



# ATV11HU09M2E

variable speed drive ATV11 - 0.37kW - 230V 1-phase supply - IP20



## Main

|                                    |                                                                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range of product                   | Altivar 11                                                                                                                                                                                                                                                    |
| Product or component type          | Variable speed drive                                                                                                                                                                                                                                          |
| Product specific application       | Simple machine                                                                                                                                                                                                                                                |
| Component name                     | ATV11                                                                                                                                                                                                                                                         |
| Application market                 | European                                                                                                                                                                                                                                                      |
| Assembly style                     | With heat sink                                                                                                                                                                                                                                                |
| EMC filter                         | Integrated                                                                                                                                                                                                                                                    |
| Built-in fan                       | Without                                                                                                                                                                                                                                                       |
| Network number of phases           | 1 phase                                                                                                                                                                                                                                                       |
| [Us] rated supply voltage          | 200...240 V - 15...10 %                                                                                                                                                                                                                                       |
| Supply frequency                   | 50...60 Hz - 5...5 %                                                                                                                                                                                                                                          |
| Motor power kW                     | 0.37 kW                                                                                                                                                                                                                                                       |
| Line current                       | 5.3 A at 230 V, I <sub>sc</sub> = 1 kA                                                                                                                                                                                                                        |
| Nominal output current             | 2.1 A 230 V motor 4 kHz                                                                                                                                                                                                                                       |
| Maximum transient current          | 3.1 A for 60 s                                                                                                                                                                                                                                                |
| Power dissipation in W             | 20.5 W at nominal load                                                                                                                                                                                                                                        |
| Switching frequency                | 2...16 kHz adjustable<br>4...16 kHz with derating factor                                                                                                                                                                                                      |
| Braking torque                     | 150 % of nominal motor torque with braking resistor at high inertia<br>20 % of nominal motor torque without braking resistor at no load<br>80 % of nominal motor torque with braking resistor at no load                                                      |
| Asynchronous motor control profile | Sensorless flux vector control with PWM type motor control signal                                                                                                                                                                                             |
| Electrical connection              | Terminal, clamping capacity: 1.5 mm <sup>2</sup> , AWG 14 (AI1, RA-RC, LI1...LI4, DO)<br>Terminal, clamping capacity: 1.5 mm <sup>2</sup> , AWG 14 (L1, L2, L3, U, V, W, PA, PC)                                                                              |
| Supply                             | Internal supply for logic inputs: 15 V (+/- 15 %)<br>100 A, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (2.2 to 10 kOhm): 5...5.25 VDC 10 A, protection type: overload and short-circuit protection |
| Analogue input type                | Configurable current AI1 4...20 mA 250 Ohm without adding resistor<br>Configurable voltage AI1 0...5 V 40000 Ohm only with internal supply<br>Configurable current AI1 0...20 mA 250 Ohm<br>Configurable voltage AI1 0...10 V 40000 Ohm                       |
| Sampling duration                  | AI1: 20 ms analog<br>LI1...LI4: 20 ms discrete                                                                                                                                                                                                                |
| Response time                      | 20 ms DO                                                                                                                                                                                                                                                      |
| Linearity error                    | DO: +/- 1 % for output<br>AI: +/- 5 % for input                                                                                                                                                                                                               |
| Discrete input type                | Assignable LI1 forward 5000 Ohm 15 V 24 V<br>Assignable LI2 reverse 5000 Ohm 15 V 24 V<br>Assignable LI3/LI4 4 preset speeds 5000 Ohm 15 V 24 V                                                                                                               |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| Discrete input logic                  | Positive logic (source) (LI1...LI4), < 5 V (state 0), > 11 V (state 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Discrete output type                  | Assignable as external voltage DO 30 V max, 30 mA<br>Assignable as open collector logic output DO 100 Ohm, 50 mA max<br>Factory set as PWM open collector output DO at 2 kHz 10 mA max<br>Protected relay logic RA-RC 1 NO<br>Assignable as internal voltage DO                                                                                                                                                                                                                                                                                  |
| Minimum switching current             | RA-RC 10 mA at 24 V DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Maximum switching current             | 2 A 250 V AC inductive $\cos \phi = 0.4$ 7 ms RA-RC<br>2 A 30 V DC inductive $\cos \phi = 0.4$ 7 ms RA-RC<br>5 A 250 V AC resistive $\cos \phi = 1$ 0 ms RA-RC<br>5 A 30 V DC resistive $\cos \phi = 1$ 0 ms RA-RC                                                                                                                                                                                                                                                                                                                               |
| Protection type                       | Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Overheating protection: drive<br>Short-circuit between motor phases: drive<br>Thermal protection: motor<br>Overcurrent between output phases and earth: drive                                                                                                                                                                                                                                                                                                               |
| Frequency resolution                  | Display unit: 0.1 Hz<br>Analog input: converter A/D, 10 bits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Electromagnetic compatibility         | 1.2/50 $\mu$ s - 8/20 $\mu$ s surge immunity test level 3 conforming to EN/IEC 61000-4-5<br>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>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to EN/IEC 61000-4-3                                                                                                                                                                          |
| Maximum motor cable length            | 10 M without additional EMC filter from 2 to 16 kHz conforming to EN 55011 class A group 1<br>10 M without additional EMC filter from 2 to 16 kHz conforming to EN 55022 class A group 1<br>20 M with additional EMC filter from 2 to 16 kHz conforming to EN 55011 class B<br>5 M without additional EMC filter from 2 to 12 kHz conforming to EN 55011 class B<br>5 M without additional EMC filter from 2 to 12 kHz conforming to EN 55022 class B<br>50 m with additional EMC filter from 2 to 16 kHz conforming to EN 55011 class A group 1 |
| Vibration resistance                  | 1 gn ( $f = 13 \dots 200$ Hz) conforming to EN/IEC 60068-2-6<br>1.5 mm peak to peak ( $f = 3 \dots 13$ 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...93 % without condensation conforming to IEC 60068-2-3<br>5...93 % without dripping water conforming to IEC 60068-2-3                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Ambient air temperature for operation | -10...40 °C without derating<br>40...50 °C by removing the protective cover from the top of the drive<br>50...60 °C by removing the protective cover from the top of the drive with current derating of 2.2 % per °C                                                                                                                                                                                                                                                                                                                             |
| Operating altitude                    | $\leq 1000$ m without derating<br>> 1000 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Complementary

