Specifications





variable speed drive, Altivar 212, 37kW, 50hp, 480V, 3 phases, with EMC, IP21

ATV212HD37N4

Main

Device short name	ATV212
Product destination	Asynchronous motors
Network number of phases	3 phases
Motor power kW	37 kW
Motor power hp	50 hp
Supply voltage limits	323528 V
Supply frequency	5060 Hz - 55 %
Line current	68.9 A at 380 V 54.4 A at 480 V
Range of product	Altivar 212
Product or component type	Variable speed drive
Product specific application	Pumps and fans in HVAC
Communication port protocol	METASYS N2 BACnet Modbus APOGEE FLN LonWorks
[Us] rated supply voltage	380480 V - 1510 %
EMC filter	Class C2 EMC filter integrated
IP degree of protection	IP21

Complementary

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Apparent power	52 kVA at 380 V
Continuous output current	79 A at 380 V 79 A at 460 V
Maximum transient current	86.9 A for 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	1 LED (red) for DC bus energized
Output voltage	<= power supply voltage
Isolation	Electrical between power and control
Type of cable	Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 90 °C / XLPE/EPR Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 70 °C / PVC With UL Type 1 kit: 3 wire(s)UL 508 cable at 40 °C, copper 75 °C / PVC

Electrical connection	VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES: terminal 2.5 mm² / AWG 14 L1/R, L2/S, L3/T: terminal 50 mm² / AWG 1/0				
Tightening torque	0.6 N.m (VIA, VIB, FM, FLA, FLB, FLC, RY, RC, F, R, RES) 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, protection type: overload and short-circuit protection Internal supply: 24 V DC (2127 V), <200 A, protection type: 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, tolerance +/- 0.5 ms for analog output(s) FLA, FLC 7 ms, tolerance +/- 0.5 ms for discrete output(s) FLB, FLC 7 ms, tolerance +/- 0.5 ms for discrete output(s) RY, RC 7 ms, tolerance +/- 0.5 ms for discrete output(s)				
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 for input VIB: +/- 0.15 % of maximum value for input FM: +/- 0.2 % for output				
Analogue output type	FM switch-configurable voltage 010 V DC, impedance: 7620 Ohm, resolution 10 bits FM switch-configurable current 020 mA, impedance: 970 Ohm, resolution 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 at 24 V DC for configurable relay logic				
Maximum switching current	5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (FL, R) 5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (FL, R) 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (FL, R) 2 A at 30 V DC on inductive load - 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 (state 0), >= 11 V (state 1) Negative logic (sink) (F, R, RES), >= 16 V (state 0), <= 10 V (state 1)				
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	Read holding registers (03) 2 words maximum Monitoring inhibitable Write single register (06) Write multiple registers (16) 2 words maximum Time out setting from 0.1 to 100 s Read device identification (43)				
Option card	Communication card for LonWorks				
Power dissipation in W	976 W				
Air flow	334 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	3050 kW at 380440 V 3 phases 3050 kW at 480500 V 3 phases
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, impedance: 30000 Ohm, resolution 10 bits VIB configurable voltage: 010 V DC 24 V max, impedance: 30000 Ohm, resolution 10 bits VIB configurable PTC probe: 06 probes, impedance: 1500 Ohm VIA switch-configurable current: 020 mA, impedance: 250 Ohm, resolution 10 bits
Analogue output number	1
Physical interface	2-wire RS 485
Connector type	1 open style 1 RJ45
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	Flux vector control without sensor, standard Voltage/frequency ratio, 5 points Voltage/frequency ratio, 2 points Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, automatic IR compensation (U/f + automatic Uo)
Torque accuracy	+/- 15 %
Transient overtorque	120 % of nominal motor torque +/- 10 % for 60 s
Acceleration and deceleration ramps	Linear adjustable separately from 0.01 to 3200 s Automatic based on the load
Motor slip compensation	Not available in voltage/frequency ratio motor control Automatic whatever the load Adjustable
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	240 mm
Height	550 mm

Depth 244 mm

Environment

Pollution degree	3 conforming to IEC 61800-5-1
IP degree of protection	IP20 on upper part without blanking plate on cover conforming to IEC 61800-5-1 IP20 on upper part without blanking plate on cover conforming to IEC 60529 IP21 conforming to IEC 61800-5-1 IP21 conforming to IEC 60529 IP41 on upper part conforming to IEC 61800-5-1 IP41 on upper part conforming to IEC 60529
Vibration resistance	1.5 mm (f= 313 Hz) conforming to IEC 60068-2-6 1 gn (f= 13200 Hz) conforming to EN/IEC 60068-2-8
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27
Environmental characteristic	Classes 3C1 conforming to IEC 60721-3-3 Classes 3S2 conforming to IEC 60721-3-3
Noise level	64 dB conforming to 86/188/EEC
Operating altitude	10003000 m limited to 2000 m for the Corner Grounded distribution network with current derating 1 % per 100 m <= 1000 m without derating
Relative humidity	595 % without condensation conforming to IEC 60068-2-3 595 % without dripping water conforming to IEC 60068-2-3
Ambient air temperature for operation	-1040 °C (without derating) 4050 °C (with derating factor)
Operating position	Vertical +/- 10 degree
product certifications	UL NOM 117 C-Tick CSA
marking	CE
Standards	IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 1 category C3 IEC 61800-3 category C2 IEC 61800-3 environments 1 category C1 EN 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C1 IEC 61800-3 environments 2 category C3 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 1 category C3 IEC 61800-3 environments 1 category C2 EN 55011 class A group 1 IEC 61800-5-1 IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 2 category C3
Assembly style	With heat sink
Electromagnetic compatibility	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11
Regulation loop	Adjustable PI regulator
Ambient air temperature for storage	-2570 °C

