                                                                                                                                   | Modbus and CANopen                                                                                  | Modbus METASYS N2, APOGEE FLN, BACnet                                                       |  |
| Available as an option                      |                               | —                                                                                                                                        | CANopen Daisy Chain, Device Net, 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<br>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<br>IEC 61800-3 (environments 1 and 2, categories C1 to C3, at C1 with option for ATV 212)<br>CE, UL, CSA, C-Tick NOM, GOST |                                                                                                     | EN 55011: Group 1, class A and class B with option added.<br>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



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

## Pumps and fans (industrial)



## Complex machines



0.37...800

—  
0.375...5  
—  
0.759...0  
0.756...30  
—  
2.27...5  
—  
2.2...800

IP 20

Heat sink or water-cooled system

0.15...00 Hz for the entire range  
0.15...99 Hz up to 37 kW at 2002...40 V ~ and 3804...80 V ~  
Sensorless flux vector control  
Voltage/frequency ratio (2 or 5 points)  
Energy saving ratio

Vector control without speed feedback  
120% of the nominal motor torque for 60 seconds

> 100  
8  
2...4  
6...20  
1...3  
0...8  
2...4

Modbus and CANopen

Modbus TCP Daisy Chain, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, INTERBUS, CC-Link, LONWORKS, METASYS N2, APOGEE FLN, BACnet

I/O extension cards, "Controller Inside" programmable card, multi-pump address encoder interface cards

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

"Altivar 61 variable speed drives"

0.37...630

—  
0.375...5  
—  
0.377...5  
0.755...00  
—  
1.57...5  
—  
1.56...30

Heat sink base plate or water-cooled system

0.15...00 Hz for the entire range  
0.15...99 Hz up to 37 kW at 2002...40 V ~ and 3804...80 V ~  
Flux vector control with or without sensor  
Voltage/frequency ratio (2 or 5 points)  
ENAS system

Vector control with or without speed feedback  
220% of the nominal motor torque for 2 seconds  
170% for 60 seconds

> 150  
16  
24...  
62...0  
13...  
0...8  
24...

Modbus TCP Daisy Chain, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, INTERBUS, CC-Link

Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders  
I/O extension cards, Controller Inside programmable card

ATV 71

"Altivar 71 variable speed drives"



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

# 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 2002...40 V (W)                | 0.182...2                                                                                           | —                                                                                   |
| Three-phase 3804...80 V (W)                 | —                                                                                                   | 0.757...5                                                                           |
| Three-phase 3805...00 V (W)                 | 0.371...5                                                                                           | —                                                                                   |
| Degree of protection                        | IP 55                                                                                               | IP 55                                                                               |
| Variants                                    | Enclosure user-definable up to 4 kW: Vario switch disconnect or, LEDs set or switch, potentiometer  | —                                                                                   |
| Drive                                       |                                                                                                     |                                                                                     |
| Output frequency                            | 0.15...00 Hz                                                                                        | 0.12...00 Hz                                                                        |
| Type of control                             | Sensorless flux vector control                                                                      | Sensorless flux vector control                                                      |
| Asynchronous motor                          | Voltage/frequency ratio                                                                             | Voltage/frequency ratio (2 points)                                                  |
| Synchronous motor                           | —                                                                                                   | Energy saving ratio                                                                 |
| Transient overtorque                        | 1702...00% of the nominal motor torque                                                              | 120% of the nominal motor torque for 60 seconds                                     |
| Functions                                   |                                                                                                     |                                                                                     |
| Number of functions                         | 50                                                                                                  | 50                                                                                  |
| Number of presets                           | 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, Device Net                                                          | LONWorks                                                                            |
| Cards (available as an option)              | —                                                                                                   | —                                                                                   |
| Dialogue tools                              |                                                                                                     |                                                                                     |
| Setup software                              | IP 65 remote terminal                                                                               | IP 54 or IP 65 remote graphic display terminal                                      |
| Configuration tool                          | SoMove                                                                                              | PCSoft for ATV 212 drive                                                            |
|                                             | Simple Loader                                                                                       | Multi-Loader                                                                        |
| Standards and certifications                | IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3)<br>CE, UL, CSA, C-Tick, GOST |                                                                                     |
| References                                  | ATV 31C                                                                                             | ATV 212W                                                                            |
| Catalogues                                  | "Altivar 31C variable speed drives"<br>(1) Heating, Ventilation and Air Conditioning                | "Altivar 212 variable speed drives"                                                 |



## Pumps and fans (industrial)



0.75...90

0.759...0

IP 54

Equipped with a Vario with digital network

0.15...99 Hz from 0.75 to 45 kW  
0.15...00 Hz from 559...0 kW

Sensorless flux vector control  
Voltage/frequency ratio (2 or 5 points)  
Energy saving ratio

Vector control without speed feedback

110% of the nominal motor torque for 60 seconds

>100

8

24...

62...0

13...

0...8

24...

