Specifications





# variable speed drive, Altivar 212, 22kW, 30hp, 480V, 3 phases, with EMC, IP21

ATV212HD22N4

Product availability: Stock - Normally stocked in distribution facility

# Price\*: 3,427.20 USD

# Main

Device Short Name	ATV212				
Product Destination	Asynchronous motors				
Phase	3 phase				
Motor Power Kw	22 kW				
Maximum Horse Power Rating	30 hp				
Supply Voltage Limits	323528 V				
Supply Frequency	5060 Hz - 55 %				
Line Current	33.1 A 480 V 41.6 A 380 V				
Range Of Product	Altivar 212				
Product Or Component Type	Variable speed drive				
Product Specific Application	Pumps and fans in HVAC				
Communication Port Protocol	Modbus LonWorks APOGEE FLN BACnet METASYS N2				
[Us] Rated Supply Voltage	380480 V - 1510 %				
Emc Filter	Class C2 EMC filter integrated				
Ip Degree Of Protection	IP21				

# Complementary

Apparent Power	33.2 kVA 380 V			
Continuous Output Current	43.5 A 380 V 43.5 A 460 V			
Maximum Transient Current	47.9 A 60 s			
Speed Drive Output Frequency	0.5200 Hz			
Speed Range	110			
Speed Accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn			
Local Signalling	for DC bus energized 1 LED (red)			
Output Voltage	<= power supply voltage			
Isolation	Electrical between power and control			

Price is "List Price" and may be subject to a trade discount - check with your local distributor or retailer for actual price.

Type Of Cable	Without mounting kit 1 IEC cable 113 °F (45 °C), copper 90 °C / XLPE/EPR Without mounting kit 1 IEC cable 113 °F (45 °C), copper 70 °C / PVC With UL Type 1 kit 3 UL 508 cable 104 °F (40 °C), copper 75 °C / PVC					
Electrical Connection	VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES terminal 0.00 in² (2.5 mm²) / AWG 14 L1/R, L2/S, L3/T terminal 0.08 in² (50 mm²) / AWG 1/0					
Tightening Torque						
	5.31 lbf.in (0.6 N.m) VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES) 212.42 lbf.in (24 N.m), 212 lb.in L1/R, L2/S, L3/T)					
Supply	Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 A overload and short-circuit protection Internal supply 24 V DC 2127 V), <200 A overload and short-circuit protection					
Sampling Duration	2 ms +/- 0.5 ms F discrete 2 ms +/- 0.5 ms R discrete 2 ms +/- 0.5 ms RES discrete 3.5 ms +/- 0.5 ms VIA analog 22 ms +/- 0.5 ms VIB analog					
Response Time	FM 2 ms +/- 0.5 ms analog FLA, FLC 7 ms +/- 0.5 ms discrete FLB, FLC 7 ms +/- 0.5 ms discrete RY, RC 7 ms +/- 0.5 ms discrete					
Accuracy	+/- 0.6 % VIA) for a temperature variation 60 °C +/- 0.6 % VIB) for a temperature variation 60 °C +/- 1 % FM) for a temperature variation 60 °C					
Linearity Error	VIA +/- 0.15 % of maximum value input VIB +/- 0.15 % of maximum value input FM +/- 0.2 % output					
Analogue Output Type	FM switch-configurable voltage 010 V DC 7620 Ohm 10 bits FM switch-configurable current 020 mA 970 Ohm 10 bits					
Discrete Output Type	Configurable relay logic FLA, FLC) NO - 100000 cycles Configurable relay logic FLB, FLC) NC - 100000 cycles Configurable relay logic RY, RC) NO - 100000 cycles					
Minimum Switching Current	3 mA 24 V DC configurable relay logic					
Maximum Switching Current	5 A 250 V AC resistive cos phi = 1 L/R = 0 ms FL, R) 5 A 30 V DC resistive cos phi = 1 L/R = 0 ms FL, R) 2 A 250 V AC inductive cos phi = $0.4 L/R = 7 ms FL$ , R) 2 A 30 V DC inductive cos phi = $0.4 L/R = 7 ms FL$ , R)					
Discrete Input Type	F programmable 24 V DC level 1 PLC 4700 Ohm R programmable 24 V DC level 1 PLC 4700 Ohm RES programmable 24 V DC level 1 PLC 4700 Ohm					
Discrete Input Logic	Positive logic (source) F, R, RES), <= 5 V, >= 11 V Negative logic (sink) F, R, RES), >= 16 V, <= 10 V					
Dielectric Strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals					
Insulation Resistance	>= 1 mOhm 500 V DC for 1 minute					
Frequency Resolution	Display unit 0.1 Hz Analog input 0.024/50 Hz					
Communication Service	Write single register (06) Read device identification (43) Read holding registers (03) 2 words maximum Write multiple registers (16) 2 words maximum Time out setting from 0.1 to 100 s Monitoring inhibitable					
Option Card	Communication card LonWorks					
Power Dissipation In W	626 W					
Air Flow	56533.83 Gal/hr(US) (214 m3/h)					
Functionality	Mid					
Specific Application	HVAC					

