

# ATV312HU30M3B

variable speed drive ATV312 - 3kW - 6.6kVA -  
146 W - 200..240 V - 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                     | 3 kW                                                                                                                                                                                                                                  |
| [Us] rated supply voltage          | 200...240 V (- 15...10 %)                                                                                                                                                                                                             |
| Supply frequency                   | 50...60 Hz (- 5...5 %)                                                                                                                                                                                                                |
| Network number of phases           | 3 phases                                                                                                                                                                                                                              |
| Line current                       | 16.6 A for 240 V<br>19.1 A for 200 V, 5 kA                                                                                                                                                                                            |
| EMC filter                         | Without EMC filter                                                                                                                                                                                                                    |
| Apparent power                     | 6.6 kVA                                                                                                                                                                                                                               |
| Maximum transient current          | 20.6 A for 60 s                                                                                                                                                                                                                       |
| Power dissipation in W             | 146 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              | Terminal<br>L1, L2, L3, U, V, W, PA, PB, PA+, PC/- terminal 5 mm <sup>2</sup> AWG 10                                                                                                                                                  |
| 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                                                                 |

## Complementary

|                                  |                                     |
|----------------------------------|-------------------------------------|
| Supply voltage limits            | 170...264 V                         |
| Network frequency limits         | 47.5...63 Hz                        |
| Prospective line I <sub>sc</sub> | 5 kA                                |
| Continuous output current        | 13.7 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/-                                                                                                                                                                                                                                                                                                                                 |
| Insulation                          | Electrical between power and control                                                                                                                                                                                                                                                                                                                                            |
| 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                                                                                                                                                                                                                                                                                                                                                              |
| Height                              | 184 mm                                                                                                                                                                                                                                                                                                                                                                          |
| Width                               | 142 mm                                                                                                                                                                                                                                                                                                                                                                          |
| Depth                               | 152 mm                                                                                                                                                                                                                                                                                                                                                                          |
| Product weight                      | 2.9 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                                                                                                                                                                                                                                    |

|                                       |                                                                                                                                                         |
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| 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                                                                          |