

Product data sheet

Characteristics

ATV312HU22M2

Altivar 312, Variable speed drive ATV312,
2.2kW, 4.4kVA, 123W, 200..240 V, 1 phase
supply



Main

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|------------------------------------|---|
| Range of product | Altivar 312 |
| Product or component type | Variable speed drive |
| Product destination | Asynchronous motors |
| Product specific application | Simple machine |
| Assembly style | With heat sink |
| Component name | ATV312 |
| Motor power kW | 2.2 kW |
| Motor power hp | 3 hp |
| [Us] rated supply voltage | 200...240 V - 15...10 % |
| Supply frequency | 50...60 Hz - 5...5 % |
| Network number of phases | Single phase |
| Line current | 21.9 A at 200 V, I _{sc} = 1 kA 18.4 A at 240 V |
| EMC filter | Integrated |
| Apparent power | 4.4 kVA |
| Maximum transient current | 16.5 A for 60 s |
| Power dissipation in W | 123 W at nominal load |
| Speed range | 1...50 |
| Asynchronous motor control profile | Sensorless flux vector control with PWM type motor control signal Factory set : constant torque |
| Electrical connection | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, L1...L16 terminal 2.5 mm ² AWG 14 L1, L2, L3, U, V, W, PA, PB, PA+, PC/- terminal 5 mm ² AWG 10 |
| Supply | Internal supply for logic inputs: 19...30 V 100 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (2.2 to 10 kOhm): 10...10.8 V 10 mA, protection type: overload and short-circuit protection |
| Communication port protocol | CANopen Modbus |
| IP degree of protection | IP20 on upper part without cover plate IP21 on connection terminals IP31 on upper part IP41 on upper part |
| Option card | Communication card for CANopen daisy chain Communication card for DeviceNet Communication card for Fipio Communication card for Modbus TCP Communication card for Profibus DP |

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Complementary

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| Supply voltage limits | 170...264 V |
| Prospective line I _{sc} | 1 kA |
| Continuous output current | 11 A at 4 kHz |
| Output frequency | 0...500 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 2...16 kHz adjustable |
| Transient overtorque | 170...200 % of nominal motor torque |
| Braking torque | 150 % during 60 s with braking resistor 100 % with braking resistor continuously 150 % without braking resistor |
| Regulation loop | Frequency PI regulator |
| Motor slip compensation | Suppressable Automatic whatever the load Adjustable |
| Output voltage | <= power supply voltage |
| Tightening torque | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6: 0.6 N.m L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-: 1.2 N.m |
| Insulation | Electrical between power and control |
| Analogue input number | 3 |
| Analogue input type | AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance: 30000 Ohm AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance: 30000 Ohm AI3 configurable current 0...20 mA, impedance: 250 Ohm |
| Sampling duration | AI1, AI2, AI3: 8 ms analog LI1...LI6: 4 ms discrete |
| Response time | AOV, AOC 8 ms for analog R1A, R1B, R1C, R2A, R2B 8 ms for discrete |
| Linearity error | +/- 0.2 % for output |
| Analogue output number | 1 |
| Analogue output type | AOC configurable current: 0...20 mA, impedance: 800 Ohm, resolution: 8 bits AOV configurable voltage: 0...10 V, impedance: 470 Ohm, resolution: 8 bits |
| Discrete input logic | Logic input not wired (LI1...LI4), < 13 V (state 1) Negative logic (source) (LI1...LI6), > 19 V (state 0) Positive logic (source) (LI1...LI6), < 5 V (state 0), > 11 V (state 1) |
| Discrete output number | 2 |
| Discrete output type | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles Configurable relay logic: (R2A, R2B) NC - 100000 cycles |
| Minimum switching current | R1-R2 10 mA at 5 V DC |
| Maximum switching current | R1-R2: 2 A at 250 V AC inductive load, cos phi = 0.4 and L/R = 7 ms R1-R2: 2 A at 30 V DC inductive load, cos phi = 0.4 and L/R = 7 ms R1-R2: 5 A at 250 V AC resistive load, cos phi = 1 and L/R = 0 ms R1-R2: 5 A at 30 V DC resistive load, cos phi = 1 and L/R = 0 ms |
| Discrete input number | 6 |
| Discrete input type | (LI1...LI6) programmable at 24 V, 0...100 mA for PLC, impedance: 3500 Ohm |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.1 to 999.9 s S, U or customized |
| Braking to standstill | By DC injection |
| Protection type | Input phase breaks: drive Line supply overvoltage and undervoltage safety circuits: drive Line supply phase loss safety function, for three phases supply: drive Motor phase breaks: drive Overcurrent between output phases and earth (on power up only): drive Overheating protection: drive Short-circuit between motor phases: drive Thermal protection: motor |
| Insulation resistance | >= 500 mOhm 500 V DC for 1 minute |
| Local signalling | 1 LED (red) for drive voltage Four 7-segment display units for CANopen bus status |
| Time constant | 5 ms for reference change |
| Frequency resolution | Analogue input: 0.1...100 Hz Display unit: 0.1 Hz |

