

# Product data sheet

Specifications



variable speed drive ATV31 - 1.1kW  
- 500V 3-phase supply - EMC filter -  
IP20

ATV31HU11N4A

ⓘ Discontinued

## Main

|                                    |                                                                                                    |
|------------------------------------|----------------------------------------------------------------------------------------------------|
| Range Of Product                   | Altivar                                                                                            |
| Product Or Component Type          | Variable speed drive                                                                               |
| Product Specific Application       | Simple machine                                                                                     |
| Component Name                     | ATV31                                                                                              |
| Assembly Style                     | With heat sink                                                                                     |
| Variant                            | With drive order potentiometer                                                                     |
| Emc Filter                         | Integrated                                                                                         |
| [Us] Rated Supply Voltage          | 380...500 V - 5...5 %                                                                              |
| Supply Frequency                   | 50...60 Hz - 5...5 %                                                                               |
| Network Number Of Phases           | 3 phases                                                                                           |
| Motor Power Kw                     | 1.1 kW 4 kHz                                                                                       |
| Motor Power Hp                     | 1.5 hp 4 kHz                                                                                       |
| Line Current                       | 3.7 A at 500 V<br>4.9 A at 380 V, I <sub>sc</sub> = 1 kA                                           |
| Apparent Power                     | 3.2 kVA                                                                                            |
| Prospective Line I <sub>sc</sub>   | 1 kA                                                                                               |
| Nominal Output Current             | 3 A 4 kHz                                                                                          |
| Maximum Transient Current          | 4.5 A for 60 s                                                                                     |
| Power Dissipation In W             | 48 W at nominal load                                                                               |
| Asynchronous Motor Control Profile | Factory set : constant torque<br>Sensorless flux vector control with PWM type motor control signal |
| Analogue Input Number              | 4                                                                                                  |

## Complementary

|                             |                       |
|-----------------------------|-----------------------|
| Product Destination         | Asynchronous motors   |
| Supply Voltage Limits       | 323...550 V           |
| Network Frequency           | 47.5...63 Hz          |
| Output Frequency            | 0.0005...0.5 kHz      |
| Nominal Switching Frequency | 4 kHz                 |
| Switching Frequency         | 2...16 kHz adjustable |
| Speed Range                 | 1...50                |

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>Transient Overtorque</b>                | 150...170 % of nominal motor torque                                                                                                                                                                                                                                                                                                                                                     |
| <b>Braking Torque</b>                      | <= 150 % during 60 s with braking resistor<br>100 % with braking resistor continuously<br>150 % without braking resistor                                                                                                                                                                                                                                                                |
| <b>Regulation Loop</b>                     | Frequency PI regulator                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Motor Slip Compensation</b>             | Automatic whatever the load<br>Suppressable<br>Adjustable                                                                                                                                                                                                                                                                                                                               |
| <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<br>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: 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                                                                                                                                   |
| <b>Analogue Input Type</b>                 | AI3 configurable current 0...20 mA, impedance: 250 Ohm<br>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>AIP potentiometer reference 8 ms 10 bits +/- 4.3 % +/- 0.2 %                                                                                            |
| <b>Sampling Duration</b>                   | LI1...LI6: 4 ms discrete<br>AI1, AI2, AI3: 8 ms analog                                                                                                                                                                                                                                                                                                                                  |
| <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>                | Positive logic (source) (LI1...LI6), < 5 V (state 0), > 11 V (state 1)<br>Logic input not wired (LI1...LI4), < 13 V (state 1)<br>Negative logic (source) (LI1...LI6), > 19 V (state 0)                                                                                                                                                                                                  |
| <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>           | 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                                                                                                      |
| <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 |

|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| Insulation Resistance | >= 500 mOhm 500 V DC for 1 minute                                                                                  |
| Display Type          | 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  | Display unit: 0.1 Hz<br>Analog input: 0.1...100 Hz                                                                 |
| Connector Type        | 1 RJ45 for CANopen via VW3 CANTAP2 adaptor<br>1 RJ45 for Modbus                                                    |
| Physical Interface    | RS485 multidrop serial link for CANopen via VW3 CANTAP2 adaptor<br>RS485 multidrop serial link for Modbus          |
| Transmission Frame    | RTU for CANopen via VW3 CANTAP2 adaptor<br>RTU for Modbus                                                          |
| Transmission Rate     | 10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen via VW3 CANTAP2 adaptor<br>4800, 9600 or 19200 bps for Modbus |
| Number Of Addresses   | 1...127 for CANopen via VW3 CANTAP2 adaptor<br>1...247 for Modbus                                                  |
| Number Of Drive       | 127 for CANopen via VW3 CANTAP2 adaptor<br>31 for Modbus                                                           |
| Marking               | CE                                                                                                                 |
| Operating Position    | Vertical +/- 10 degree                                                                                             |
| Net Weight            | 1.8 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 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                             | EN 50178                                                                                                                                                                                                                                                                                                                                          |
| Product Certifications                | C-Tick<br>UL<br>CSA<br>N998                                                                                                                                                                                                                                                                                                                       |
| Ip Degree Of Protection               | On upper part: IP20 (without cover plate)<br>On connection terminals: IP21<br>On upper part: IP31<br>On upper part: IP41                                                                                                                                                                                                                          |
| 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                                                                                                                                                                                                                                                                       |

# Contractual warranty

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