Modbus and CANopen

Modbus TCP Daisy Chain, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, INTERBUS, CC-Link, LONWORKS, METASYS N2, APOGEE FLN, BACnet

I/O extension cards, "Controller Inside" programmable card, multi-pump cards, encoder interface cards

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**

"Altivar 61 variable speed drives"

## Complex machines



0.75...75

0.757...5

Equipped with a Vario with digital network

0.15...99 Hz from 0.75 to 37 kW  
0.15...00 Hz from 45 to 75 kW

Sensorless flux vector control  
Voltage/frequency ratio (2 or 5 points)  
ENERGY saving

Vector control with or without speed feedback

220% of the nominal motor torque for 2 seconds

170% for 60 seconds

>150

16

24...

62...0

13...

0...8

24...

Modbus TCP Daisy Chain, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, INTERBUS, CC-Link

Interface cards for incremental, resolvers, SinCos SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card

**ATV 71W**

**ATV 71E5**

"Altivar 71 variable speed drives"



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

# Variable speed drives

## Altivar 61 Plus and Altivar 71 Plus

Integrated solutions

|                                             |                       |                                                                                                                                                                     |                                                                                                                           |                                                                                                                                       |
|---------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Type of machine                             |                       | Pumps and fans<br>(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<br>Modular with integrated options<br>User-definable on request                                            |                                                                                                                                       |
| Drive                                       | Output frequency      | 0.1...500 Hz                                                                                                                                                        |                                                                                                                           |                                                                                                                                       |
|                                             | Type of control       | Asynchronous motor<br><br>Sensorless flux vector control<br>Voltage/frequency ratio 2 or 5 points<br>Energy saving ratio                                            |                                                                                                                           |                                                                                                                                       |
|                                             |                       | Flux vector control without speed feedback                                                                                                                          |                                                                                                                           |                                                                                                                                       |
|                                             | Transient overtorque  | 120% of the nominal motor torque for 60 seconds                                                                                                                     |                                                                                                                           |                                                                                                                                       |
| Communication                               |                       | Modbus and CANopen<br><br>Modbus TCP, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, InterBus CC-Link, LonWorks, METASYS N2, APOGEE FLN, BACnet |                                                                                                                           |                                                                                                                                       |
| Cards (available as an option)              |                       | "Controller Inside" programmable card<br>Multi-pump cards                                                                                                           |                                                                                                                           |                                                                                                                                       |
| Degree of protection                        |                       | IP 54 with separate air flows, ATV 61ES5                                                                                                                            | IP 23 on input terminals, ATV 61EXC2<br>IP 54 on input terminals, ATV 61EXC5<br>IP 54 with separate air flows, ATV 61EXS5 | With integrated air-cooled circuit:<br>IP 23: ATV 61EXA2<br>IP 54: ATV 61EXA5<br>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                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 905. 00                                                                                           | 905. 00                                                                                                                                  | 5001. 300                                                                                                                                                                             |
| —                                                                                                 | 905. 00                                                                                                                                  | 5001. 500                                                                                                                                                                             |
| —                                                                                                 | 1106. 30                                                                                                                                 | 6302. 000                                                                                                                                                                             |
| With enhanced protection                                                                          |                                                                                                                                          | With enhanced protection and integrated cooling circuit                                                                                                                               |
| Ready to use                                                                                      | Standard offer<br>Modular with integrated options<br>User-definable on request                                                           |                                                                                                                                                                                       |
| 0.15. 00 Hz                                                                                       |                                                                                                                                          |                                                                                                                                                                                       |
| Flux vector control with or without sensor<br>Voltage/frequency ratio (2 or 5 points)<br>ENASpeed |                                                                                                                                          |                                                                                                                                                                                       |
| Vector control with or without speed feedback                                                     |                                                                                                                                          |                                                                                                                                                                                       |
| 220% of the nominal motor torque for 2 seconds<br>170% of the nominal motor torque for 60 seconds |                                                                                                                                          |                                                                                                                                                                                       |
| Modbus and CANopen                                                                                |                                                                                                                                          |                                                                                                                                                                                       |
| Modbus TCP, Modbus Uni-Telway, EtherNet/IP, Device Net, PROFIBUS DP V0 and V1, InterBus CC-Link   |                                                                                                                                          |                                                                                                                                                                                       |
| “Controller Inside” programmable card                                                             |                                                                                                                                          |                                                                                                                                                                                       |
| IP 54 with separate air flows, <b>ATV 71ES5</b>                                                   | IP 23 compact version, <b>ATV 71EXC2</b><br>IP 54 compact version, <b>ATV 71EXC5</b><br>IP 54 with separate air flows, <b>ATV 71EXS5</b> | IP 23, with integrated air-cooled circuit, <b>ATV 71EXA2</b><br>IP 54, with integrated air-cooled circuit, <b>ATV 71EXA5</b><br>IP 55, with external water-cooled system (on request) |

## ATV 71 Plus

"Altia r 71 a riable speed drive S"



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

PF105302



Ventilation application

L\_000060



Air conditioning application

PF42882



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" article 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 systems
- Reducing noise pollution (noise caused by air flow and motor)

Its various standards 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 compatible
- 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 operating 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 protocol 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).



