Product datasheet
Characteristics

ATV212WU40N4C
variable speed drive ATV212 - 4kW - 5hp - 480V - 3ph - EMC class C1 - IP55

Green Premium™ Product

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
Network number of phases	3 phases
Motor power kW	4 kW
Motor power hp	5 hp
[Us] rated supply voltage	380...480 V - 15...10 %
Supply voltage limits	323...528 V
Supply frequency	50...60 Hz - 5...5 %
Network frequency	47.5...63 Hz
EMC filter	Class C1 EMC filter integrated
Line current	6.5 A 480 V 8.2 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	12...16 kHz with derating factor 6...16 kHz adjustable
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	Voltage/frequency ratio, 2 points Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, automatic IR compensation (U/f + automatic Uo)
Regulation loop	Adjustable PI regulator
Motor slip compensation	Adjustable Automatic whatever the load Not available in voltage/frequency ratio motor control
Local signalling	1 LED red DC bus energized
Output voltage	<= power supply voltage
Isolation	Electrical between power and control
Type of cable	IEC cable without mounting kit 1 45 °C copper 90 °C XLPE/EPR IEC cable without mounting kit 1 45 °C copper 70 °C PVC UL 508 cable with UL Type 1 kit 3 40 °C copper 75 °C PVC
Electrical connection	Terminal 2.5 mm² AWG 14 VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES Terminal 6 mm² AWG 10 L1/R, L2/S, L3/T
Tightening torque	1.3 N.m 11.5 lb.in L1/R, L2/S, L3/T

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	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 DC +/- 5 % <= 10 A 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	Switch-configurable voltage VIA 0...10 V DC 24 V max 30000 Ohm 10 bits
	Configurable voltage VIB 0...10 V DC 24 V max 30000 Ohm 10 bits
	Configurable PTC probe VIB 0...6 probes 1500 Ohm
	Switch-configurable current VIA 0...20 mA 250 Ohm 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	2 ms +/- 0.5 ms FM analog
	7 ms +/- 0.5 ms FLA, FLC discrete
	7 ms +/- 0.5 ms FLB, FLC discrete
	7 ms +/- 0.5 ms RY, RC 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	+/- 0.15 % of maximum value input VIA
	+/- 0.15 % of maximum value input VIB
	+/- 0.2 % output FM
Analogue output number	1
Analogue output type	Switch-configurable voltage FM 0...10 V DC 7620 Ohm 10 bits
	Switch-configurable current FM 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	Programmable F 24 V DC level 1 PLC 4700 Ohm
	Programmable R 24 V DC level 1 PLC 4700 Ohm
	Programmable RES 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
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	Input phase breaks drive
	Line supply overvoltage and undervoltage drive
	Line supply undervoltage drive
	Overcurrent between output phases and earth drive
	Overheating protection drive
	Short-circuit between motor phases drive
	Thermal protection motor
	Motor phase break motor
	Break on the control circuit drive
	Thermal power stage drive
	Overvoltages on the DC bus drive
	Against exceeding limit speed drive
	Against input phase loss drive
	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	0.1 Hz display unit
	0.024/50 Hz analog input
Communication port protocol	APOGEE FLN
	BACnet
	LonWorks
	METASYS N2
	Modbus
Connector type	1 RJ45

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	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 inhibitable Read device identification (43) Read holding registers (03) 2 words maximum Time out setting from 0.1 to 100 s Write multiple registers (16) 2 words maximum Write single register (06)
Option card	Communication card LonWorks
Operating position	Vertical +/- 10 degree
Width	230 mm
Height	340 mm
Depth	208 mm
Product weight	10.55 kg
Specific application	HVAC
IP degree of protection	IP55

Environment

electromagnetic compatibility	1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Conducted radio-frequency immunity test level 3 IEC 61000-4-6 Voltage dips and interruptions immunity test IEC 61000-4-11
pollution degree	3 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	<= 1000 m without derating 1000...3000 m limited to 2000 m for the Corner Grounded distribution network with current derating 1 % per 100 m
relative humidity	5...95 % without condensation IEC 60068-2-3 5...95 % without dripping water IEC 60068-2-3
ambient air temperature for operation	-10...40 °C without derating > 40...50 °C with derating factor
ambient air temperature for storage	-25...70 °C
standards	EN 55011 group 1 class B EN 61800-3 EN 61800-3 category C1 EN 61800-3 environments 1 category C1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 1 category C3 EN 61800-3 environments 2 category C1 EN 61800-3 environments 2 category C2 EN 61800-3 environments 2 category C3 EN 61800-5-1 IEC 61800-3 IEC 61800-3 category C1 IEC 61800-3 environments 1 category C1 IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C3 IEC 61800-5-1
product certifications	CSA

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	C-Tick NOM 117 UL
marking	CE

Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1112 - Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold
Product environmental profile	Available
Product end of life instructions	Available

Dimensions
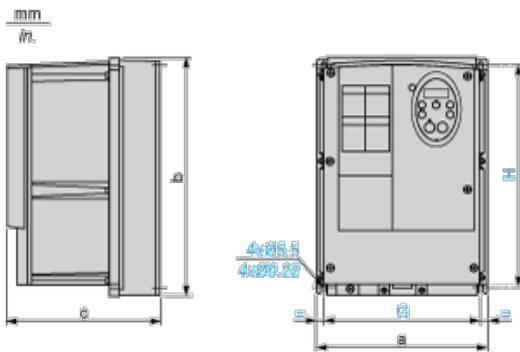
Dimensions in mm

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:

l Do not place it close to heating elements.

