



Main

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| Range of product | Altivar 12 |
| Product or component type | Variable speed drive |
| Product destination | Asynchronous motors |
| Product specific application | Simple machine |
| Assembly style | On base plate |
| Component name | ATV12 |
| Quantity per set | Set of 1 |
| EMC filter | Without EMC filter |
| Built-in fan | Without |
| Network number of phases | 3 phases |
| [Us] rated supply voltage | 200...240 V - 15...10 % |
| Motor power kW | 4 kW |
| Motor power hp | 5 hp |
| Communication port protocol | Modbus |
| Line current | 23.8 A 200 V 19.9 A 240 V |
| Speed range | 1...20 |
| Transient overtorque | 150...170 % of nominal motor torque depending on drive rating and type of motor |
| Asynchronous motor control profile | Quadratic voltage/frequency ratio Sensorless flux vector control Voltage/frequency ratio (V/f) |
| IP degree of protection | IP20 without blanking plate on upper part |
| Noise level | 0 dB |

Complementary

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| Supply frequency | 50/60 Hz +/- 5 % |
| Connector type | 1 RJ45 Modbus on front face |
| Physical interface | 2-wire RS 485 Modbus |
| Transmission frame | RTU Modbus |
| Transmission rate | 4800 bit/s 9600 bit/s 19200 bit/s 38400 bit/s |

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| Number of addresses | 1...247 Modbus |
| Communication service | Read holding registers (03) 29 words Write single register (06) 29 words Write multiple registers (16) 27 words Read/write multiple registers (23) 4/4 words Read device identification (43) |
| Prospective line I _{sc} | <= 5 kA |
| Continuous output current | 16.7 A 4 kHz |
| Maximum transient current | 25 A 60 s |
| Speed drive output frequency | 0.5...400 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 2...16 kHz adjustable 4...16 kHz with derating factor |
| Braking torque | Up to 70 % of nominal motor torque without braking resistor |
| Motor slip compensation | Adjustable Preset in factory |
| Output voltage | 200...240 V 3 phases |
| Electrical connection | Terminal 5.5 mm ² AWG 10 L1, L2, L3, U, V, W, PA, PC |
| Tightening torque | 1.2 N.m |
| Insulation | Electrical between power and control |
| Supply | Internal supply for reference potentiometer 5 V DC 4.75...5.25 V 10 mA overload and short-circuit protection Internal supply for logic inputs 24 V DC 20.4...28.8 V 100 mA overload and short-circuit protection |
| Analogue input number | 1 |
| Analogue input type | Configurable voltage AI1 0...10 V 30 kOhm Configurable voltage AI1 0...5 V 30 kOhm Configurable current AI1 0...20 mA 250 Ohm |
| Discrete input number | 4 |
| Discrete input type | Programmable LI1...LI4 24 V 18...30 V |
| Discrete input logic | Negative logic (sink) > 16 V < 10 V 3.5 kOhm Positive logic (source) 0...< 5 V > 11 V |
| Sampling duration | 20 ms +/- 1 ms logic input 10 ms analogue input |
| Linearity error | +/- 0.3 % of maximum value analogue input |
| Analogue output number | 1 |
| Analogue output type | Software-configurable voltage AO1 0...10 V 470 Ohm 8 bits Software-configurable current AO1 0...20 mA 800 Ohm 8 bits |
| Discrete output number | 2 |
| Discrete output type | Logic output LO+, LO- Protected relay output R1A, R1B, R1C 1 C/O |
| Minimum switching current | 5 mA 24 V DC logic relay |
| Maximum switching current | 2 A 250 V AC inductive cos phi = 0.4 L/R = 7 ms logic relay 2 A 30 V DC inductive cos phi = 0.4 L/R = 7 ms logic relay 3 A 250 V AC resistive cos phi = 1 L/R = 0 ms logic relay 4 A 30 V DC resistive cos phi = 1 L/R = 0 ms logic relay |
| Acceleration and deceleration ramps | Linear from 0 to 999.9 s S U |
| Braking to standstill | By DC injection <= 30 s |
| Protection type | Against input phase loss in three-phase Thermal motor protection via the drive by continuous calculation of I ² t Line supply overvoltage Line supply undervoltage Overcurrent between output phases and earth Overheating protection Short-circuit between motor phases |
| Frequency resolution | 0.1 Hz display unit Converter A/D, 10 bits analog input |
| Time constant | 20 ms +/- 1 ms for reference change |
| Marking | CE |
| Operating position | Vertical +/- 10 degree |

