

# ATV312HU22M2

variable speed drive ATV312 - 2.2kW - 4.4kVA  
- 123W - 200..240 V- 1-phase supply



## Main

|                                    |                                                                                                                                                                                                                                       |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                       | 18.4 A for 240 V<br>21.9 A for 200 V, 1 kA                                                                                                                                                                                            |
| 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 | Factory set : constant torque<br>Sensorless flux vector control with PWM type motor control signal                                                                                                                                    |
| Electrical connection              | L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 5 mm <sup>2</sup> AWG 10<br>AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm <sup>2</sup> AWG 14                                                          |
| Supply                             | Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V, <= 10 mA for overload and short-circuit protection<br>Internal supply for logic inputs at 19...30 V, <= 100 mA for overload and short-circuit protection |
| Communication port protocol        | CANopen<br>Modbus                                                                                                                                                                                                                     |
| IP degree of protection            | IP41 on upper part<br>IP31 on upper part<br>IP21 on connection terminals<br>IP20 on upper part without cover plate                                                                                                                    |
| Option card                        | Profibus DP communication card<br>Modbus TCP communication card<br>Fipio communication card<br>DeviceNet communication card<br>CANopen daisy chain communication card                                                                 |

The information provided in this documentation contains general descriptions and/or technical characteristics of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage limits               | 170...264 V                                                                                                                                                                                                                                                                                                                                                                     |
| Network frequency limits            | 47.5...63 Hz                                                                                                                                                                                                                                                                                                                                                                    |
| Prospective line I <sub>sc</sub>    | 1 kA                                                                                                                                                                                                                                                                                                                                                                            |
| Continuous output current           | 11 A at 4 kHz                                                                                                                                                                                                                                                                                                                                                                   |
| Speed drive 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                      | 30 % without braking resistor<br>100 % with braking resistor continuously<br>150 % with braking resistor for 60 s                                                                                                                                                                                                                                                               |
| Regulation loop                     | Frequency PI regulator                                                                                                                                                                                                                                                                                                                                                          |
| Motor slip compensation             | Adjustable<br>Automatic whatever the load<br>Suppressable                                                                                                                                                                                                                                                                                                                       |
| Output voltage                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                         |
| Tightening torque                   | 1.2 N.m L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-<br>0.6 N.m AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6                                                                                                                                                                                                                                                          |
| Insulation                          | Electrical between power and control                                                                                                                                                                                                                                                                                                                                            |
| Analogue input number               | 3                                                                                                                                                                                                                                                                                                                                                                               |
| Analogue input type                 | AI3 configurable current 0...20 mA, impedance 250 Ohm<br>AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance 30000 Ohm<br>AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance 30000 Ohm                                                                                                                                                       |
| Sampling duration                   | LI1...LI6 4 ms for discrete<br>AI1, AI2, AI3 8 ms for analog                                                                                                                                                                                                                                                                                                                    |
| Response time                       | R1A, R1B, R1C, R2A, R2B 8 ms for discrete<br>AOV, AOC 8 ms for analog                                                                                                                                                                                                                                                                                                           |
| Linearity error                     | +/- 0.2 % for output                                                                                                                                                                                                                                                                                                                                                            |
| Analogue output number              | 1                                                                                                                                                                                                                                                                                                                                                                               |
| Analogue output type                | AOV configurable voltage 0...10 V, impedance 470 Ohm, resolution 8 bits<br>AOC configurable current 0...20 mA, impedance 800 Ohm, resolution 8 bits                                                                                                                                                                                                                             |
| Discrete input logic                | (LI1...LI6) positive logic (source), < 5 V (state 0), > 11 V (state 1)<br>(LI1...LI6) negative logic (source), > 19 V (state 0)<br>(LI1...LI4) logic input not wired, < 13 V (state 1)                                                                                                                                                                                          |
| Discrete output number              | 2                                                                                                                                                                                                                                                                                                                                                                               |
| Discrete output type                | (R2A, R2B) configurable relay logic NC, electrical durability 100000 cycles<br>(R1A, R1B, R1C) configurable relay logic 1 NO + 1 NC, electrical durability 100000 cycles                                                                                                                                                                                                        |
| Minimum switching current           | R1-R2 10 mA at 5 V DC                                                                                                                                                                                                                                                                                                                                                           |
| Maximum switching current           | R1-R2 on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms<br>R1-R2 on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms<br>R1-R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms<br>R1-R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms                                                                                              |
| Discrete input number               | 6                                                                                                                                                                                                                                                                                                                                                                               |
| Discrete input type                 | (LI1...LI6) programmable, 24 V 0...100 mA with PLC, impedance 3500 Ohm                                                                                                                                                                                                                                                                                                          |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.1 to 999.9 s<br>S, U or customized                                                                                                                                                                                                                                                                                                          |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                 |
| Protection type                     | Thermal protection motor<br>Short-circuit between motor phases drive<br>Overheating protection drive<br>Overcurrent between output phases and earth (on power up only) drive<br>Motor phase breaks drive<br>Line supply phase loss safety function, for three phases supply drive<br>Line supply overvoltage and undervoltage safety circuits drive<br>Input phase breaks drive |
| Insulation resistance               | >= 500 mOhm at 500 V DC for 1 minute                                                                                                                                                                                                                                                                                                                                            |
| Local signalling                    | Four 7-segment display units for CANopen bus status<br>1 LED red for drive voltage                                                                                                                                                                                                                                                                                              |
| Time constant                       | 5 ms for reference change                                                                                                                                                                                                                                                                                                                                                       |