### 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 compatible IP 21 or UL Type 12/IP 55 products which meet electromagnetic compatibility requirements and reduce current harmonics, allowing minimal temperature rise in the cables

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

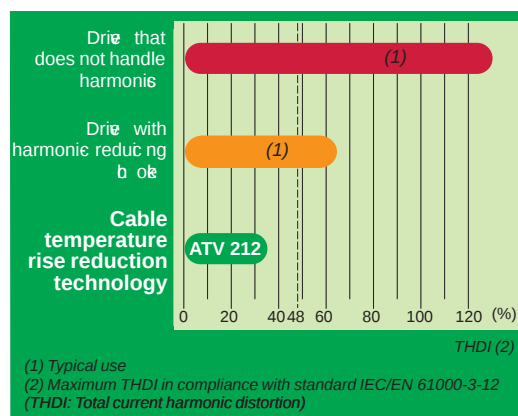
The built-in EMC filters in ATV 212...N4 and ATV 212W...N4C drives and

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 are installed by the user to reduce emissions (see pages 22 and 23).



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

### 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 block or DC block 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 costs of adding a line block or DC block, you reduce the time spent on wiring, you optimize the entire system and you reduce the losses

This technology also triples 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<br>IP 21 & IP 41 on upper part<br>IP 20 without blanking plate on upper part of order<br>UL Type 1 with the VW3 A31 81 or VW3 A9 20 kit, see page 18<br>ATV 212W...N4 and ATV 212W...N4C drives<br>UL Type 12/IP 55 |
| Ambient air temperature around the device                          | ATV 212H...M3X and ATV 212H...N4 drives<br>- 10... 50°C without derating, + 60°C with derating (2)<br>ATV 212W...N4 and ATV 212W...N4C drives<br>- 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<br>■ 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 DC programmable logic inputs compatible with IEC 11 PLC, IEC/EN 61131-2 standard<br>■ 1 positive logic input (Source)<br>■ 1 negative logic input (Sink)                                                                                       |
| Configurable relay logic outputs                                   | ■ 1 output, one "N/C" contact and one "N/O" contact with common point<br>■ 1 output, one "N/O" contact                                                                                                                                                      |

(1) THDI: Total current harmonic distortion

(2) View the derating curves on our website: [www.schneider-electric.com](http://www.schneider-electric.com).

PF300761



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 starting of a spinning load with speed detection
- Adaptation of current limiting according to speed
- Reference limitation 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 ducts are blocked
- Machine protection via a low frequency function (reference 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/REMY
- Preset speeds
- Monitoring, measurement of energy consumption
- Electric and service hours meter

### Protection functions

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



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](http://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 start-up 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.

#### 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 drive must be powered-up. See page 20.

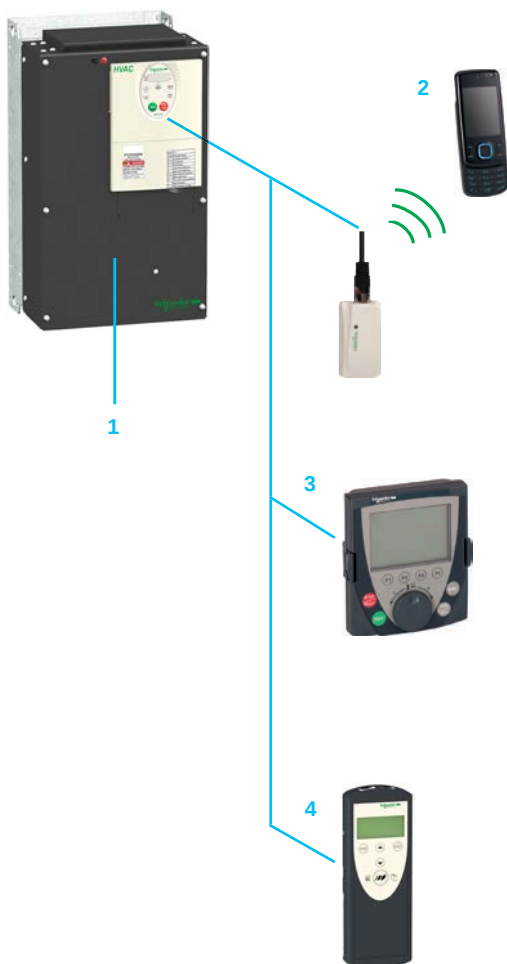
#### Quick menu tool

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 starters units.