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| Connector type | 1 RJ45 for Modbus/CANopen |
| Physical interface | RS485 multidrop serial link |
| Transmission frame | RTU |
| Transmission rate | 10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen 4800, 9600 or 19200 bps for Modbus |
| Number of addresses | 1...127 for CANopen 1...247 for Modbus |
| Number of drive | 127 for CANopen 31 for Modbus |
| Marking | CE |
| Operating position | Vertical +/- 10 degree |
| Outer dimension | 184 x 140 x 150 mm 230 x 200 x 152 mm 215 x 185 x 158 mm |
| Height | 184 mm |
| Width | 142 mm |
| Depth | 152 mm |
| Net weight | 3.1 kg |

Environment

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| Dielectric strength | 2040 V DC between earth and power terminals 2880 V AC between control and power terminals |
| Electromagnetic compatibility | 1.2/50 μ s - 8/20 μ s surge immunity test level 3 conforming to IEC 61000-4-5 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 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 |
| Standards | IEC 61800-3 IEC 61800-5-1 |
| Product certifications | NOM[RETURN]CSA[RETURN]DNV[RETURN]UL[RETURN]GOST[RETURN]C-Tick |
| Pollution degree | 2 |
| Protective treatment | TC |
| Vibration resistance | 1 gn (f= 13...150 Hz) conforming to EN/IEC 60068-2-6 1.5 mm (f= 3...13 Hz) conforming to EN/IEC 60068-2-6 |
| Shock resistance | 15 gn for 11 ms conforming to EN/IEC 60068-2-27 |
| Relative humidity | 5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3 |
| Ambient air temperature for storage | -25...70 °C |
| Ambient air temperature for operation | -10...50 °C without derating (with protective cover on top of the drive) -10...60 °C with derating factor (without protective cover on top of the drive) |
| Operating altitude | \leq 1000 m without derating 1000...2000 m with current derating 1 % per 100 m |

Packing Units

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| Unit Type of Package 1 | PCE |
| Number of Units in Package 1 | 1 |
| Package 1 Height | 21.012 cm |
| Package 1 Width | 21.476 cm |
| Package 1 Length | 21.724 cm |
| Package 1 Weight | 2.87 kg |
| Unit Type of Package 2 | S06 |
| Number of Units in Package 2 | 12 |
| Package 2 Height | 73.5 cm |
| Package 2 Width | 60.0 cm |
| Package 2 Length | 80.0 cm |
| Package 2 Weight | 44.0 kg |

Offer Sustainability

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| Sustainable offer status | Green Premium product |
| EU RoHS Directive | Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration |
| Mercury free | Yes |
| China RoHS Regulation | China RoHS Declaration |
| RoHS exemption information | Yes |
| 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 |
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