|                              |                                     |
|------------------------------|-------------------------------------|
| Product destination          | Asynchronous motors                 |
| Supply voltage limits        | 170...264 V                         |
| Network frequency limits     | 47.5...63 Hz                        |
| Speed drive output frequency | 0...200 Hz                          |
| Nominal switching frequency  | 4 kHz                               |
| Speed range                  | 1...20                              |
| Transient overtorque         | 150...170 % of nominal motor torque |

|                                     |                                                                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulation loop                     | Factory-set with the speed loop stability and gain<br>Adjustable frequency<br>Possible correction for machines with high resistive torque/inertia/fast cycles |
| Motor slip compensation             | Preset in factory<br>Adjustable                                                                                                                               |
| Prospective line Isc                | 1 kA                                                                                                                                                          |
| Output voltage                      | <= power supply voltage                                                                                                                                       |
| Insulation                          | Electrical between power and control                                                                                                                          |
| Analogue input number               | 1                                                                                                                                                             |
| Discrete input number               | 4                                                                                                                                                             |
| Discrete output number              | 2                                                                                                                                                             |
| Acceleration and deceleration ramps | Linear from 0 to 99.9 s                                                                                                                                       |
| Braking to standstill               | By DC injection                                                                                                                                               |
| Insulation resistance               | > 500 MOhm                                                                                                                                                    |
| Marking                             | CE                                                                                                                                                            |
| Operating position                  | Vertical +/- 10 degree                                                                                                                                        |
| CAD overall width                   | 72 mm                                                                                                                                                         |
| CAD overall height                  | 142 mm                                                                                                                                                        |
| CAD overall depth                   | 125 mm                                                                                                                                                        |
| Outer dimension                     | 142 x 72 x 125 mm                                                                                                                                             |
| Net weight                          | 1 kg                                                                                                                                                          |

## Environment

|                                            |                                         |
|--------------------------------------------|-----------------------------------------|
| Standards                                  | EN 50178                                |
| Product certifications                     | N998[RETURN]CSA[RETURN]UL[RETURN]C-Tick |
| IP degree of protection                    | IP20                                    |
| Ambient air temperature for storage        | -25...65 °C                             |
| Variable speed drive application selection | Packaging conveyor                      |
| Motor power range AC-3                     | 0...0.5 kW at 200...240 V 1 phase       |
| Motor starter type                         | Variable speed drive                    |

## Contractual warranty

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