### Main

<table>
<thead>
<tr>
<th>Range of product</th>
<th>Altivar 312 Solar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product or component type</td>
<td>Variable speed drive</td>
</tr>
<tr>
<td>Product destination</td>
<td>Asynchronous motors</td>
</tr>
<tr>
<td>Product specific application</td>
<td>Pumping station with photovoltaic arrays</td>
</tr>
<tr>
<td>Assembly style</td>
<td>With heat sink</td>
</tr>
<tr>
<td>Device short name</td>
<td>ATV312</td>
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</tbody>
</table>

### Complementary

<p>| Motor power kW              | 1.5 kW                    |
| Motor power hp              | 2 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    | Single phase              |
| Line current                | 13.3 A at 240 V           |
|                            | 15.8 A at 200 V, Isc = 1 kA |
| EMC filter                  | Integrated                |
| Apparent power              | 3.2 kVA                   |
| Prospective line Isc        | 1 kA                      |
| Continuous output current   | 8 A at 4 kHz              |
| Maximum transient current   | 12 A for 60 s             |
| Power dissipation in W      | 90 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                      |</p>
<table>
<thead>
<tr>
<th><strong>Transient overtorque</strong></th>
<th>150…170 % of nominal motor torque</th>
</tr>
</thead>
</table>
| **Braking torque**       | <= 150 % during 60 s with braking resistor  
100 % with braking resistor continuously 
150 % without braking resistor |
| **Asynchronous motor control profile** | Factory set: energy saving mode |
| **Regulation loop**      | Frequency PI regulator |
| **Motor slip compensation** | Automatic whatever the load  
Adjustable  
Suppressable |
| **Output voltage**       | <= power supply voltage |
| **Electrical connection** | A1, A2, A3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, L1...L16 terminal 2.5 mm² AWG 14  
L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm² AWG 14 |
| **Tightening torque**    | A1, A2, A3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, L1...L16: 0.6 N.m  
L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-: 0.8 N.m |
| **Insulation**           | Electrical between power and control |
| **Supply**               | Internal supply for logic inputs at 19...30 V, <100 A, protection type: overload and short-circuit protection  
Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V, <10 A, protection type: overload and short-circuit protection |
| **Analogue input number**| 3 |
| **Analogue input type**  | A11 configurable voltage 0...10 V, input voltage 30 V max, impedance: 30000 Ohm  
A12 configurable voltage +/- 10 V, input voltage 30 V max, impedance: 30000 Ohm  
A13 configurable current 0...20 mA, impedance: 250 Ohm |
| **Sampling duration**    | A11, A12, A13: 8 ms analog  
L11...L16: 4 ms discrete |
| **Response time**        | AOV, AOC 8 ms for analog  
R1A, R1B, R1C, R2A, R2B 8 ms for discrete |
| **Linearity error**      | +/- 0.2 % for output |
| **Analogue output number**| 2 |
| **Analogue output type** | AOC configurable current: 0...20 mA, impedance: 800 Ohm, resolution: 8 bits  
AOV configurable voltage: 0...10 V, impedance: 470 Ohm, resolution: 8 bits |
| **Discrete input logic** | Logic input not wired (L1...L4), < 13 V (state 1)  
Negative logic (source) (L1...L6), > 19 V (state 0)  
Positive logic (source) (L1...L6), < 5 V (state 0), > 11 V (state 1) |
| **Discrete output number**| 2 |
| **Discrete output type** | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles  
Configurable relay logic: (R2A, R2B) NC - 100000 cycles |
| **Minimum switching current** | R1-R2 10 mA at 5 V DC |
| **Maximum switching current** | 2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)  
2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2)  
5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)  
5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2) |
| **Discrete input number** | 6 |
| **Discrete input type**  | (L1...L6) programmable at 24 V, 0...100 mA for PLC, impedance: 3500 Ohm |
| **Acceleration and deceleration ramps** | Linear adjustable separately from 0.1 to 999.9 s  
S, U or customized |
| **Braking to standstill** | By DC injection |
| **Protection type**      | Input phase breaks: drive  
Line supply overvoltage and undervoltage safety circuits: drive  
Line supply phase loss safety function, for three phases supply: drive  
Motor phase breaks: drive  
Overcurrent between output phases and earth (on power up only): drive  
Overheating protection: drive  
Short-circuit between motor phases: drive  
Thermal protection: motor |
| **Dielectric strength**  | 2040 V DC between earth and power terminals  
2880 V AC between control and power terminals |
| **Insulation resistance**| >= 500 mOhm 500 V DC for 1 minute |
| **Local signalling**     | 1 LED (red)drive voltage:  
Four 7-segment display unitsCANopen bus status: |
| **Time constant**        | 5 ms for reference change |
| **Frequency resolution** | Analog input: 0.1…100 Hz |
**Communication port protocol**
- Modbus
- CANopen

**Connector type**
1 RJ45 for Modbus/CANopen

**Physical interface**
RTU

**Transmission frame**
RS485 multidrop serial link

**Transmission rate**
- 10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen
- 4800, 9600 or 19200 bps for Modbus

**Number of addresses**
- 1…127 for CANopen
- 1…247 for Modbus

**Number of drive**
- 127 for CANopen
- 31 for Modbus

**Electromagnetic compatibility**
- 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5
- Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4
- Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2
- Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3

**Standards**
- IEC 61800-3
- IEC 61800-5-1

**Marking**
- CE

**Height**
143 mm

**Width**
107 mm

**Depth**
152 mm

**Product weight**
1.8 kg

**Option card**
- Communication card for CANopen daisy chain
- Communication card for DeviceNet
- Communication card for Fipio
- Communication card for Modbus TCP
- Communication card for Proflbus DP

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**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
- 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
- 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 (with protective cover on top of the drive)
- -10…60 °C with derating factor (without protective cover on top of the drive)

**Operating altitude**
- <= 1000 m without
- >= 1000 m with current derating 1 % per 100 m

**Operating position**
Vertical +/- 10 degree

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**Offer Sustainability**

**Sustainable offer status**
Green Premium product

**REACH Regulation**
REACh Declaration

**EU RoHS Directive**
Pro-active compliance (Product out of EU RoHS legal scope)
EU RoHS Declaration

**Mercury free**
Yes

**RoHS exemption information**
Yes

**China RoHS Regulation**
China RoHS declaration

**Environmental Disclosure**
Product Environmental Profile

**Circularity Profile**
End of Life Information

**WEEE**
The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
| Contractual warranty | Warranty | 18 months |