



## Main

|                                    |  |
|------------------------------------|--|
| Range of product                   | Altivar 12   |
| Product or component type          | Variable speed drive   |
| Product destination                | Asynchronous motors  |
| Product specific application       | Simple machine   |
| Assembly style                     | With heat sink   |
| Component name                     | ATV12  |
| Quantity per set                   | Set of 1   |
| EMC filter                         | Integrated   |
| Built-in fan                       | With   |
| Network number of phases           | 1 phase  |
| [Us] rated supply voltage          | 200...240 V - 15...10 %  |
| Motor power kW                     | 1.5 kW   |
| Motor power hp                     | 2 hp   |
| Communication port protocol        | Modbus   |
| Line current                       | 17.8 A at 200 V<br>14.9 A at 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 | Sensorless flux vector control<br>Quadratic voltage/frequency ratio<br>Voltage/frequency ratio (V/f) |
| IP degree of protection            | IP20 without blanking plate on upper part  |
| Noise level                        | 45 dB  |

## Complementary

|                  |                                   |
|------------------|-----------------------------------|
| Supply frequency | 50/60 Hz +/- 5 %                  |
| Connector type   | 1 RJ45 (on front face) for Modbus |

|                                     |   |
|-------------------------------------|---|
| Physical interface                  | 2-wire RS 485 for Modbus  |
| Transmission frame                  | RTU for Modbus  |
| Transmission rate                   | 4800 bit/s<br>9600 bit/s<br>19200 bit/s<br>38400 bit/s  |
| Number of addresses                 | 1...247 for Modbus  |
| Communication service               | Read holding registers (03) 29 words<br>Write single register (06) 29 words<br>Write multiple registers (16) 27 words<br>Read/write multiple registers (23) 4/4 words<br>Read device identification (43)  |
| Prospective line I <sub>sc</sub>    | 1 kA  |
| Continuous output current           | 7.5 A at 4 kHz  |
| Maximum transient current           | 11.2 A for 60 s   |
| Speed drive output frequency        | 0.5...400 Hz  |
| Nominal switching frequency         | 4 kHz   |
| Switching frequency                 | 2...16 kHz adjustable<br>4...16 kHz with derating factor  |
| Braking torque                      | Up to 70 % of nominal motor torque without braking resistor   |
| Motor slip compensation             | Adjustable<br>Preset in factory   |
| Output voltage                      | 200...240 V 3 phases  |
| Electrical connection               | Terminal, clamping capacity: 5.5 mm <sup>2</sup> , 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, protection type: overload and short-circuit protection<br>Internal supply for logic inputs: 24 V DC (20.4...28.8 V), <100 mA, protection type: overload and short-circuit protection |
| Analogue input number               | 1   |
| Analogue input type                 | Configurable current AI1 0...20 mA 250 Ohm<br>Configurable voltage AI1 0...10 V 30 kOhm<br>Configurable voltage AI1 0...5 V 30 kOhm   |
| Discrete input number               | 4   |
| Discrete input type                 | Programmable LI1...LI4 24 V 18...30 V   |
| Discrete input logic                | Negative logic (sink), > 16 V (state 0), < 10 V (state 1), input impedance 3.5 kOhm<br>Positive logic (source), 0...< 5 V (state 0), > 11 V (state 1)   |
| Sampling duration                   | 20 ms, tolerance +/- 1 ms for logic input<br>10 ms for analogue input   |
| Linearity error                     | +/- 0.3 % of maximum value for analogue input   |
| Analogue output number              | 1   |
| Analogue output type                | AO1 software-configurable voltage: 0...10 V, impedance: 470 Ohm, resolution 8 bits<br>AO1 software-configurable current: 0...20 mA, impedance: 800 Ohm, resolution 8 bits   |
| Discrete output number              | 2   |
| Discrete output type                | Logic output LO+, LO-<br>Protected relay output R1A, R1B, R1C 1 C/O   |
| Minimum switching current           | 5 mA at 24 V DC for logic relay   |
| Maximum switching current           | 2 A 250 V AC inductive cos phi = 0.4 L/R = 7 ms logic relay<br>2 A 30 V DC inductive cos phi = 0.4 L/R = 7 ms logic relay<br>3 A 250 V AC resistive cos phi = 1 L/R = 0 ms logic relay<br>4 A 30 V DC resistive cos phi = 1 L/R = 0 ms logic relay                |
| Acceleration and deceleration ramps | U<br>S<br>Linear from 0 to 999.9 s  |
| Braking to standstill               | By DC injection, <30 s  |
| Protection type                     | Line supply overvoltage<br>Line supply undervoltage<br>Overcurrent between output phases and earth<br>Overheating protection<br>Short-circuit between motor phases  |

