

Product data sheet

Characteristics

ATV212WU40N4

variable speed drive ATV212 - 4kW - 5hp - 480V - 3ph - EMC class C2 - IP55



Product availability: Non-Stock - Not normally stocked in distribution facility

Price*: 829.00 USD



Main

Range of Product	Altivar 212
Product or Component Type	Variable speed drive
Device short name	ATV212
Product destination	Asynchronous motors
Product Specific Application	Pumps and fans in HVAC
Assembly style	With heat sink
Phase	3 phase
Motor power kW	4 KW
Maximum Horse Power Rating	5 Hp
[Us] rated supply voltage	380...480 V - 15...10 %
Supply voltage limits	323...528 V
Supply frequency	50...60 Hz - 5...5 %
EMC filter	Class C2 EMC filter integrated
Line current	6.4 A 480 V 8.1 A 380 V

Complementary

Apparent power	6.9 KVA 380 V
Prospective line Isc	5 KA
Continuous output current	9.1 A 380 V 9.1 A 460 V
Maximum transient current	10 A 60 s
Speed drive output frequency	0.5...200 Hz
Nominal switching frequency	12 kHz
Switching frequency	6...16 kHz adjustable 12...16 kHz with derating factor
Speed range	1...10
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn
Torque accuracy	+/- 15 %
Transient overtorque	120 % of nominal motor torque +/- 10 % 60 s

Asynchronous motor control profile	Flux vector control without sensor, standard Voltage/Frequency ratio, automatic IR compensation (U/f + automatic U ₀) Voltage/Frequency ratio, 5 points Voltage/Frequency ratio, 2 points Voltage/Frequency ratio - Energy Saving, quadratic U/f
Regulation loop	Adjustable PI regulator
Motor slip compensation	Not available in voltage/frequency ratio motor control Adjustable Automatic whatever the load
Local signalling	For DC bus energized 1 LED (red)
Output voltage	<= power supply voltage
Isolation	Electrical between power and control
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 in ² (2.5 mm ²) / AWG 14 L1/R, L2/S, L3/T terminal 0.01 in ² (6 mm ²) / AWG 10
Tightening torque	11.51 Lbf.in (1.3 N.m), 11.5 lb.in L1/R, L2/S, L3/T) 5.31 Lbf.in (0.6 N.m) VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES)
Supply	Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V D-C +/- 5 %, <10 A, protection type: overload and short-circuit protection Internal supply 24 V DC 21...27 V), <200 A overload and short-circuit protection
Analogue input number	2
Analogue input type	VIA switch-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 10 bits VIB configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 10 bits VIB configurable PTC probe 0...6 probes 1500 Ohm VIA switch-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 10 bits
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 number	1
Analogue output type	FM switch-configurable voltage 0...10 V DC 7620 Ohm 10 bits FM switch-configurable current 0...20 mA 970 Ohm 10 bits
Discrete output number	2
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, with level 1 PLC, impedance: 4700 Ohm R programmable 24 V DC, with level 1 PLC, impedance: 4700 Ohm RES programmable 24 V DC, with level 1 PLC, impedance: 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
Acceleration and deceleration ramps	Automatic based on the load Linear adjustable separately from 0.01 to 3200 s
Braking to standstill	By DC injection

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
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 Port Protocol	Modbus APOGEE FLN METASYS N2 BACnet LonWorks
Connector Type	1 RJ45 1 open style
Physical interface	2-wire RS 485
Transmission frame	RTU
Transmission Rate	9600 bps or 19200 bps
Data format	8 bits, 1 stop, odd even or no configurable parity
Type of polarization	No impedance
Number of addresses	1...247
Communication Service	Monitoring inhabitable Read holding registers (03) 2 words maximum Time out setting from 0.1 to 100 s Read device identification (43) Write multiple registers (16) 2 words maximum Write single register (06)
Option card	Communication card LonWorks
Operating position	Vertical +/- 10 degree
Maximum Width	9.06 In (230 mm)
Maximum Height	13.39 In (340 mm)
Maximum Depth	8.19 In (208 mm)
Net Weight	21.27 Lb(US) (9.65 kg)
Functionality	Mid
Specific application	HVAC
IP degree of protection	IP55