| | |
|--|---|
| Height | 184 mm |
| Width | 140 mm |
| Depth | 100.2 mm |
| Product weight | 1.6 kg |
| Variable speed drive application selection | Commercial equipment : mixer Commercial equipment : other application Textile : ironing |
| Motor starter type | Variable speed drive |

Environment

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|---------------------------------------|--|
| Electromagnetic compatibility | Immunity to conducted disturbances level 3 EN/IEC 61000-4-6 Surge immunity test level 3 EN/IEC 61000-4-5 Voltage dips and interruptions immunity test EN/IEC 61000-4-11 Electrical fast transient/burst immunity test level 4 EN/IEC 61000-4-4 Electrostatic discharge immunity test level 3 EN/IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 EN/IEC 61000-4-3 |
| Electromagnetic emission | Radiated emissions environment 1 category C2 EN/IEC 61800-3 2...16 kHz shielded motor cable Conducted emissions EN/IEC 61800-3 |
| Product certifications | CSA C-Tick GOST NOM UL |
| Vibration resistance | 1 gn EN/IEC 60068-2-6 13...200 Hz 1.5 mm peak to peak EN/IEC 60068-2-6 3...13 Hz drive unmounted on symmetrical DIN rail |
| Shock resistance | 15 gn EN/IEC 60068-2-27 11 ms |
| Relative humidity | 5...95 % without condensation IEC 60068-2-3 5...95 % without dripping water IEC 60068-2-3 |
| Ambient air temperature for storage | -25...70 °C |
| Ambient air temperature for operation | -10...40 °C protective cover from the top of the drive removed 40...60 °C with current derating 2.2 % per °C |
| Operating altitude | > 1000...3000 m with current derating 1 % per 100 m <= 1000 m without derating |

Offer Sustainability

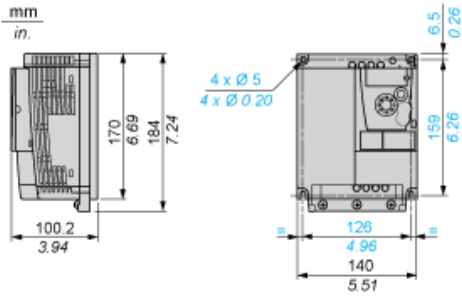
| | |
|------------------------|---|
| RoHS (date code: YYWW) | Compliant - since 0901 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity |
| REACH | Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold |

Contractual warranty

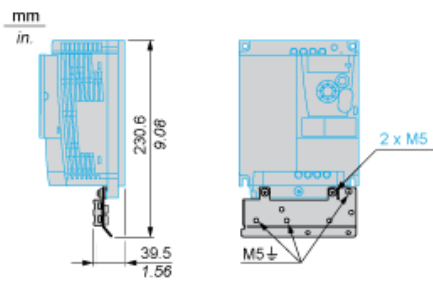
| | |
|-----------------|-----------|
| Warranty period | 18 months |
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Dimensions

