

# Product data sheet

Specifications



variable speed drive ATV312 -  
0.18kW - 0.7kVA - 23W - 200..240  
V- 3-phase supply

ATV312H018M3412

⚠ Discontinued on: Jan 1, 2023

⚠ Discontinued

## Main

|                              |                                          |
|------------------------------|------------------------------------------|
| Range Of Product             | Altivar 312 Solar                        |
| Product Or Component Type    | Variable speed drive                     |
| Product Destination          | Asynchronous motors                      |
| Product Specific Application | Pumping station with photovoltaic arrays |
| Assembly Style               | With heat sink                           |
| Device Short Name            | ATV312                                   |

## Complementary

|                              |                                                                                                                          |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Motor Power Kw               | 0.18 kW                                                                                                                  |
| Motor Power Hp               | 0.25 hp                                                                                                                  |
| [Us] Rated Supply Voltage    | 200...240 V - 5...5 %                                                                                                    |
| Supply Voltage Limits        | 170...264 V                                                                                                              |
| Supply Frequency             | 50...60 Hz - 5...5 %                                                                                                     |
| Network Frequency            | 47.5...63 Hz                                                                                                             |
| Network Number Of Phases     | 3 phases                                                                                                                 |
| Line Current                 | 1.9 A at 240 V<br>2.1 A at 200 V, Isc = 1 kA                                                                             |
| Emc Filter                   | Without EMC filter                                                                                                       |
| Apparent Power               | 0.7 kVA                                                                                                                  |
| Prospective Line Isc         | 1 kA                                                                                                                     |
| Continuous Output Current    | 1.5 A at 4 kHz                                                                                                           |
| Maximum Transient Current    | 2.3 A for 60 s                                                                                                           |
| Power Dissipation In W       | 23 W at nominal load                                                                                                     |
| Speed Drive Output Frequency | 0.5...500 Hz                                                                                                             |
| Nominal Switching Frequency  | 4 kHz                                                                                                                    |
| Switching Frequency          | 2...16 kHz adjustable                                                                                                    |
| Speed Range                  | 1...50                                                                                                                   |
| Transient Overtorque         | 150...170 % of nominal motor torque                                                                                      |
| Braking Torque               | <= 150 % during 60 s with braking resistor<br>100 % with braking resistor continuously<br>150 % without braking resistor |

Disclaimer: 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

|                                            |                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Asynchronous Motor Control Profile</b>  | Factory set: energy saving mode                                                                                                                                                                                                                                                                                                                                                         |
| <b>Regulation Loop</b>                     | Frequency PI regulator                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Motor Slip Compensation</b>             | Suppressable<br>Adjustable<br>Automatic whatever the load                                                                                                                                                                                                                                                                                                                               |
| <b>Output Voltage</b>                      | <= power supply voltage                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Electrical Connection</b>               | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm² AWG 14<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm² AWG 14                                                                                                                                                                                                                                  |
| <b>Tightening Torque</b>                   | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6: 0.6 N.m<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-: 0.8 N.m                                                                                                                                                                                                                                                                |
| <b>Insulation</b>                          | Electrical between power and control                                                                                                                                                                                                                                                                                                                                                    |
| <b>Supply</b>                              | Internal supply for logic inputs at 19...30 V, <100 A, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V, <10 A, protection type: overload and short-circuit protection                                                                                                                             |
| <b>Analogue Input Number</b>               | 3                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Analogue Input Type</b>                 | AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance: 30000 Ohm<br>AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance: 30000 Ohm<br>AI3 configurable current 0...20 mA, impedance: 250 Ohm                                                                                                                                                            |
| <b>Sampling Duration</b>                   | AI1, AI2, AI3: 8 ms analog<br>LI1...LI6: 4 ms discrete                                                                                                                                                                                                                                                                                                                                  |
| <b>Response Time</b>                       | AOV, AOC 8 ms for analog<br>R1A, R1B, R1C, R2A, R2B 8 ms for discrete                                                                                                                                                                                                                                                                                                                   |
| <b>Linearity Error</b>                     | +/- 0.2 % for output                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Analogue Output Number</b>              | 2                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Analogue Output Type</b>                | AOC configurable current: 0...20 mA, impedance: 800 Ohm, resolution: 8 bits<br>AOV configurable voltage: 0...10 V, impedance: 470 Ohm, resolution: 8 bits                                                                                                                                                                                                                               |
| <b>Discrete Input Logic</b>                | Logic input not wired (LI1...LI4), < 13 V (state 1)<br>Negative logic (source) (LI1...LI6), > 19 V (state 0)<br>Positive logic (source) (LI1...LI6), < 5 V (state 0), > 11 V (state 1)                                                                                                                                                                                                  |
| <b>Discrete Output Number</b>              | 2                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Discrete Output Type</b>                | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles<br>Configurable relay logic: (R2A, R2B) NC - 100000 cycles                                                                                                                                                                                                                                                        |
| <b>Minimum Switching Current</b>           | R1-R2 10 mA at 5 V DC                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Maximum Switching Current</b>           | 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)<br>2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)<br>5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)<br>5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)                                                                                          |
| <b>Discrete Input Number</b>               | 6                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Discrete Input Type</b>                 | (LI1...LI6) programmable at 24 V, 0...100 mA for PLC, impedance: 3500 Ohm                                                                                                                                                                                                                                                                                                               |
| <b>Acceleration And Deceleration Ramps</b> | Linear adjustable separately from 0.1 to 999.9 s<br>S, U or customized                                                                                                                                                                                                                                                                                                                  |
| <b>Braking To Standstill</b>               | By DC injection                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Protection Type</b>                     | Input phase breaks: drive<br>Line supply overvoltage and undervoltage safety circuits: drive<br>Line supply phase loss safety function, for three phases supply: drive<br>Motor phase breaks: drive<br>Overcurrent between output phases and earth (on power up only): drive<br>Overheating protection: drive<br>Short-circuit between motor phases: drive<br>Thermal protection: motor |
| <b>Dielectric Strength</b>                 | 2040 V DC between earth and power terminals<br>2880 V AC between control and power terminals                                                                                                                                                                                                                                                                                            |