Variable Speed Drive Application Selection	Building - HVAC compressor for scroll Building - HVAC fan Building - HVAC pump					
Motor Power Range Ac-3	1525 kW 380440 V 3 phase 1525 kW 480500 V 3 phase					
Motor Starter Type	Variable speed drive					
Discrete Output Number	2					
Analogue Input Number	2					
Analogue Input Type	VIA switch-configurable voltage 010 V DC 24 V max 30000 Ohm 10 bits VIB configurable voltage 010 V DC 24 V max 30000 Ohm 10 bits VIB configurable PTC probe 06 probes 1500 Ohm VIA switch-configurable current 020 mA 250 Ohm 10 bits					
Analogue Output Number	1					
Physical Interface	2-wire RS 485					
Connector Type	1 RJ45 1 open style					
Transmission Rate	9600 bps or 19200 bps					
Transmission Frame	RTU					
Number Of Addresses	1247					
Data Format	8 bits, 1 stop, odd even or no configurable parity					
Type Of Polarization	No impedance					
Asynchronous Motor Control Profile	Voltage/frequency ratio, 2 points Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, automatic IR compensation (U/f + automatic Uo) Flux vector control without sensor, standard Voltage/frequency ratio, 5 points					
Torque Accuracy	+/- 15 %					
Transient Overtorque	120 % of nominal motor torque +/- 10 % 60 s					
Acceleration And Deceleration Ramps	Automatic based on the load Linear adjustable separately from 0.01 to 3200 s					
Motor Slip Compensation	Adjustable Not available in voltage/frequency ratio motor control Automatic whatever the load					
Switching Frequency	616 kHz adjustable 816 kHz with derating factor					
Nominal Switching Frequency	8 kHz					
Braking To Standstill	By DC injection					
Network Frequency	47.563 Hz					
Prospective Line Isc	22 kA					
Protection Type	Overheating protection drive Thermal power stage drive Short-circuit between motor phases drive Input phase breaks drive Overcurrent between output phases and earth drive Overvoltages on the DC bus drive Break on the control circuit drive Against exceeding limit speed drive Line supply overvoltage and undervoltage drive Line supply undervoltage drive Against input phase loss drive Thermal protection motor Motor phase break motor With PTC probes motor					
Width	9.45 in (240 mm)					

Height	16.54 in (420 mm)			
Depth	8.43 in (214 mm)			
Net Weight	58.20 lb(US) (26.4 kg)			

# Environment

Pollution Degree	3 IEC 61800-5-1
Ip Degree Of Protection	IP20 on upper part without blanking plate on cover IEC 61800-5-1 IP20 on upper part without blanking plate on cover IEC 60529 IP21 IEC 61800-5-1 IP21 IEC 60529 IP41 on upper part IEC 61800-5-1 IP41 on upper part IEC 60529
Vibration Resistance	1.5 mm 3…13 Hz)IEC 60068-2-6 1 gn 13…200 Hz)EN/IEC 60068-2-8
Shock Resistance	15 gn 11 ms IEC 60068-2-27
Environmental Characteristic	Classes 3C1 IEC 60721-3-3 Classes 3S2 IEC 60721-3-3
Noise Level	59.9 dB 86/188/EEC
Operating Altitude	3280.849842.52 ft (10003000 m) limited to 2000 m for the Corner Grounded distribution network with current derating 1 % per 100 m <= 3280.84 ft (1000 m) without derating
Relative Humidity	595 % without condensation IEC 60068-2-3 595 % without dripping water IEC 60068-2-3
Ambient Air Temperature For Operation	14104 °F (-1040 °C) without derating) 104122 °F (4050 °C) with derating factor)
Operating Position	Vertical +/- 10 degree
Product Certifications	C-tick UL NOM 117 CSA
Marking	CE
Standards	IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 1 category C2 EN 61800-3 category C3 IEC 61800-3 category C2 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 2 category C3 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 2 category C2 UL Type 1 IEC 61800-3 environments 1 category C1 EN 55011 class A group 1 IEC 61800-3 environments 2 category C1
Assembly Style	With heat sink
Electromagnetic Compatibility	Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 Conducted radio-frequency immunity test level 3 IEC 61000-4-6
	Voltage dips and interruptions immunity test IEC 61000-4-11