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



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



ATV 212H075M3X  
EMC plate not mounted



ATV 212HD15N4  
EMC plate not mounted



ATV 212HD55N4  
EMC plate not mounted

| IP 21 drives (frequency range from 0.5 to 200 Hz)                                                  |                       |       |                |                              |                                         |                                    |                                            |          |           |                       |
|----------------------------------------------------------------------------------------------------|-----------------------|-------|----------------|------------------------------|-----------------------------------------|------------------------------------|--------------------------------------------|----------|-----------|-----------------------|
| Motor<br>Power indicated on rating plate                                                           | Line supply           |       |                |                              | Altivar 212                             |                                    |                                            |          |           |                       |
|                                                                                                    | 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 |                |                              |                                         |                                    |                                            |          |           |                       |
| 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<br>Power indicated on rating plate                                                           | Line supply           |       |                |                              | Altivar 212                             |                                    |                                            |          |           |                       |
|                                                                                                    | 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 |                |                              |                                         |                                    |                                            |          |           |                       |
| 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 (on rail)  |                      |                   |                       |
|-----------------------|----------------------|-------------------|-----------------------|
| Drives (5)            |                      | W x H x D         |                       |
|                       |                      | EMC plate mounted | EMC plate not mounted |
| ATV 212H●●●M3X        | ATV 212H●●●N4        | mm                | mm                    |
| ATV 212075M3XU. 22M3X | ATV 212075N4U. 22N4  | 107 x 192 x 150   | 107 x 143 x 150       |
| ATV 212U30M3X, U40M3X | ATV 212U30N4U. 55N4  | 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 212D11M3XD. 18M3X | ATV 212D15N4D. 22N4S | 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 212HD18M3X...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](http://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



ATV 212W075N4

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        | %             |        |
| 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 (on rail)

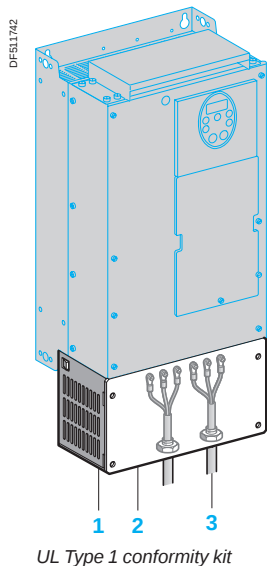
| Drives               | W x H x D        |
|----------------------|------------------|
| ATV 212W             | mm               |
| 075N4 (C)U, 22N4 (C) | 215 x 297 x 192  |
| U30N4 (C)U, 75N4 (C) | 230 x 340 x 208  |
| D11N4 (C), D15N4 (C) | 290 x 560 x 315  |
| D18N4 (C)            | 310 x 665 x 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](http://www.schneider-electric.com).

(3) Total current harmonic distortion in accordance with IEC/EN 61000-3-12.



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 bending is connected inside the kit.

The kit consists of:

- All the mechanical parts including a pre-drilled plate for connecting the tubes
- Fixing accessories
- A manual

## References

| For drives                                        | Reference   | Weight<br>kg |
|---------------------------------------------------|-------------|--------------|
| ATV 212H075M3XH. U22M3X<br>ATV 212H075N4H. U22N4  | VW3 A31 814 | 0.500        |
| ATV 212HU30M3X, HU40M3X<br>ATV 212HU30N4H. U55N4  | VW3 A31 815 | 0.500        |
| ATV 212HU55M3X, HU75M3X<br>ATV 212HU75N4, HD11N4  | VW3 A31 816 | 0.900        |
| ATV 212HD11M3XH. D18M3X<br>ATV 212HD15N4H. D22N4S | VW3 A31 817 | 1.200        |
| ATV 212HD22M3X<br>ATV 212HD22N4, HD30N4           | VW3 A9 206  | 4.000        |
| ATV 212HD37N4, HD45N4                             | VW3 A9 207  | 5.000        |
| ATV 212HD30M3X<br>ATV 212HD55N4, HD75N4           | VW3 A9 208  | 7.000        |

## L Rail mounting kit

This kit enables easy installation of ATV 212H075M3XH. U22M3X and ATV 212H075N4H. U22N4 drives by mounting them directly on a 35 mm wide L rail.

## Reference

| For drives                                       | Reference   | Weight<br>kg |
|--------------------------------------------------|-------------|--------------|
| ATV 212H075M3XH. U22M3X<br>ATV 212H075N4H. U22N4 | VW3 A31 852 | 0.350        |

## 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](http://www.schneider-electric.com). It operates in the following PC environments and configurations:

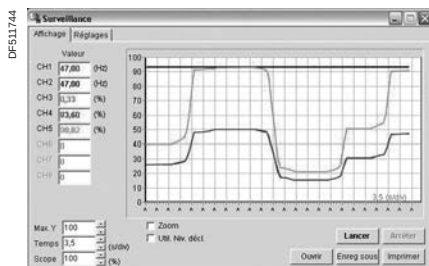
- Microsoft Windows® 98, Microsoft Windows® 2000, Microsoft Windows® XP
- Pentium® 233 MHz or higher, hard disk with 10 MB available, 32 MB RAM
- 256 colour, 640 x 480 pixels or higher definition monitor