|                               |                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation Resistance         | >= 500 mOhm 500 V DC for 1 minute                                                                                                                                                                                                                                                                                                                 |
| Local Signalling              | 1 LED (red) for drive voltage<br>Four 7-segment display units for CANopen bus status                                                                                                                                                                                                                                                              |
| Time Constant                 | 5 ms for reference change                                                                                                                                                                                                                                                                                                                         |
| Frequency Resolution          | Analog input: 0.1...100 Hz<br>Display unit: 0.1 Hz                                                                                                                                                                                                                                                                                                |
| Communication Port Protocol   | Modbus<br>CANopen                                                                                                                                                                                                                                                                                                                                 |
| Connector Type                | 1 RJ45 for Modbus/CANopen                                                                                                                                                                                                                                                                                                                         |
| Physical Interface            | RS485 multidrop serial link                                                                                                                                                                                                                                                                                                                       |
| Transmission Frame            | RTU                                                                                                                                                                                                                                                                                                                                               |
| Transmission Rate             | 10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen<br>4800, 9600 or 19200 bps for Modbus                                                                                                                                                                                                                                                        |
| Number Of Addresses           | 1...127 for CANopen<br>1...247 for Modbus                                                                                                                                                                                                                                                                                                         |
| Number Of Drive               | 127 for CANopen<br>31 for Modbus                                                                                                                                                                                                                                                                                                                  |
| Electromagnetic Compatibility | 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 |
| Standards                     | IEC 61800-5-1                                                                                                                                                                                                                                                                                                                                     |
| Marking                       | CE                                                                                                                                                                                                                                                                                                                                                |
| Height                        | 145 mm                                                                                                                                                                                                                                                                                                                                            |
| Width                         | 72 mm                                                                                                                                                                                                                                                                                                                                             |
| Depth                         | 122 mm                                                                                                                                                                                                                                                                                                                                            |
| Net Weight                    | 1.3 kg                                                                                                                                                                                                                                                                                                                                            |
| Option Card                   | Communication card for CANopen daisy chain<br>Communication card for DeviceNet<br>Communication card for Fipio<br>Communication card for Modbus TCP<br>Communication card for Profibus DP                                                                                                                                                         |

## Environment

|                                       |                                                                                                                                                             |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ip Degree Of Protection               | IP20 without cover plate                                                                                                                                    |
| Pollution Degree                      | 2                                                                                                                                                           |
| Protective Treatment                  | TC                                                                                                                                                          |
| Vibration Resistance                  | 1 gn (f= 13...150 Hz) conforming to EN/IEC 60068-2-6<br>1.5 mm (f= 3...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...95 % without condensation conforming to IEC 60068-2-3<br>5...95 % without dripping water conforming to IEC 60068-2-3                                    |
| Ambient Air Temperature For Storage   | -25...70 °C                                                                                                                                                 |
| Ambient Air Temperature For Operation | -10...50 °C without derating (with protective cover on top of the drive)<br>-10...60 °C with derating factor (without protective cover on top of the drive) |
| Operating Altitude                    | <= 1000 m without derating<br>>= 1000 m with current derating 1 % per 100 m                                                                                 |
| Operating Position                    | Vertical +/- 10 degree                                                                                                                                      |

## Packing Units

|                              |         |
|------------------------------|---------|
| Unit Type Of Package 1       | PCE     |
| Number Of Units In Package 1 | 1       |
| Package 1 Height             | 13.5 cm |
| Package 1 Width              | 17.5 cm |
| Package 1 Length             | 18.0 cm |
| Package 1 Weight             | 1.4 kg  |

## Contractual warranty

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