

# ATV312HU55M3

variable speed drive ATV312 - 5.5kW -  
12.8kVA - 292W - 200..240V- 3-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                     | 5.5 kW                                                                                                                                                                                                                                |
| Motor power hp                     | 7.5 hp                                                                                                                                                                                                                                |
| [Us] rated supply voltage          | 200...240 V (- 15...10 %)                                                                                                                                                                                                             |
| Supply frequency                   | 50...60 Hz (- 5...5 %)                                                                                                                                                                                                                |
| Network number of phases           | 3 phases                                                                                                                                                                                                                              |
| Line current                       | 32 A for 240 V<br>36.8 A for 200 V, 22 kA                                                                                                                                                                                             |
| EMC filter                         | Without EMC filter                                                                                                                                                                                                                    |
| Apparent power                     | 12.8 kVA                                                                                                                                                                                                                              |
| Maximum transient current          | 41.3 A for 60 s                                                                                                                                                                                                                       |
| Power dissipation in W             | 292 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 16 mm <sup>2</sup> AWG 6<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                                                                 |

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## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply voltage limits               | 170...264 V                                                                                                                                                                                                                                                                                                                                                                     |
| Network frequency limits            | 47.5...63 Hz                                                                                                                                                                                                                                                                                                                                                                    |
| Prospective line I <sub>sc</sub>    | 22 kA                                                                                                                                                                                                                                                                                                                                                                           |
| Continuous output current           | 27.5 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                   | 2.5 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      | 232 x 180 x 170 mm                                                                 |
| Height               | 232 mm                                                                             |
| Width                | 180 mm                                                                             |
| Depth                | 172 mm                                                                             |
| Product weight       | 6.4 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...3000 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>                                    |