## 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<br>kg |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|
| PC serial port connection kit for point-to-point Modbus connection | <ul style="list-style-type: none"> <li>■ One 3 m cable with two RJ 45 connectors</li> <li>■ One RS 232/RS 485 converter with one 9-way female SUB-D connector and one RJ 45 connector</li> </ul> | VW3 A8 106 | 0.350        |



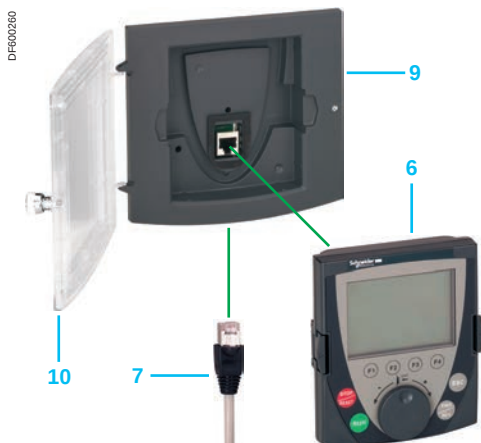
"Monitoring" function in PCSoft software workshop



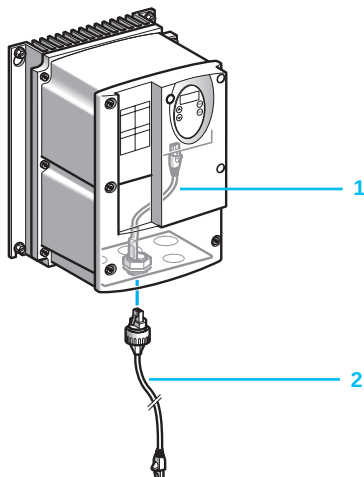
Remote graphic display terminal



Remote mounting accessories for graphic display terminal



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 a remote drive 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 load 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
  - Pres: sets the current value (ENT)

### References

| Designation                                                                                | Item no. | Length m | Reference  | Weight kg |
|--------------------------------------------------------------------------------------------|----------|----------|------------|-----------|
| Remote graphic display terminal                                                            | 6        | —        | VW3 A1 101 | 0.180     |
| A remote-mounting adaptor VW3 A1 104 R... and an RJ 45 adaptor VW3 A1 105 must be provided |          |          |            |           |

### Accessories for mounting the graphic display terminal remotely

|                                                |   |                   |                                                                       |                                  |
|------------------------------------------------|---|-------------------|-----------------------------------------------------------------------|----------------------------------|
| Remote cables equipped with 2 RJ 45 connectors | 7 | 1<br>3<br>5<br>10 | VW3 A1 104 R10<br>VW3 A1 104 R30<br>VW3 A1 104 R50<br>VW3 A1 104 R100 | 0.050<br>0.150<br>0.250<br>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 RJ 45 connector and an IP 55 RJ 45 base   | 1 | 0.3<br>0.6 | VW3 A0 1500<br>VW3 A0 1502 | 0.050<br>0.100 |
| For remote location of the drive's RJ 45 port while maintaining IP 55 protection |   |            |                            |                |

|                                                                                                                                        |   |   |             |       |
|----------------------------------------------------------------------------------------------------------------------------------------|---|---|-------------|-------|
| IP 55 cable equipped with an RJ 45 connector and an IP 55 RJ 45 connector. For connecting an drive equipped with a VW3 A0 150... cable | 2 | 3 | VW3 A0 1501 | 0.130 |
|----------------------------------------------------------------------------------------------------------------------------------------|---|---|-------------|-------|



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 intuitive 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 a 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](http://www.schneider-electric.com).

The SoMove Mobile software and drive configuration files can be downloaded from our website [www.schneider-electric.com](http://www.schneider-electric.com).

### References

| Designation                                                                                                                                                                                                                                                          | Reference                                                                                            | Weight<br>kg |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------|
| SoMove Mobile software for mobile phones                                                                                                                                                                                                                             | Download from our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> | —            |
| Modbus-Bluetooth® adaptor<br>Enables any non-Bluetooth® device to communicate using this technology.<br>It comprises:<br>■ 1 Bluetooth® adaptor (range 10 m, class 2) with an RJ 45 connection<br>■ For SoMove: 1 x 0.1 m cable with 2 RJ45 connections<br>■ ... (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 drive must be powered-up.

### Reference

| Designation                                                                                                                                                                                                                                                                                                                       | Reference  | Weight<br>kg |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|
| Multi-Loader configuration tool<br>Supplied with:<br>■ 1 cable equipped with 2 RJ 45 connections<br>■ 1 cable equipped with one type A USB connection and one mini B USB connection<br>■ 1 x SD memory card<br>■ 1 x female/female RJ 45 adaptor<br>■ 4 AA/LR6 1.5 V batteries<br>■ 1 anti-back protection<br>■ 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 starters.

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](http://www.schneider-electric.com).

| Designation                                        | Reference  | Weight<br>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.



