

# Product data sheet

Specifications



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

ATV31HU30N4

! Discontinued on: 31 December 2011

! End-of-service on: 31 December 2015

! 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
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	3 kW 4 kHz
Line current	10.9 A at 380 V, I <sub>sc</sub> = 1 kA 8.3 A at 500 V
Apparent power	7.1 kVA
Prospective line I <sub>sc</sub>	1 kA
Nominal output current	7.1 A 4 kHz
Maximum transient current	10.7 A for 60 s
Power dissipation in W	125 W at nominal load
Asynchronous motor control profile	Sensorless flux vector control with PWM type motor control signal Factory set : constant torque
Analogue input number	3

### 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

<b>Transient overtorque</b>	150...170 % of nominal motor torque
<b>Braking torque</b>	<= 150 % during 60 s with braking resistor 100 % with braking resistor continuously 150 % without braking resistor
<b>Regulation loop</b>	Frequency PI regulator
<b>Motor slip compensation</b>	Adjustable Suppressable Automatic whatever the load
<b>Output voltage</b>	<= power supply voltage
<b>Electrical connection</b>	A11, A12, A13, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm <sup>2</sup> AWG 14 L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm <sup>2</sup> AWG 14
<b>Tightening torque</b>	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
<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 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>	A13 configurable current 0...20 mA, impedance: 250 Ohm 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
<b>Sampling duration</b>	LI1...LI6: 4 ms discrete A11, A12, A13: 8 ms analog
<b>Response time</b>	AOV, AOC 8 ms for analog 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 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) Logic input not wired (LI1...LI4), < 13 V (state 1) 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 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 R1-R2: 2 A at 30 V DC inductive load, cos phi = 0.4 and L/R = 7 ms R1-R2: 5 A at 250 V AC resistive load, cos phi = 1 and L/R = 0 ms 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 S, U or customized
<b>Braking to standstill</b>	By DC injection
<b>Protection type</b>	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
<b>Insulation resistance</b>	>= 500 mOhm 500 V DC for 1 minute
<b>Display type</b>	1 LED (red) for drive voltage Four 7-segment display units for CANopen bus status
<b>Time constant</b>	5 ms for reference change
<b>Frequency resolution</b>	Display unit: 0.1 Hz Analog input: 0.1...100 Hz
<b>Connector type</b>	1 RJ45 for CANopen via VW3 CANTAP2 adaptor

1 RJ45 for Modbus

<b>Physical interface</b>	RS485 multidrop serial link for CANopen via VW3 CANTAP2 adaptor RS485 multidrop serial link for Modbus
<b>Transmission frame</b>	RTU for CANopen via VW3 CANTAP2 adaptor RTU for Modbus
<b>Transmission rate</b>	10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen via VW3 CANTAP2 adaptor 4800, 9600 or 19200 bps for Modbus
<b>Number of addresses</b>	1...127 for CANopen via VW3 CANTAP2 adaptor 1...247 for Modbus
<b>Number of drive</b>	127 for CANopen via VW3 CANTAP2 adaptor 31 for Modbus
<b>Marking</b>	CE
<b>Operating position</b>	Vertical +/- 10 degree
<b>Outer dimension</b>	215 x 185 x 158 mm 184 x 140 x 150 mm 402 x 239 x 192 mm
<b>Net weight</b>	3.1 kg

## Environment

<b>Dielectric strength</b>	2410 V DC between earth and power terminals 3400 V AC between control and power terminals
<b>Electromagnetic compatibility</b>	1.2/50 $\mu$ s - 8/20 $\mu$ s 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
<b>Standards</b>	EN 50178
<b>Product certifications</b>	UL CSA C-Tick N998
<b>IP degree of protection</b>	On upper part: IP20 (without cover plate) On connection terminals: IP21 On upper part: IP31 On upper part: IP41
<b>Pollution degree</b>	2
<b>Protective treatment</b>	TC
<b>Vibration resistance</b>	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
<b>Shock resistance</b>	15 gn for 11 ms conforming to EN/IEC 60068-2-27
<b>Relative humidity</b>	5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3
<b>Ambient air temperature for storage</b>	-25...70 °C
<b>Ambient air temperature for operation</b>	-10...50 °C without derating (with protective cover on top of the drive) -10...60 °C with derating factor (without protective cover on top of the drive)
<b>Operating altitude</b>	<= 1000 m without derating >= 1000 m with current derating 1 % per 100 m

## Contractual warranty

<b>Warranty</b>	18 months
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## Recommended replacement(s)

ATV31HU30N4 is replaced by:

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1x



Variable speed drive, Altivar Machine ATV320, 3 kW, 380...500 V, 3 phases, compact  
ATV320U30N4C

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