

# Product data sheet

Specifications



## variable speed drive ATV31 - 4kW - 500V 3-phase supply - EMC filter - IP20

ATV31HU40N4A

⚠ 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	4 kW 4 kHz
Motor power hp	5 hp 4 kHz
Line current	10.6 A at 500 V 13.9 A at 380 V, I <sub>sc</sub> = 1 kA
Apparent power	9.2 kVA
Prospective line I <sub>sc</sub>	1 kA
Nominal output current	9.5 A 4 kHz
Maximum transient current	14.3 A for 60 s
Power dissipation in W	150 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	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

<b>Switching frequency</b>	2...16 kHz adjustable
<b>Speed range</b>	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>	Suppressable Automatic whatever the load 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 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>	AI1, AI2, AI3, 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>	AI3 configurable current 0...20 mA, impedance: 250 Ohm AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance: 30000 Ohm AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance: 30000 Ohm AIP potentiometer reference 8 ms 10 bits +/- 4.3 % +/- 0.2 %
<b>Sampling duration</b>	LI1...LI6: 4 ms discrete AI1, AI2, AI3: 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>	S, U or customized Linear adjustable separately from 0.1 to 999.9 s
<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>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>	C-Tick UL CSA 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)

ATV31HU40N4A is replaced by:

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1x



Variable speed drive, Altivar Machine ATV320, 4 kW, 380...500 V, 3 phases, compact  
ATV320U40N4C

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