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

### 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 allowable length must include all cabling. If a cable longer than that recommended is used, the motor blocks 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     |
| <b>Three-phase supply voltage: 200...240 V 50/60 Hz</b> |                                   |                |                  |        |                 |                 |                |        |
| ATV 212H075M3XH, D11M3X                                 | 6                                 | 100            | 150              | 350    | 90              | —               | VW3 A5 103     | 10.000 |
| ATV 212HD15M3X                                          | 6                                 | 100            | 150              | 430    | 215             | 3               | VW3 A5 104     | 15.500 |
| ATV 212HD18M3XH, D30M3X                                 | 6                                 | 150            | 300              | 430    | 215             | 3               | VW3 A5 104     | 15.500 |
| <b>Three-phase supply voltage: 380...480 V 50/60 Hz</b> |                                   |                |                  |        |                 |                 |                |        |
| ATV 212H075N4H, D11N4                                   | 6                                 | 100            | 150              | 350    | 90              | —               | VW3 A5 103     | 10.000 |
| ATV 212W075N4W, D11N4                                   |                                   |                |                  |        |                 |                 |                |        |
| ATV 212W075N4CW, D11N4C                                 |                                   |                |                  |        |                 |                 |                |        |
| ATV 212HD15N4                                           | 6                                 | 100            | 150              | 430    | 215             | 3               | VW3 A5 104     | 15.500 |
| ATV 212WD15N4                                           |                                   |                |                  |        |                 |                 |                |        |
| ATV 212WD15N4C                                          |                                   |                |                  |        |                 |                 |                |        |
| ATV 212HD18N4, HD75N4                                   | 6                                 | 150            | 300              | 430    | 215             | 3               | VW3 A5 104     | 15.500 |
| ATV 212WD18N4, WD75N4                                   |                                   |                |                  |        |                 |                 |                |        |
| ATV 212WD18N4C, WD75N4C                                 |                                   |                |                  |        |                 |                 |                |        |

### IP 20 protection kit

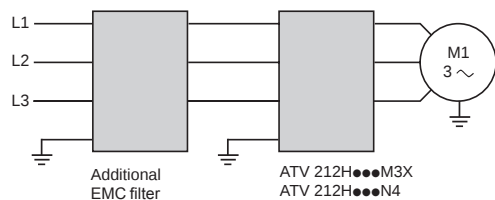
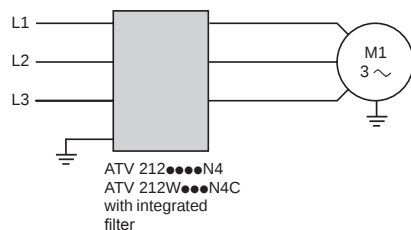
VW3 A5 103 motor blocks provide IP 00 degree of protection as standard.

This kit gives the VW3 A5 104 blocks 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 | —         |



VW3 A5 103



Mounting the filter beside the Altivar 212 drive



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)<br>according to |                         |                | Leakage<br>current<br>(2) |
|-----------------------|------------------------------------------------------|-------------------------|----------------|---------------------------|
|                       | EN 55011<br>class B Gr1                              | EN 55011<br>class A Gr1 |                |                           |
|                       | IEC/EN 61800-3<br>Category C1                        | IEC/EN 61800-3          |                |                           |
|                       |                                                      | Category<br>C2          | Category<br>C3 |                           |
|                       | m                                                    | m                       | m              | mA                        |
| IP 21 drives          |                                                      |                         |                |                           |
| ATV 212H075N4H, U22N4 | –                                                    | 20                      | 20             | 4.5                       |
| ATV 212HU30N4H, U55N4 | –                                                    | 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 212W075N4W, U22N4   | –  | 5  | –   | 4.5  |
| ATV 212WU30N4W, U55N4   | –  | 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 212W075N4CW, U22N4C | 20 | 20 | 20  | 18.4 |
| ATV 212WU30N4CW, U55N4C | 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 and comply 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.

### 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 install 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).



VW3 A31 404

### References

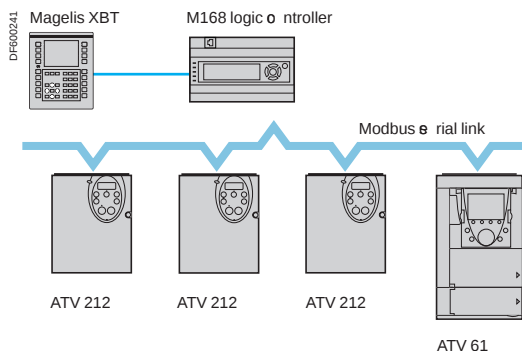
| For drives                                              | Maximum length of shielded cable (1) according to |                                  | In (2) | If (3) | Loss (4) | Reference   | Weight |
|---------------------------------------------------------|---------------------------------------------------|----------------------------------|--------|--------|----------|-------------|--------|
|                                                         | 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     |
| <b>Three-phase supply voltage: 200...240 V 50/60 Hz</b> |                                                   |                                  |        |        |          |             |        |
| 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 |
| <b>Three-phase supply voltage: 380...480 V 50/60 Hz</b> |                                                   |                                  |        |        |          |             |        |
| 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.



