



Main

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|------------------------------|--------------------------------|
| 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 | 3 kW |
| Maximum Horse Power Rating | 4 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 C1 EMC filter integrated |
| Line current | 6.2 A 380 V 5 A 480 V |

Complementary

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| Apparent power | 5.5 kVA 380 V |
| Prospective line I _{sc} | 5 kA |
| Continuous output current | 7.2 A 380 V 7.2 A 460 V |
| Maximum transient current | 7.9 A for 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 T _n to T _n |
| Torque accuracy | +/- 15 % |
| Transient overtorque | 120 % of nominal motor torque +/- 10 % 60 s |
| Asynchronous motor control profile | Voltage/Frequency ratio - Energy Saving, quadratic U/f Voltage/Frequency ratio, 5 points Voltage/Frequency ratio, automatic IR compensation (U/f + automatic U ₀) Flux vector control without sensor, standard Voltage/frequency ratio, 2 points |
| Regulation loop | Adjustable PI regulator |
| Motor slip compensation | Not available in voltage/frequency ratio motor control Adjustable Automatic whatever the load |
| Local signalling | DC bus energized 1 LED red) |
| 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 UL 508 cable 104 °F (40 °C), copper 75 °C / PVC |

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|-------------------------------------|---|
| 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 DC +/- 5 %, <10 A, protection type: overload and short-circuit protection Internal supply: 24 V DC (21...27 V), <200 A, protection type: overload and short-circuit protection |
| Analogue input number | 2 |
| Analogue input type | VIA switch-configurable voltage 0...10 V DC 24 V max 30000 Ohm 10 bits VIB configurable voltage 0...10 V DC 24 V max 30000 Ohm 10 bits VIB configurable PTC probe 0...6 probes 1500 Ohm VIA switch-configurable current 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 | 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 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 |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01 to 3200 s Automatic based on the load |
| 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 |

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| Communication port protocol | METASYS N2 Modbus LonWorks APOGEE FLN BACnet |
| 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 | Time out setting from 0.1 to 100 s Read holding registers (03) 2 words maximum Read device identification (43) Write multiple registers (16) 2 words maximum Monitoring inhibitible Write single register (06) |
| Option card | Communication card LonWorks |
| Operating position | Vertical +/- 10 degree |
| Width | 9.06 in (230 mm) |
| Height | 13.39 in (340 mm) |
| Depth | 8.19 in (208 mm) |
| Net weight | 23.26 lb(US) (10.55 kg) |
| Specific application | HVAC |
| IP degree of protection | IP55 |

Environment

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|---------------------------------------|---|
| 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 μ s - 8/20 μ s 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 |
| 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 (f= 3...13 Hz) conforming to 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 conforming to 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) 40...50 °C (with derating factor) |
| Ambient air temperature for storage | -13...158 °F (-25...70 °C) |

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| Standards | IEC 61800-3 environments 1 category C3 EN 61800-3 category C1 EN 61800-3 IEC 61800-3 IEC 61800-3 environments 1 category C1 EN 61800-3 environments 2 category C3 EN 61800-3 environments 1 category C3 EN 55011 group 1 class B IEC 61800-3 category C1 EN 61800-5-1 EN 61800-3 environments 1 category C2 IEC 61800-3 environments 2 category C3 EN 61800-3 environments 2 category C1 EN 61800-3 environments 2 category C2 IEC 61800-3 environments 2 category C1 IEC 61800-5-1 EN 61800-3 environments 1 category C1 IEC 61800-3 environments 1 category C2 IEC 61800-3 environments 2 category C2 |
| Product certifications | C-tick UL NOM 117 CSA |
| Marking | CE |

Ordering and shipping details

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|-----------------------|-----------------------------------|
| Category | 22157 - ATV212 1 - 25 HP 460 VOLT |
| Discount Schedule | CP4D |
| GTIN | 03606480322631 |
| Nbr. of units in pkg. | 1 |
| Package weight(Lbs) | 22.28 lb(US) (10.11 kg) |
| Returnability | No |
| Country of origin | ID |

Packing Units

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|------------------------------|--------------------------|
| Unit Type of Package 1 | PCE |
| Package 1 Height | 12.20 in (31 cm) |
| Package 1 width | 10.24 in (26 cm) |
| Package 1 Length | 16.34 in (41.5 cm) |
| Unit Type of Package 2 | P06 |
| Number of Units in Package 2 | 4 |
| Package 2 Weight | 114.33 lb(US) (51.86 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

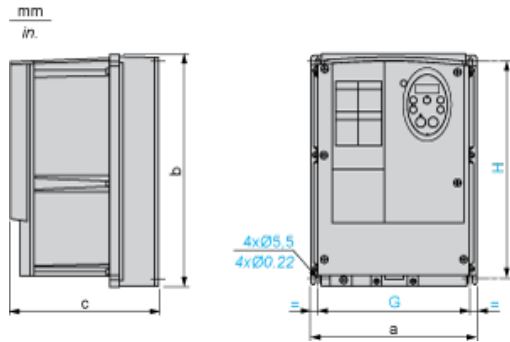
| | |
|----------------------------|---|
| Sustainable offer status | Green Premium product |
| California proposition 65 | WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive 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 |