Against input phase loss in three-phase  
Thermal motor protection via the drive by continuous calculation of I<sup>2</sup>t

|  |   |
|--|---|
| Frequency resolution                       | Analog input: converter A/D, 10 bits<br>Display unit: 0.1 Hz                            |
| Time constant                              | 20 ms +/- 1 ms for reference change   |
| Marking                                    | CE  |
| Operating position                         | Vertical +/- 10 degree  |
| Height                                     | 142 mm  |
| Width                                      | 105 mm  |
| Depth                                      | 156.2 mm  |
| Net weight                                 | 1.4 kg  |
| Functionality                              | Basic   |
| Specific application                       | Commercial equipment  |
| Variable speed drive application selection | Mixer Commercial equipment<br>Other application Commercial equipment<br>Ironing Textile |
| Motor starter type                         | Variable speed drive  |

## Environment

|                                       |   |
|---------------------------------------|---|
| Electromagnetic compatibility         | Electrical fast transient/burst immunity test level 4 conforming to EN/IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 conforming to EN/IEC 61000-4-2<br>Immunity to conducted disturbances level 3 conforming to EN/IEC 61000-4-6<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to EN/IEC 61000-4-3<br>Surge immunity test level 3 conforming to EN/IEC 61000-4-5<br>Voltage dips and interruptions immunity test conforming to EN/IEC 61000-4-11  |
| Electromagnetic emission              | Radiated emissions environment 1 category C2 conforming to EN/IEC 61800-3 2...16 kHz shielded motor cable<br>Conducted emissions with integrated EMC filter environment 1 category C1 conforming to EN/IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <5 m<br>Conducted emissions with additional EMC filter environment 1 category C1 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <20 m<br>Conducted emissions with additional EMC filter environment 1 category C2 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <50 m<br>Conducted emissions with additional EMC filter environment 2 category C3 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <50 m<br>Conducted emissions with integrated EMC filter environment 1 category C2 conforming to EN/IEC 61800-3 4...16 kHz shielded motor cable <5 m<br>Conducted emissions with integrated EMC filter environment 1 category C2 conforming to EN/IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <10 m |
| Product certifications                | CSA<br>GOST<br>UL<br>NOM<br>C-Tick  |
| Vibration resistance                  | 1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-6<br>1.5 mm peak to peak (f = 3...13 Hz) - drive unmounted on symmetrical DIN rail - conforming to EN/IEC 60068-2-6   |
| Shock resistance                      | 15 gn conforming to EN/IEC 60068-2-27 for 11 ms   |
| Relative humidity                     | 5...95 % without condensation conforming to IEC 60068-2-3<br>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 protective cover from the top of the drive removed<br>50...60 °C with current derating 2.2 % per °C   |
| Operating altitude                    | > 1000...2000 m with current derating 1 % per 100 m<br><= 1000 m without derating   |

## Offer Sustainability

|                          |   |
|--------------------------|---|
| Sustainable offer status | Green Premium product   |
| REACH Regulation         | <a href="#">REACH Declaration</a>   |
| EU RoHS Directive        | Pro-active compliance (Product out of EU RoHS legal scope)<br><a href="#">EU RoHS Declaration</a> |
| Mercury free             | Yes   |

|                            |   |
|----------------------------|---|
| RoHS exemption information | <a href="#">Yes</a>   |
| China RoHS Regulation      | <a href="#">China RoHS declaration</a>  |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>   |
| Circularity Profile        | <a href="#">End of Life Information</a>   |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |

**Contractual warranty**

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