Example of configuration on the 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:

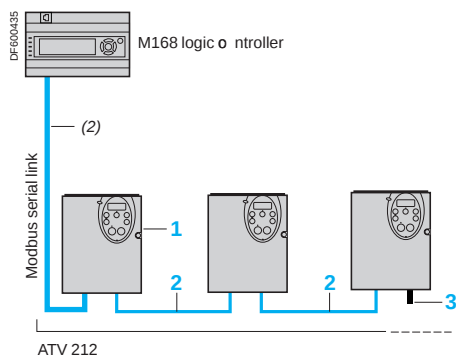
- An RJ 45 communication port for the Modbus serial link: this network port is mainly assigned to the remote graphic display terminal (Drive Navigator).

It is also used to connect:

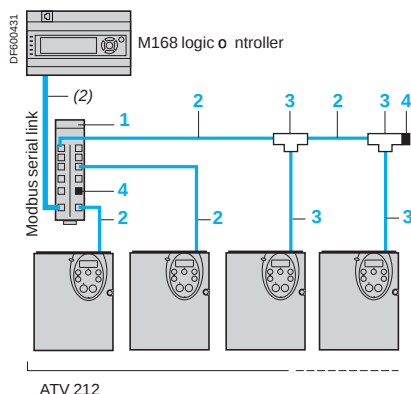
- The Multi-Loader configuration tool
- The Bluetooth® serial link
- A Magelis industrial HMI terminal

- 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.binder-elec.com](http://www.binder-elec.com).



Optimized solution for daisy chain connection to the Modbus serial link



Connection via splitter box with RJ45 connectors on Modbus serial link

| Description                                                                                          | Item no.  | Length<br>m | Unit<br>reference | Weight<br>kg         |
|------------------------------------------------------------------------------------------------------|-----------|-------------|-------------------|----------------------|
| <b>Connection accessories for Modbus serial link (optimized solution for daisy chain connection)</b> |           |             |                   |                      |
| <b>RS 485 double shielded twisted pair Modbus cable</b><br>Supplied without connection               | 1         | 100         | TSX CSA 100       | —                    |
| <b>Modbus drop cable</b><br>1 RJ 45 connection or and one stripped end                               | 2         | 3           | VW3 A8 306 D30    | 0.150                |
| <b>Line termination</b><br>For screw terminals (3)                                                   | R = 120 Ω | 3           | —                 | VW3 A8 306 DRC 0.200 |
|                                                                                                      | C = 1 nF  | 3           | —                 | VW3 A8 306 DR 0.200  |

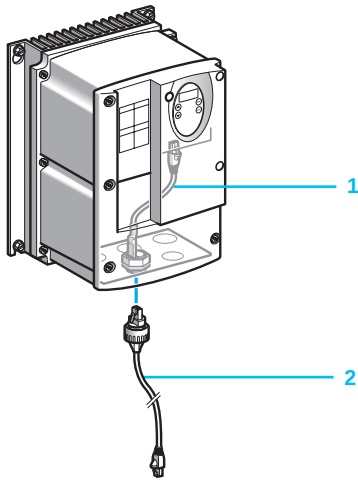
### Other connection accessories for Modbus serial link

|                                                                               |   |     |                 |       |
|-------------------------------------------------------------------------------|---|-----|-----------------|-------|
| <b>Modbus splitter box</b><br>10 RJ 45 connections and 1 screw terminal block | 1 | —   | LU9 GC3         | 0.500 |
| <b>Cordsets for Modbus serial link</b><br>equipped with 2 RJ 45 connections   | 2 | 0.3 | VW3 A8 306 R03  | 0.025 |
|                                                                               | 1 | —   | VW3 A8 306 R10  | 0.060 |
|                                                                               | 3 | —   | VW3 A8 306 R30  | 0.130 |
| <b>Modbus T-junction boxes</b><br>with integrated cable                       | 3 | 0.3 | VW3 A8 306 TF03 | 0.190 |
|                                                                               | 1 | —   | VW3 A8 306 TF10 | 0.210 |
| <b>Line terminator (3)</b><br>For RJ 45 connection or                         | 4 | —   | VW3 A8 306 RC   | 0.010 |

(1) Heating, Ventilation and Air Conditioning.

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

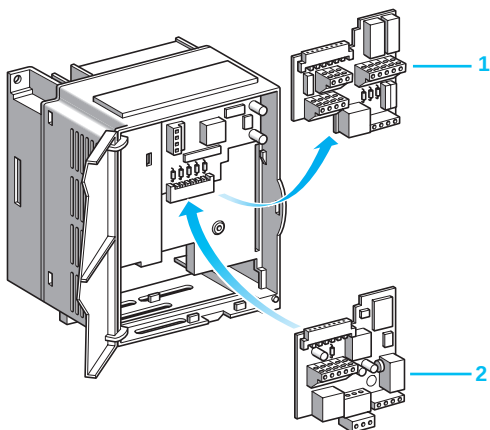
(3) Sold in lots of 2.