Ambient Air Temperature For -13...158 °F (-25...70 °C) Storage

# Ordering and shipping details

Category	US1CP4D22158
Discount Schedule	CP4D
Gtin	3606480322549
Returnability	Yes
Country Of Origin	CN

# **Packing Units**

-	
Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	16.14 in (41 cm)
Package 1 Width	15.16 in (38.5 cm)
Package 1 Length	20.08 in (51 cm)
Package 1 Weight	29.76 lb(US) (13.5 kg)

# **Contractual warranty**

Warranty

18 months

# Sustainability Screen Premium

**Green Premium<sup>TM</sup> label** is Schneider Electric's commitment to delivering products with best-inclass environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

Yes

Learn more about Green Premium >

Guide to assess a product's sustainability >



Transparency RoHS/REACh

### Well-being performance

Mercury Free

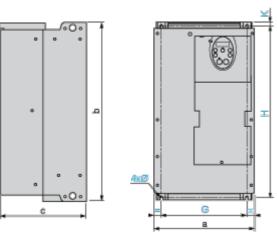
Rohs Exemption Information

# **Certifications & Standards**

Reach Regulation	REACh Declaration			
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)			
China Rohs Regulation	China RoHS declaration			
Environmental Disclosure	Product Environmental Profile			
Weee				
weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.			
Circularity Profile				

#### **Dimensions Drawings**

#### Dimensions

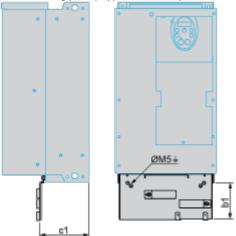


Dimensions in mm							
ATV212H	а	b	с	G	Н	К	Ø
D22M3X D22N4, D30N4	240	420	214	206	403	10	6
D37N4, D45N4	240	550	244	206	529	10	6

#### Dimensions in in.

ATV212H	а	b	с	G	Н	K	Ø
D22M3X D22N4, D30N4	9.45	16.54	8.43	8.11	15.87	0.39	0.24
D37N4, D45N4	9.45	21.65	9.60	8.11	20.83	0.39	0.24

EMC mounting plate (supplied with drive)



Dimensions in mm

ATV212H	b1	c1
D22M3X D22N4, D30N4	122	120
D37N4, D45N4	113	127

# Product data sheet ATV212HD22N4

Dimensions in in.		
ATV212H	h1	(1

ATV212H	b1	c1	
D22M3X D22N4, D30N4	4.80	4.72	
D37N4, D45N4	4.45	5.00	

# ATV212HD22N4

#### Mounting and Clearance

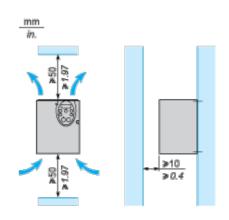
#### **Mounting Recommendations**

#### Clearance

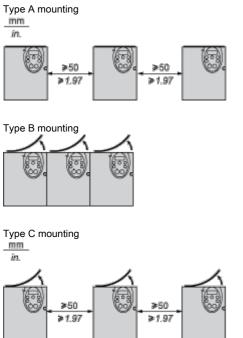
Depending on the conditions in which the drive is to be used, its installation will require certain precautions and the use of appropriate accessories.

Install the unit vertically:

- Do not place it close to heating elements.
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from bottom to the top of the unit.



#### **Mounting Types**

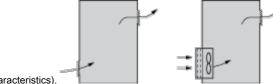


By removing the protective blanking cover from the top of the drive, the degree of protection for the drive becomes IP21. The protective blanking cover may vary according to the drive model, see opposite.

#### Specific Recommendations for Mounting in an Enclosure

To help ensure proper air circulation in the drive:

- Fit ventilation grilles.
- Check that there is sufficient ventilation. If there is not, install a forced ventilation unit with a filter. The openings and/or fans must provide a flow rate at least equal to that of the drive fans (refer to the product



characteristics).

- Use special filters with UL Type 12/IP54 protection. •
- Remove the blanking cover from the top of the drive. .