l 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
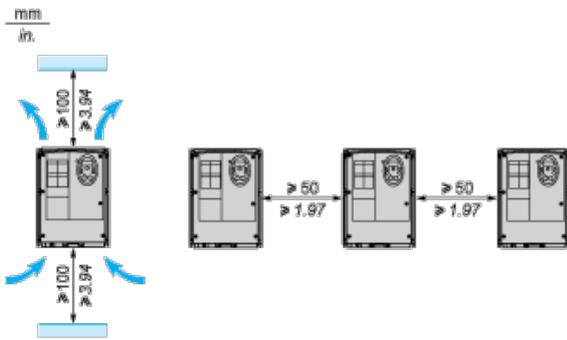
Recommended Wiring Diagram

3-Phase Power Supply
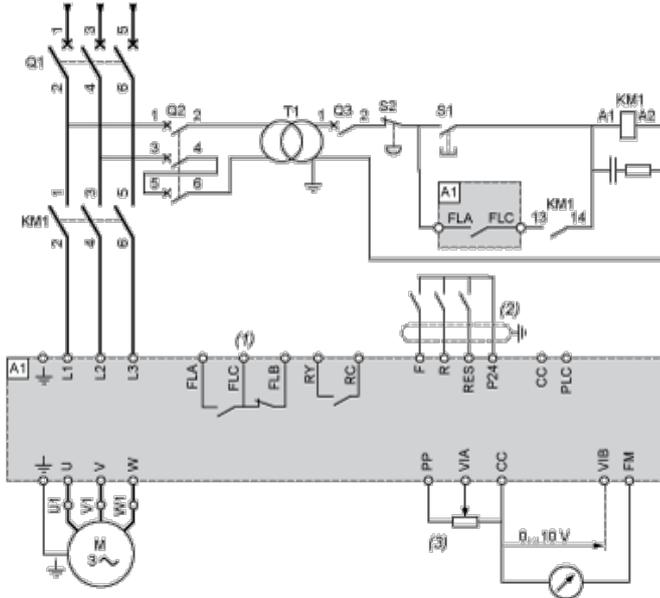
A1: ATV 212 drive

KM1: Contactor

Q1: Circuit breaker

Q2: GV2 L rated at twice the nominal primary current of T1

Q3: GB2CB05

S1, XB4 B or XB5 A pushbuttons
S2:

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
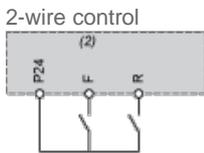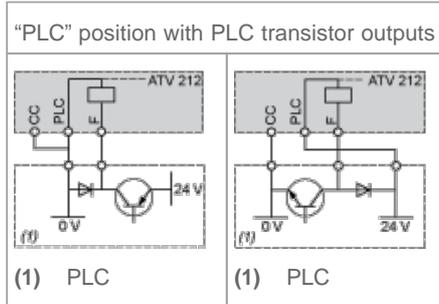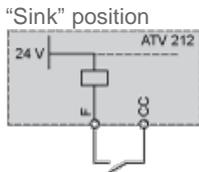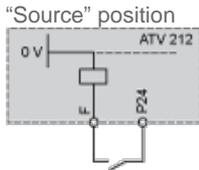
F: Forward

R: Preset speed

(2) ATV 212 control terminals

3-wire control
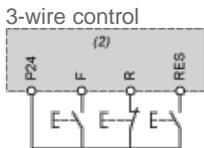
F: Forward

R: Stop

RES: Reverse

(2) ATV 212 control terminals

PTC probe
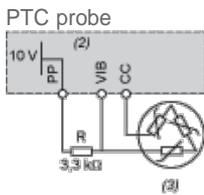
(2) ATV 212 control terminals

(3) Motor

Analog Inputs

Voltage analog inputs

External +10 V

(2) ATV 212 control terminals	**(2)** ATV 212 control terminals
(4) Speed reference potentiometer 2.2 to	
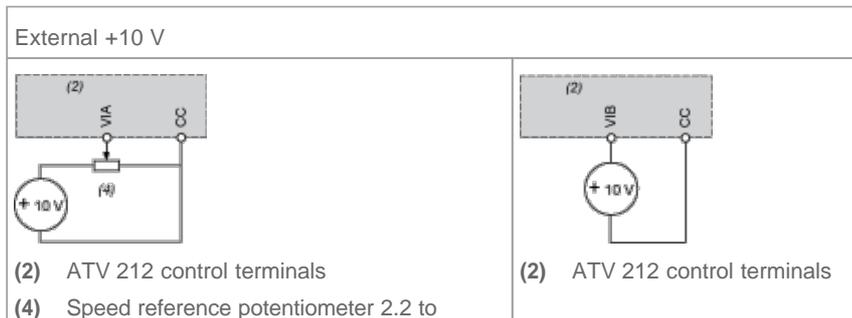
10 kΩ	

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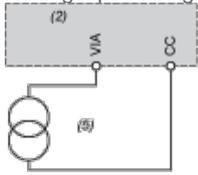

(2) ATV 212 control terminals

(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)
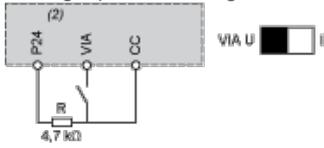
(2) ATV 212 control terminals

Derating Curves

The derating curves for the drive nominal current (In) depend on the temperature and the switching frequency.

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

X Switching frequency