Environment

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 μ s - 8/20 μ s 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 conforming to IEC 61000-4-11
Pollution degree	3 conforming to IEC 61800-5-1
IP degree of protection	IP55 EN/IEC 61800-5-1 IP55 EN/IEC 60529
Vibration resistance	1.5 mm 3...13 Hz)EN/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	55 DB 86/188/EEC
Operating altitude	3280.84...9842.52 ft (1000...3000 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	5...95 % without condensation IEC 60068-2-3 5...95 % without dripping water IEC 60068-2-3
Ambient air temperature for operation	14...104 °F (-10...40 °C) without derating) 104...122 °F (40...50 °C) with derating factor)
Ambient Air Temperature for Storage	-13...158 °F (-25...70 °C)
Standards	EN 61800-3 environments 2 category C2 EN 61800-3 EN 61800-3 environments 2 category C1 EN 61800-3 category C2 IEC 61800-3 environments 2 category C3 IEC 61800-3 environments 1 category C3 EN 61800-3 category C3 IEC 61800-3 category C3 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C1 EN 61800-5-1 IEC 61800-5-1 IEC 61800-3 category C2 EN 55011 class A group 1 EN 61800-3 environments 1 category C2 IEC 61800-3 EN 61800-3 environments 1 category C3 IEC 61800-3 environments 1 category C2 EN 61800-3 environments 2 category C3 IEC 61800-3 environments 1 category C1 EN 61800-3 environments 1 category C1
Product Certifications	NOM 117 UL C-tick CSA
Marking	CE

Ordering and shipping details

Category	22157 - ATV212 1 - 25 HP 460 VOLT
Discount Schedule	CP4D
GTIN	03606480322693
Nbr. of units in pkg.	1
Package weight(Lbs)	19.92 Lb(US) (9.036 kg)
Returnability	No
Country of origin	ID

Packing Units

Unit Type of Package 1	PCE
Package 1 Height	12.20 In (31 cm)
Package 1 width	16.14 In (41 cm)
Package 1 Length	12.60 In (32 cm)
Unit Type of Package 2	P06
Number of Units in Package 2	4
Package 2 Weight	108.34 Lb(US) (49.14 kg)
Package 2 Height	31.50 In (80 cm)
Package 2 width	31.50 In (80 cm)
Package 2 Length	23.62 In (60 cm)

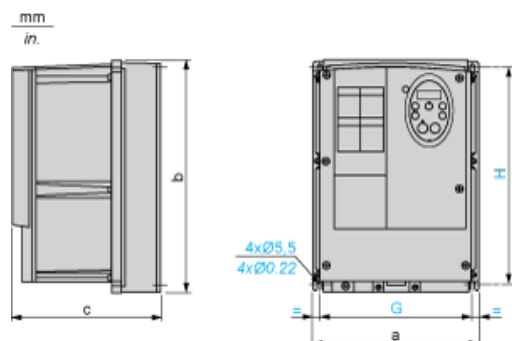
Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS Declaration
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End Of Life Information
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

Contractual warranty

Warranty	18 months
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Dimensions



Dimensions in mm

ATV212W	a	b	c	G	H
075N4...U22N4 075N4C...U22N4C	215	297	192	197	277
U30N4...U75N4 U30N4C...U75N4C	230	340	208	212	318

Dimensions in in.

ATV212W	a	b	c	G	H
075N4...U22N4 075N4C...U22N4C	8.46	11.69	7.56	7.76	10.91
U30N4...U75N4 U30N4C...U75N4C	9.06	13.39	8.19	8.35	12.52

Mounting Recommendations

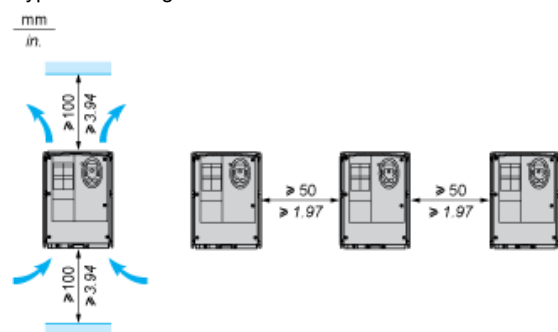
Clearance

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:

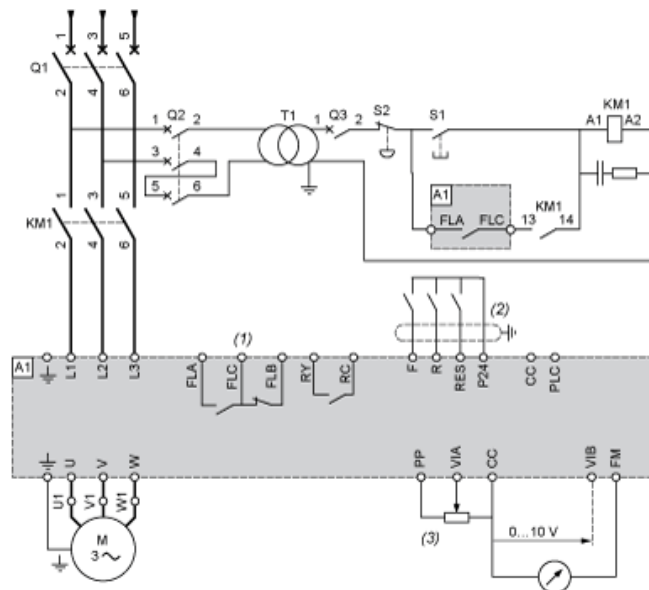
- Do not place it close to heating elements.
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from bottom to the top of the unit.

Type A Mounting



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)

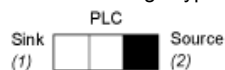
Voltage/current selection for analog I/O (VIA and VIB)



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



Selection of logic type



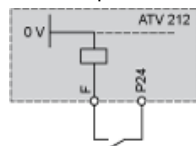
(1) negative logic

(2) positive logic

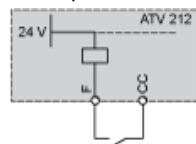
Other Possible Wiring Diagrams

Logic Inputs According to the Position of the Logic Type Switch

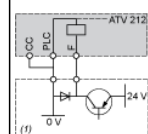
"Source" position



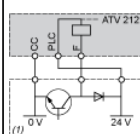
"Sink" position



"PLC" position with PLC transistor outputs

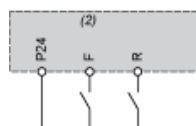


(1) PLC



(1) PLC

2-wire control

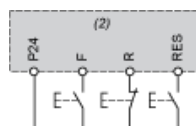


F: Forward

R: Preset speed

(2) ATV 212 control terminals

3-wire control



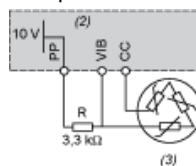
F: Forward

R: Stop

RES: Reverse

(2) ATV 212 control terminals

PTC probe



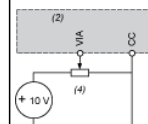
(2) ATV 212 control terminals

(3) Motor

Analog Inputs

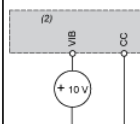
Voltage analog inputs

External +10 V



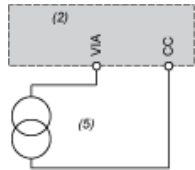
(2) ATV 212 control terminals

(4) Speed reference potentiometer 2.2 to 10 kΩ



(2) ATV 212 control terminals

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



(2) ATV 212 control terminals

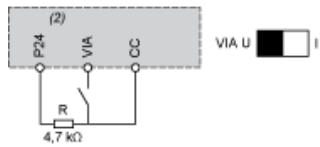
(5) Source 0-20 mA, 4-20 mA, X-Y mA

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



(2) ATV 212 control terminals

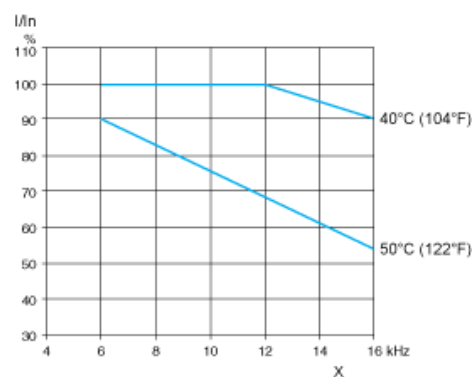
Analog input VIA configured as negative logic input ("Sink" position)



(2) ATV 212 control terminals

Derating Curves

The derating curves for the drive nominal current (I_n) depend on the temperature and the switching frequency.
For intermediate temperatures (45°C for example), interpolate between 2 curves.



X Switching frequency

Product Life Status : Commercialised