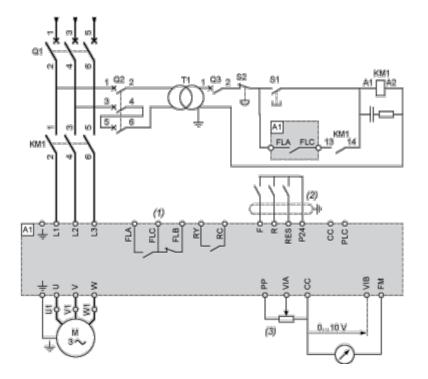
#### Sealed Metal Enclosure (IP54 Degree of Protection)

The drive must be mounted in a dust and damp proof enclosure in certain environmental conditions, such as dust, corrosive gases, high humidity with risk of condensation and dripping water, splashing liquid, etc. This enables the drive to be used in an enclosure where the maximum internal temperature reaches 50°C.

Connections and Schema

#### Recommended Wiring Diagram

#### **3-Phase Power Supply**



- A1: ATV 212 drive
- KM1: Contactor
- Q1: Circuit breaker
- Q2: GV2 L rated at twice the nominal primary current of T1
- Q3: GB2CB05
- S1, S2: XB4 B or XB5 A pushbuttons
- T1: 100 VA transformer 220 V secondary
- (1) Fault relay contacts for remote signalling of the drive status
- (2) Connection of the common for the logic inputs depends on the positioning of the switch (Source, PLC, Sink)
- (3) Reference potentiometer SZ1RV1202

**NOTE:** All terminals are located at the bottom of the drive. Install interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

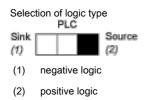
#### Switches (Factory Settings)

Voltage/current selection for analog I/O (VIA and VIB)

VIA U		1
VIB U		PTC

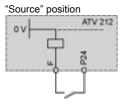
Voltage/current selection for analog I/O (FM)

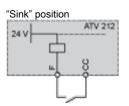


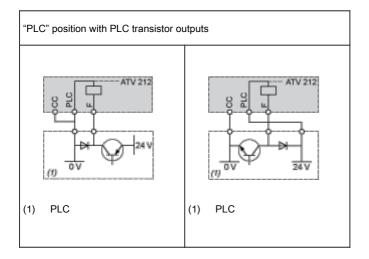


#### **Other Possible Wiring Diagrams**

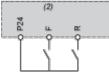
#### Logic Inputs According to the Position of the Logic Type Switch







#### 2-wire control

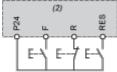


F: Forward

R: Preset speed

(2) ATV 212 control terminals

3-wire control



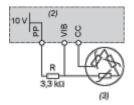
F: Forward

R: Stop

RES: Reverse

(2) ATV 212 control terminals

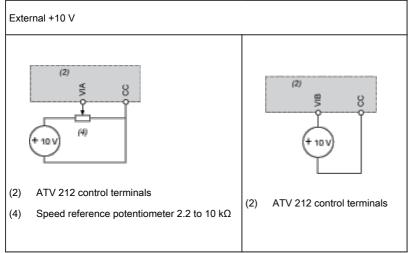
PTC probe



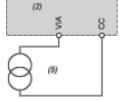
- (2) ATV 212 control terminals
- (3) Motor

#### **Analog Inputs**

Voltage analog inputs



Analog input configured for current: 0-20 mA, 4-20 mA, X-Y mA



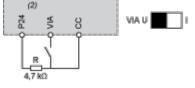
- (2) ATV 212 control terminals
- (5) Source 0-20 mA, 4-20 mA, X-Y mA

Analog input VIA configured as positive logic input ("Source" position)



(2) ATV 212 control terminals

Analog input VIA configured as negative logic input ("Sink" position)



(2) ATV 212 control terminals

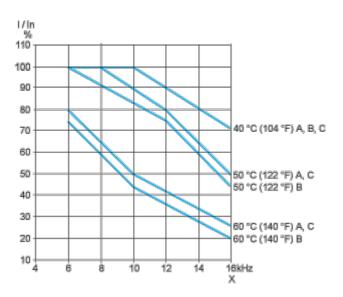
## ATV212HD22N4

#### Performance Curves

#### **Derating Curves**

The derating curves for the drive nominal current (In) depend on the temperature, the switching frequency and the mounting type (A, B or C).

For intermediate temperatures (45°C for example), interpolate between 2 curves.



X Switching frequency