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|---------------------|--|
| 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

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| Warranty | 18 months |
|----------|-----------|

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

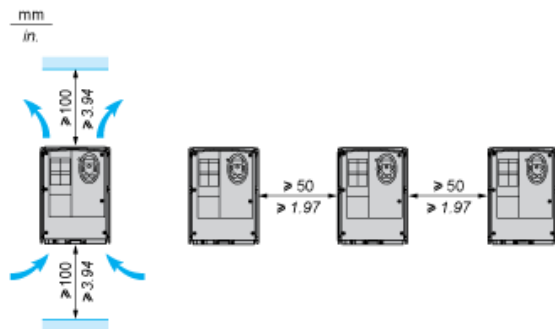
Clearance

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:

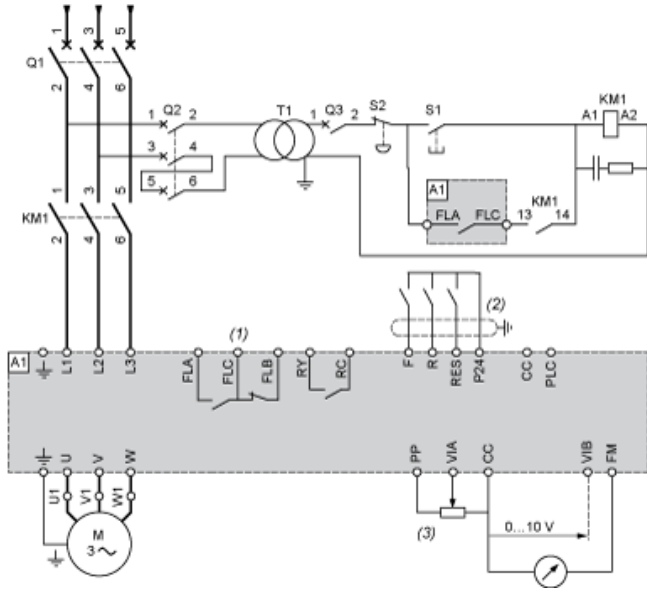
- Do not place it close to heating elements.
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from bottom to the top of the unit.

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, 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

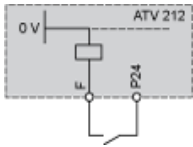


- (1) negative logic
- (2) positive logic

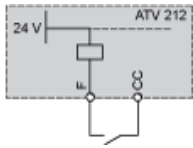
Other Possible Wiring Diagrams

Logic Inputs According to the Position of the Logic Type Switch

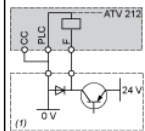
"Source" position



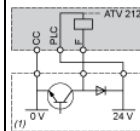
"Sink" position



"PLC" position with PLC transistor outputs

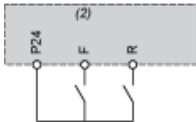


(1) PLC



(1) PLC

2-wire control

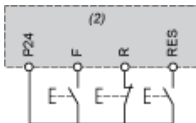


F: Forward

R: Preset speed

(2) ATV 212 control terminals

3-wire control



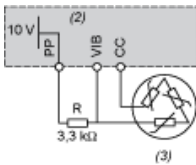
F: Forward

R: Stop

RES: Reverse

(2) ATV 212 control terminals

PTC probe



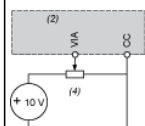
(2) ATV 212 control terminals

(3) Motor

Analog Inputs

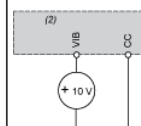
Voltage analog inputs

External +10 V



(2) ATV 212 control terminals

(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

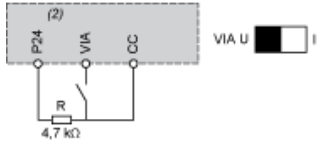
(5) Source 0-20 mA, 4-20 mA, X-Y mA

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



(2) ATV 212 control terminals

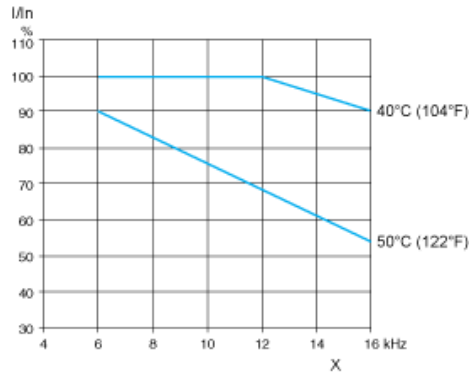
Analog input VIA configured as negative logic input ("Sink" position)



(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