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	45 cm
Package 1 Width	38.5 cm
Package 1 Length	70 cm
Package 1 Weight	23.5 kg

Contractual warranty

15-Sept-2024

Warranty 18 months



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Transparency RoHS/REACh

Well-being performance



Mercury Free



Rohs Exemption Information

Yes

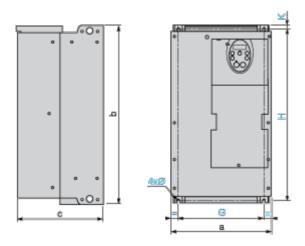
Certifications & Standards

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	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Circularity Profile	End of Life Information

ATV212HD37N4

Dimensions Drawings

Dimensions



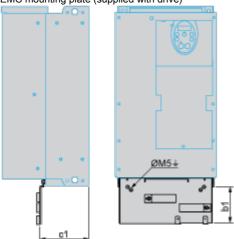
Dimensions in mm

Dilliens	510115 111 111111							
ATV2	12H	а	b	С	G	Н	K	Ø
D22M D22N	3X 4, D30N4	240	420	214	206	403	10	6
D37N4	4, 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

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Dimensions in in.

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

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Mounting and Clearance

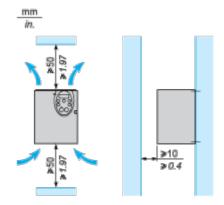
Mounting Recommendations

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.

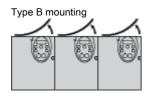


Mounting Types

Type A mounting

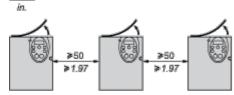






Type C mounting





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.

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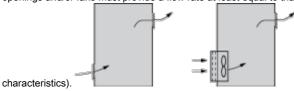
Specific Recommendations for Mounting in an Enclosure

To help ensure proper air circulation in the drive:

• Fit ventilation grilles.

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



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

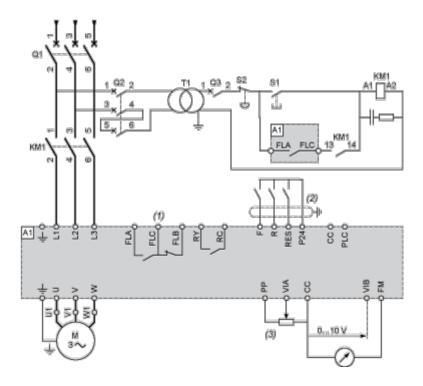
Sealed Metal Enclosure (IP54 Degree of Protection)

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 I PTC

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

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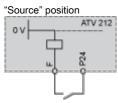
Selection of logic type PLC

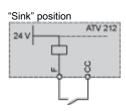
Sink Source (2)

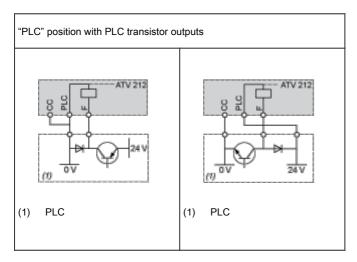
- (1) negative logic
- (2) positive logic

Other Possible Wiring Diagrams

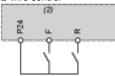
Logic Inputs According to the Position of the Logic Type Switch





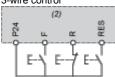


2-wire control



- F: Forward
- R: Preset speed
- (2) ATV 212 control terminals

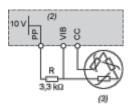
3-wire control



- F: Forward
- R: Stop
- RES: Reverse
- (2) ATV 212 control terminals

PTC probe

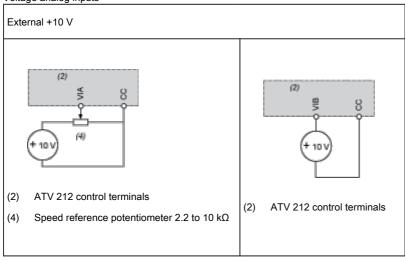
ATV212HD37N4



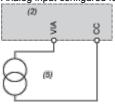
- (2) ATV 212 control terminals
- (3) Motor

Analog Inputs

Voltage analog inputs

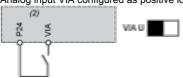


Analog input configured for current: 0-20 mA, 4-20 mA, X-Y mA



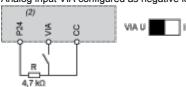
- (2) ATV 212 control terminals
- (5) Source 0-20 mA, 4-20 mA, X-Y mA

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

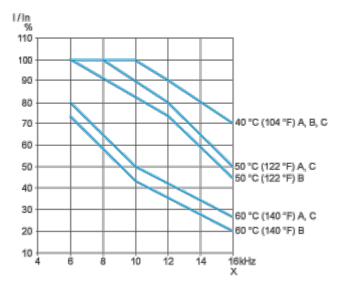
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Performance Curves

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

Image of product / Alternate images

Alternative





