

# ATV12HU22M2X

variable speed drive ATV12 - 2.2kW - 3hp -  
200..240V 1ph with heat sink w/o EMC



## 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                         | Without EMC filter                                                                                   |
| Built-in fan                       | With                                                                                                 |
| Network number of phases           | 1 phase                                                                                              |
| [Us] rated supply voltage          | 200...240 V - 15...10 %                                                                              |
| Motor power kW                     | 2.2 kW                                                                                               |
| Motor power hp                     | 3 hp                                                                                                 |
| Communication port protocol        | Modbus                                                                                               |
| Line current                       | 24 A 200 V<br>20.2 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<br>Sensorless flux vector control<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 %                                                                                                                                                                                         |
| Type of connector            | 1 RJ45 Modbus on front face                                                                                                                                                                              |
| Physical interface           | 2-wire RS 485 Modbus                                                                                                                                                                                     |
| Transmission frame           | RTU Modbus                                                                                                                                                                                               |
| Transmission rate            | 4800 bit/s<br>9600 bit/s<br>19200 bit/s<br>38400 bit/s                                                                                                                                                   |
| Number of addresses          | 1...247 Modbus                                                                                                                                                                                           |
| Communication service        | Read device identification (43)<br>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 |
| Prospective line Isc         | <= 1 kA                                                                                                                                                                                                  |
| Continuous output current    | 10 A 4 kHz                                                                                                                                                                                               |
| Maximum transient current    | 15 A 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                                                                                                                                                                                               |

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|                                     | Preset in factory                                                                                                                                                                                                                                                                                     |
| Output voltage                      | 200...240 V 1 phase                                                                                                                                                                                                                                                                                   |
| Electrical connection               | Terminal 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 overload and short-circuit protection<br>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 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 < 10 V 3.5 kOhm<br>Positive logic (source) 0...< 5 V > 11 V                                                                                                                                                                                                              |
| Sampling duration                   | < 20 ms +/- 1 ms logic input<br>< 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<br>Software-configurable current AO1 0...20 mA 800 Ohm 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 24 V DC 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 | Linear from 0 to 999.9 s<br>S<br>U                                                                                                                                                                                                                                                                    |
| Braking to standstill               | By DC injection 0.1...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<br>Against input phase loss in three-phase<br>Thermal motor protection via the drive by continuous calculation of I <sup>2</sup> t |
| Frequency resolution                | 0.1 Hz display unit<br>Converter A/D, 10 bits analog input                                                                                                                                                                                                                                            |
| 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                                                                                                                                                                                                                                                                                              |
| Product weight                      | 1.4 kg                                                                                                                                                                                                                                                                                                |
| Functionality                       | Basic                                                                                                                                                                                                                                                                                                 |
| Specific application                | Other applications<br>Centrifugal pumps and fans                                                                                                                                                                                                                                                      |

## Environment

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| electromagnetic compatibility | Electrical fast transient/burst immunity test level 4 EN/IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 EN/IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 EN/IEC 61000-4-3<br>Immunity to conducted disturbances level 3 EN/IEC 61000-4-6<br>Surge immunity test level 3 EN/IEC 61000-4-5<br>Voltage dips and interruptions immunity test EN/IEC 61000-4-11 |
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| electromagnetic emission              | <p>Radiated emissions environment 1 category C2 EN/IEC 61800-3 2...16 kHz shielded motor cable</p> <p>Conducted emissions with additional EMC filter environment 1 category C1 EN/IEC 61800-3 4...12 kHz shielded motor cable &lt;= 20 m</p> <p>Conducted emissions with additional EMC filter environment 1 category C2 EN/IEC 61800-3 4...12 kHz shielded motor cable &lt;= 50 m</p> <p>Conducted emissions with additional EMC filter environment 2 category C3 EN/IEC 61800-3 4...12 kHz shielded motor cable &lt;= 50 m</p> |
| product certifications                | <p>CSA</p> <p>UL</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| vibration resistance                  | <p>1 gn EN/IEC 60068-2-6 13...200 Hz</p> <p>1.5 mm peak to peak EN/IEC 60068-2-6 3...13 Hz drive unmounted on symmetrical DIN rail</p>                                                                                                                                                                                                                                                                                                                                                                                           |
| shock resistance                      | 15 gn EN/IEC 60068-2-27 11 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| relative humidity                     | <p>5...95 % without condensation IEC 60068-2-3</p> <p>5...95 % without dripping water IEC 60068-2-3</p>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ambient air temperature for storage   | -25...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ambient air temperature for operation | <p>50...60 °C with current derating 2.2 % per °C</p> <p>-10...50 °C protective cover from the top of the drive removed</p>                                                                                                                                                                                                                                                                                                                                                                                                       |
| operating altitude                    | <p>&lt;= 1000 m without derating</p> <p>&gt; 1000...2000 m with current derating 1 % per 100 m</p>                                                                                                                                                                                                                                                                                                                                                                                                                               |

### Offer Sustainability

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|----------------------------------|-----------------------------------------------------------------------|
| Sustainable offer status         | Green Premium product                                                 |
| RoHS (date code: YYWW)           | Compliant - since 1026 - Schneider Electric declaration of conformity |
| REACH                            | Reference not containing SVHC above the threshold                     |
| Product environmental profile    | Available                                                             |
| Product end of life instructions | Available                                                             |