|                      |                                                                                    |
|----------------------|------------------------------------------------------------------------------------|
| Frequency resolution | Display unit 0.1 Hz<br>Analog input 0.1...100 Hz                                   |
| Type of connector    | 1 RJ45 Modbus/CANopen                                                              |
| Physical interface   | RS485 multidrop serial link                                                        |
| Transmission frame   | RTU                                                                                |
| Transmission rate    | 4800, 9600 or 19200 bps Modbus<br>10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen |
| Number of addresses  | 1...247 Modbus<br>1...127 CANopen                                                  |
| Number of drive      | 31 Modbus<br>127 CANopen                                                           |
| Marking              | CE                                                                                 |
| Operating position   | Vertical +/- 10 degree                                                             |
| Outer dimension      | 184 x 140 x 150 mm<br>215 x 185 x 158 mm<br>230 x 200 x 152 mm                     |
| Height               | 184 mm                                                                             |
| Width                | 142 mm                                                                             |
| Depth                | 152 mm                                                                             |
| Product weight       | 3.1 kg                                                                             |

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dielectric strength                   | 2880 V AC between control and power terminals<br>2040 V DC between earth and power terminals                                                                                                                                                                                                                                                      |
| Electromagnetic compatibility         | Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3<br>Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3<br>Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4<br>1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3 |
| Standards                             | IEC 61800-3<br>IEC 61800-5-1                                                                                                                                                                                                                                                                                                                      |
| Product certifications                | CSA<br>C-Tick<br>DNV<br>GOST<br>NOM<br>UL                                                                                                                                                                                                                                                                                                         |
| Pollution degree                      | 2                                                                                                                                                                                                                                                                                                                                                 |
| Protective treatment                  | TC                                                                                                                                                                                                                                                                                                                                                |
| Vibration resistance                  | 1.5 mm (f = 3...13 Hz) conforming to EN/IEC 60068-2-6<br>1 gn (f = 13...150 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 dripping water conforming to IEC 60068-2-3<br>5...95 % without condensation conforming to IEC 60068-2-3                                                                                                                                                                                                                          |
| Ambient air temperature for storage   | -25...70 °C                                                                                                                                                                                                                                                                                                                                       |
| Ambient air temperature for operation | -10...60 °C with derating factor without protective cover on top of the drive<br>-10...50 °C without derating with protective cover on top of the drive                                                                                                                                                                                           |
| 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                                                                    |
| RoHS (date code: YYWW)           | Compliant - since 0913 - <a href="#">Schneider Electric declaration of conformity</a>    |
| REACH                            | Reference contains SVHC above the threshold - <a href="#">go to CaP for more details</a> |
| Product environmental profile    | Available <a href="#">Download Product Environmental</a>                                 |
| Product end of life instructions | Available <a href="#">Download End Of Life Manual</a>                                    |