

# ATV312HU75N4

variable speed drive ATV312 - 7.5kW - 18kVA - 269W - 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                     | 7.5 kW  |
| Motor power hp                     | 10 hp   |
| [Us] rated supply voltage          | 380...500 V (- 5...5 %)   |
| Supply frequency                   | 50...60 Hz (- 5...5 %)  |
| Network number of phases           | 3 phases  |
| Line current                       | 21 A for 500 V<br>27.7 A for 380 V, 1 kA  |
| EMC filter                         | Integrated  |
| Apparent power                     | 18 kVA  |
| Maximum transient current          | 25.5 A for 60 s   |
| Power dissipation in W             | 269 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              | AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm <sup>2</sup> AWG 14<br>L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm <sup>2</sup> AWG 14  |
| Supply                             | Internal supply for logic inputs at 19...30 V <= 100 A for overload and short-circuit protection<br>Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V <= 10 A for overload and short-circuit protection |
| Communication port protocol        | CANopen<br>Modbus   |
| 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                        | CANopen daisy chain communication card<br>DeviceNet communication card<br>Fipio communication card<br>Modbus TCP communication card<br>Profibus DP communication card   |

## Complementary

|                                  |               |
|----------------------------------|---------------|
| Supply voltage limits            | 323...550 V   |
| Network frequency limits         | 47.5...63 Hz  |
| Prospective line I <sub>sc</sub> | 1 kA          |
| Continuous output current        | 17 A at 4 kHz |
| Speed drive output frequency     | 0.5...500 Hz  |
| Nominal switching frequency      | 4 kHz         |

|                                     |   |
|-------------------------------------|---|
| Switching frequency                 | 2...16 kHz adjustable   |
| Transient overtorque                | 150...170 % of nominal motor torque   |
| Braking torque                      | <= 150 % with braking resistor for 60 s<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                   | 0.6 N.m AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6<br>0.8 N.m L1, L2, L3, U, V, W, PA, PB, PA/+, PC/-  |
| 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 for analog<br>LI1...LI6 4 ms for 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              | 2   |
| 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                | LI1...LI4 logic input not wired, < 13 V (state 1)<br>LI1...LI6 negative logic (source), > 19 V (state 0)<br>LI1...LI6 positive logic (source), < 5 V (state 0), > 11 V (state 1)  |
| Discrete output number              | 2   |
| Discrete output type                | R1A, R1B, R1C configurable relay logic 1 NO + 1 NC, electrical durability 100000 cycles<br>R2A, R2B configurable relay logic NC, electrical durability 100000 cycles  |
| Minimum switching current           | R1-R2 10 mA at 5 V DC   |
| Maximum switching current           | R1-R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms<br>R1-R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms<br>R1-R2 on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms<br>R1-R2 on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms  |
| Discrete input number               | 6   |
| Discrete input type                 | LI1...LI6 programmable 24 V 0...100 mA with PLC, impedance 3500 Ohm   |
| 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                     | 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 at 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  |
| Type of connector                   | 1 RJ45 Modbus/CANopen   |
| Physical interface                  | RS485 multidrop serial link   |
| Transmission frame                  | RTU   |
| Transmission rate                   | 10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen<br>4800, 9600 or 19200 bps Modbus  |
| Number of addresses                 | 1...127 CANopen<br>1...247 Modbus   |

|                    |  |
|--------------------|--|
| Number of drive    | 127 CANopen<br>31 Modbus                                       |
| Marking            | CE   |
| Operating position | Vertical +/- 10 degree   |
| Outer dimension    | 232 x 180 x 170 mm<br>300 x 210 x 170 mm<br>405 x 234 x 268 mm |
| Product weight     | 6.5 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 conforming to IEC 61000-4-5 level 3<br>Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4<br>Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3<br>Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3 |
| Standards                             | IEC 61800-3<br>IEC 61800-5-1  |
| Product certifications                | CSA<br>C-Tick<br>GOST<br>NOM<br>UL  |
| 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   |
| RoHS EUR status                       | Compliant   |
| RoHS EUR conformity date              | 0913  |