ATV312HU22M2412
variable speed drive ATV312 - 2.2kW - 4.4kVA - 123W - 200..240 V- 1-phase supply

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**: 2.2 kW
- **Motor power hp**: 3 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**: 18.4 A at 240 V
  21.9 A at 200 V, Isc = 1 kA
- **EMC filter**: Integrated
- **Apparent power**: 4.4 kVA
- **Prospective line Isc**: 1 kA
- **Continuous output current**: 11 A at 4 kHz
- **Maximum transient current**: 16.5 A for 60 s
- **Power dissipation in W**: 123 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
- 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
- A11, A12, A13, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1…LI6 terminal 2.5 mm² AWG 14
- L1, L2, L3, U, V, W, PA, PB, PA+, PC/- terminal 2.5 mm² AWG 14

### Tightening torque
- A11, A12, A13, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1…LI6: 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
- LI1…LI6: 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 (LI1…LI4), < 13 V (state 1)
- Negative logic (source) (LI1…LI6), > 19 V (state 0)
- Positive logic (source) (LI1…LI6), < 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
- (LI1…LI6) programmable at 24 V, 0…100 mA for PLC, impedance: 3500 Ohm

### Acceleration and deceleration ramps
- S, U or customized
- Linear adjustable separately from 0.1 to 999.9 s

### 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** | Display unit: 0.1 Hz
| **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
| 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 61800-5-1
| IEC 61800-3
| **Marking** | CE
| **Height** | 184 mm
| **Width** | 142 mm
| **Depth** | 152 mm
| **Net weight** | 3.1 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 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
| 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

## 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**

<table>
<thead>
<tr>
<th>Warranty</th>
<th>18 months</th>
</tr>
</thead>
</table>