Drive without EMC Conformity Kit

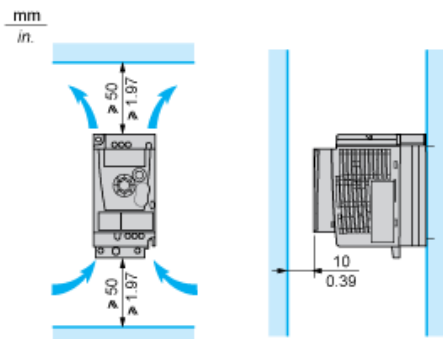


Drive with EMC Conformity Kit

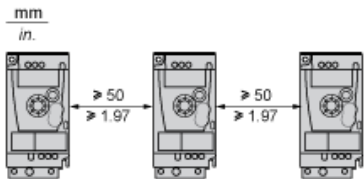


Mounting Recommendations

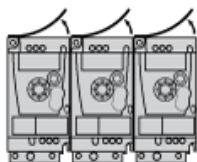
Clearance for Vertical Mounting



Mounting Type A

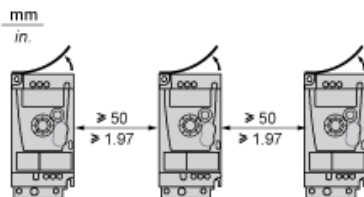


Mounting Type B



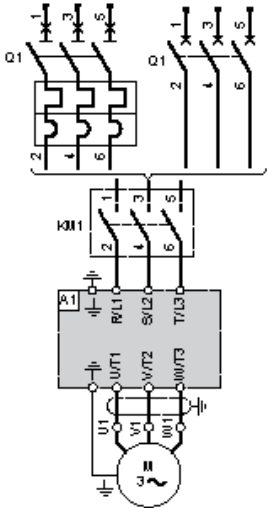
Remove the protective cover from the top of the drive.

Mounting Type C



Remove the protective cover from the top of the drive.

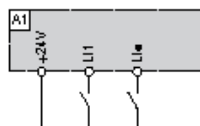
Three-Phase Power Supply Wiring Diagram



- A1 Drive
- KM1 Contactor (only if a control circuit is needed)
- Q1 Circuit breaker

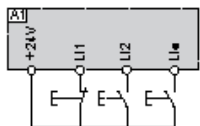
Recommended Schemes

2-Wire Control for Logic I/O with Internal Power Supply



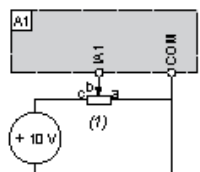
LI1 : Forward
LI• : Reverse
A1 : Drive

3-Wire Control for Logic I/O with Internal Power Supply



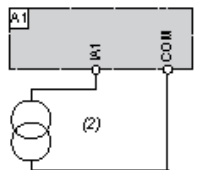
LI1 : Stop
LI2 : Forward
LI• : Reverse
A1 : Drive

Analog Input Configured for Voltage with Internal Power Supply



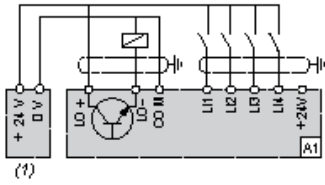
(1) 2.2 kΩ...10 kΩ reference potentiometer
A1 : Drive

Analog Input Configured for Current with Internal Power Supply



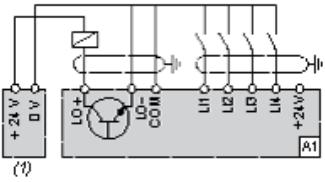
(2) 0-20 mA 4-20 mA supply
A1 : Drive

Connected as Positive Logic (Source) with External 24 vdc Supply



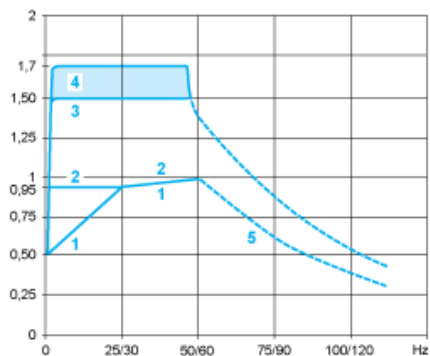
- (1) 24 vdc supply
- A1 : Drive

Connected as Negative Logic (Sink) with External 24 vdc supply



- (1) 24 vdc supply
- A1 : Drive

Torque Curves



- 1 : Self-cooled motor: continuous useful torque (1)
- 2 : Force-cooled motor: continuous useful torque

3 : Transient overtorque for 60 s

4 : Transient overtorque for 2 s

5 : Torque in overspeed at constant power (2)

(1) For power ratings ≤ 250 W, derating is 20% instead of 50% at very low frequencies.

(2) The nominal motor frequency and the maximum output frequency can be adjusted from 0.5 to 400 Hz. The mechanical overspeed capability of the s