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 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-------------|-----------|
| <b>RJ45 connection accessories with IP 55 degree of protection</b>                                                                                              |          |          |             |           |
| Internal IP 55 cable equipped with an RJ 45 connector and an IP 55 RJ 45 base. For remote location of the drive's RJ 45 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 RJ 45 connector and an IP 55 RJ 45 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 Altia r 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 RJ 45 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 data backup connection).
- This screw terminal block is assigned to control and signalling by a PLC or by another type of controller.

The Altia r 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](http://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 Altia r 212 enable working of these drive controls 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 brake 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](http://www.schneider-electric.com).

### 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 fault by minimizing the time required to make the necessary repairs and the cost of replacement equipment.



+



+



GV2 L20  
+  
LC1 D09  
+  
ATV 212HU40M3X

### 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 (V)  | 24 V                   | 48 V | 110 V | 220 V | 230 V | 240 V |
|----------------|------------------------|------|-------|-------|-------|-------|
| LC1 D09...D115 | 50/60 Hz               | B7   | E7    | F7    | M7    | P7    |
| LC1 F185       | 400...00 Hz (LX9 coil) | —    | E7    | F7    | M7    | P7    |

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



+



+



GV3 L40  
+  
LC1 D25  
+  
ATV 212WD18N4

## Motor starters for UL type 12/IP 55 drives

| Motor                                            |     | Drive                           | Circuit-breaker |        |      | Line<br>contactor |
|--------------------------------------------------|-----|---------------------------------|-----------------|--------|------|-------------------|
| Power (1)                                        |     | Reference                       | Reference (2)   | Rating | Im   | Reference (3) (4) |
| kW                                               | HP  |                                 |                 | A      | A    |                   |
| Three-phase supply voltage: 380...415 V 50/60 Hz |     |                                 |                 |        |      |                   |
| 0.75                                             | 1   | ATV 212W075N4<br>ATV 212W075N4C | GV2 L07         | 2.5    | –    | LC1 D09●●         |
| 1.5                                              | 2   | ATV 212WU15N4<br>ATV 212WU15N4C | GV2 L08         | 4      | –    | LC1 D09●●         |
| 2.2                                              | 3   | ATV 212WU22N4<br>ATV 212WU22N4C | GV2 L10         | 6.3    | –    | LC1 D09●●         |
| 3                                                | –   | ATV 212WU30N4<br>ATV 212WU30N4C | GV2 L10         | 6.3    | –    | LC1 D09●●         |
| 4                                                | 5   | ATV 212WU40N4<br>ATV 212WU40N4C | GV2 L14         | 10     | –    | LC1 D09●●         |
| 5.5                                              | 7.5 | ATV 212WU55N4<br>ATV 212WU55N4C | GV2 L16         | 14     | –    | LC1 D09●●         |
| 7.5                                              | 10  | ATV 212WU75N4<br>ATV 212WU75N4C | GV2 L20         | 18     | –    | LC1 D09●●         |
| 11                                               | 15  | ATV 212WD11N4<br>ATV 212WD11N4C | GV2 L22         | 25     | –    | LC1 D09●●         |
| 15                                               | 20  | ATV 212WD15N4<br>ATV 212WD15N4C | GV2 L32         | 32     | –    | LC1 D18●●         |
| 18.5                                             | 25  | ATV 212WD18N4<br>ATV 212WD18N4C | GV3 L40         | 40     | –    | LC1 D25●●         |
| 22                                               | 30  | ATV 212WD22N4<br>ATV 212WD22N4C | GV3 L50         | 50     | –    | LC1 D32●●         |
| 30                                               | 40  | ATV 212WD30N4<br>ATV 212WD30N4C | GV3 L65         | 65     | –    | LC1 D40●●         |
| 37                                               | 50  | ATV 212WD37N4<br>ATV 212WD37N4C | NS80HMA80       | 80     | 480  | LC1 D80●●         |
| 45                                               | 60  | ATV 212WD45N4<br>ATV 212WD45N4C | NSX100●MA100    | 100    | 600  | LC1 D80●●         |
| 55                                               | 75  | ATV 212WD55N4<br>ATV 212WD55N4C | NSX160●MA150    | 150    | 1350 | LC1 D115●●        |
| 75                                               | 100 | ATV 212WD75N4<br>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 | 50                 |
| GV3 L40...GV3 L65 |                    |
| 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 (V)  | 24 V        | 48 V | 110 V | 220 V | 230 V | 240 V |
|----------------|-------------|------|-------|-------|-------|-------|
| LC1 D09...D115 | 50/60 Hz B7 | 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.

**Schneider Electric Industries SAS**

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