

# ATV312HD15N4

variable speed drive ATV312 - 15kW - 32kVA -  
 492 W - 380..500 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                     | 15 kW   |
| Motor power hp                     | 20 hp   |
| [Us] rated supply voltage          | 380...500 V - 15...10 %   |
| Supply frequency                   | 50...60 Hz - 5...5 %  |
| Network number of phases           | 3 phases  |
| Line current                       | 48.2 A at 380 V, I <sub>sc</sub> = 22 kA<br>36.8 A at 500 V   |
| EMC filter                         | Integrated  |
| Apparent power                     | 32 kVA  |
| Maximum transient current          | 49.5 A for 60 s   |
| Power dissipation in W             | 492 W at nominal load   |
| Speed range                        | 1...50  |
| Asynchronous motor control profile | Sensorless flux vector control with PWM type motor control signal<br>Factory set : constant torque  |
| Electrical connection              | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, L1...L16 terminal 2.5 mm <sup>2</sup> AWG 14<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 25 mm <sup>2</sup> AWG 3   |
| Supply                             | Internal supply for logic inputs: 19...30 V 100 mA, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (2.2 to 10 kOhm): 10...10.8 V 10 mA, protection type: overload and short-circuit protection |
| Communication port protocol        | Modbus<br>CANopen   |
| IP degree of protection            | IP20 on upper part without cover plate<br>IP21 on connection terminals<br>IP31 on upper part<br>IP41 on upper part  |
| 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   |

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## Complementary

|                                     |   |
|-------------------------------------|---|
| Supply voltage limits               | 323...550 V   |
| Prospective line I <sub>sc</sub>    | 22 kA   |
| Continuous output current           | 33 A at 4 kHz   |
| 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                      | 150 % during 60 s with braking resistor<br>100 % with braking resistor continuously<br>150 % without braking resistor   |
| Regulation loop                     | Frequency PI regulator  |
| Motor slip compensation             | Adjustable<br>Automatic whatever the load<br>Suppressable   |
| Output voltage                      | <= power supply voltage   |
| Tightening torque                   | 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/-: 4.5 N.m  |
| Insulation                          | Electrical between power and control  |
| Analogue input number               | 3   |
| Analogue input type                 | 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  |
| Sampling duration                   | AI1, AI2, AI3: 8 ms analog<br>LI1...LI6: 4 ms discrete  |
| Response time                       | AOV, AOC 8 ms for analog<br>R1A, R1B, R1C, R2A, R2B 8 ms for discrete   |
| Linearity error                     | +/- 0.2 % for output  |
| Analogue output number              | 1   |
| Analogue output type                | 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   |
| Discrete input logic                | 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)  |
| Discrete output number              | 2   |
| Discrete output type                | Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles<br>Configurable relay logic: (R2A, R2B) NC - 100000 cycles  |
| Minimum switching current           | R1-R2 10 mA at 5 V DC   |
| Maximum switching current           | R1-R2: 2 A at 250 V AC inductive load, cos phi = 0.4 and L/R = 7 ms<br>R1-R2: 2 A at 30 V DC inductive load, cos phi = 0.4 and L/R = 7 ms<br>R1-R2: 5 A at 250 V AC resistive load, cos phi = 1 and L/R = 0 ms<br>R1-R2: 5 A at 30 V DC resistive load, cos phi = 1 and L/R = 0 ms  |
| 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<br>Linear adjustable separately from 0.1 to 999.9 s  |
| Braking to standstill               | By DC injection   |
| Protection type                     | 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 |
| 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                | Analogue input: 0.1...100 Hz<br>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<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   |
| Marking             | CE   |
| Operating position  | Vertical +/- 10 degree   |
| Outer dimension     | 390 x 245 x 190 mm<br>595 x 234 x 268 mm<br>330 x 245 x 190 mm                             |
| Height              | 329.5 mm   |
| Width               | 245 mm   |
| Depth               | 192 mm   |
| Net weight          | 11 kg  |

## Environment

|                                       |   |
|---------------------------------------|---|
| Dielectric strength                   | 2410 V DC between earth and power terminals<br>3400 V AC between control and power terminals  |
| Electromagnetic compatibility         | 1.2/50 $\mu$ s - 8/20 $\mu$ s 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<br>IEC 61800-3  |
| Product certifications                | UL<br>CSA<br>DNV<br>GOST<br>C-Tick<br>NOM   |
| 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...3000 m with current derating 1 % per 100 m   |

## Packing Units

|                              |           |
|------------------------------|-----------|
| Unit Type of Package 1       | PCE       |
| Number of Units in Package 1 | 1         |
| Package 1 Weight             | 11.856 kg |
| Package 1 Height             | 28 cm     |
| Package 1 width              | 29 cm     |
| Package 1 Length             | 40 cm     |
| Unit Type of Package 2       | P06       |
| Number of Units in Package 2 | 4         |
| Package 2 Weight             | 59.82 kg  |
| Package 2 Height             | 80 cm     |
| Package 2 width              | 80 cm     |
| Package 2 Length             | 60 cm     |

## Offer Sustainability

|                            |   |
|----------------------------|---|
| Sustainable offer status   | Green Premium product   |
| REACH Regulation           | <a href="#">REACH Declaration</a>   |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>                              |
| Mercury free               | Yes   |
| RoHS exemption information | <a href="#">Yes</a>   |
| China RoHS Regulation      | <a href="#">China RoHS Declaration</a>  |
| Environmental Disclosure   | <a href="#">Product Environmental Profile</a>   |
| Circularity Profile        | <a href="#">End Of Life Information</a>   |
| 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 |
|----------|-----------|