Product data sheet
Characteristics

ATV31CU30N4ZH28
variable speed drive ATV31 - 3p - 3 kW - 3x 380-500V - IP55 - complete

Main

Range of product	Altivar 31
Product or component type	Variable speed drive
Product destination	Asynchronous motors
Product specific application	Simple machine Wire guiding
Assembly style	Enclosed
Component name	ATV31
EMC filter	Integrated
Power supply voltage	380...500 V - 15...10 %
Power supply frequency	50...60 Hz - 5...5 %
Network number of phases	3 phases
Motor power kW	3 kW
Line current	10.9 A 380 V 1 kA 8.3 A 500 V 1 kA
Apparent power	7.1 kVA
Maximum prospective line Isc	5 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
Speed range	1…50
Transient overtorque	150…170 % of nominal motor torque
Asynchronous motor control profile	Sensorless flux vector control with PWM type motor control signal Factory set : constant torque
Analogue input number	3
IP degree of protection	IP55

Complementary

Power supply voltage limit	323…550 V
Power supply frequency limits	47.5…63 Hz
Speed drive output frequency	0.5…500 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...16 kHz adjustable
Braking torque	<= 150 % during 60 s with braking resistor 100 % with braking resistor continuously 30 % without braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Suppressable Automatic whatever the load Adjustable
Output voltage	<= power supply voltage
Electrical connection	AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm² AWG 14 L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 2.5 mm² AWG 14
Tightening torque	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
Insulation	Electrical between power and control

Supply	Internal supply for logic inputs 19…30 V, <100 mA overload protection Internal supply for logic inputs 19…30 V, <100 mA short-circuit protection Internal supply for reference potentiometer 10…10.8 V, <10 mA overload protection Internal supply for reference potentiometer 10…10.8 V, <10 mA short-circuit protection
Analogue input type	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
Input sampling time	LI1...LI6: 4 ms discrete AI1, AI2, AI3: 8 ms analog
Output response time	AOV, AOC 8 ms for analog 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 AOV configurable voltage: 0...10 V, impedance: 470 Ohm, resolution: 8 bits
Discrete input logic	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)
Discrete output number	2
Discrete output type	Configurable relay logic: (R1A, R1B, R1C) 1 NO + 1 NC - 100000 cycles Configurable relay logic: (R2A, R2B) NC - 100000 cycles
Minimum switching current	10 mA 5 V DC R1-R2
Maximum switching current	2 A at 250 V AC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2) 2 A at 30 V DC on inductive load - cos phi = 0.4 - L/R = 7 ms (R1-R2) 5 A at 250 V AC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2) 5 A at 30 V DC on resistive load - cos phi = 1 - L/R = 0 ms (R1-R2)
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	Linear adjustable separately from 0.1 to 999.9 s S, U or customized
Braking to standstill	By DC injection
Protection type	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
Insulation resistance	>= 500 mOhm 500 V DC for 1 minute
Local signalling	1 LED (red) for drive voltage Four 7-segment display units for CANopen bus status
Time constant	5 ms for reference change
Frequency resolution	Display unit: 0.1 Hz Analog input: 0.1...100 Hz
Communication port protocol	CANopen Modbus
Connector type	1 RJ45 for CANopen via VW3 CANTAP2 adaptor 1 RJ45 for Modbus
Physical interface	RS485 multidrop serial link for Modbus
Transmission frame	RTU for Modbus
Transmission rate	10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen via VW3 CANTAP2 adaptor 4800, 9600 or 19200 bps for Modbus
Number of addresses	1…127 for CANopen via VW3 CANTAP2 adaptor 1…247 for Modbus
Number of drive	127 for CANopen via VW3 CANTAP2 adaptor 31 for Modbus
Marking	CE
Operating position	Vertical +/- 10 degree
Net weight	10.7 kg

Environment

Dielectric strength	2410 V DC between earth and power terminals 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 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
Standards	EN 50178
Product certifications	N998 CSA C-Tick UL
Pollution degree	2
Protective treatment	TC
Vibration resistance	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
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 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) -10…60 °C with derating factor (without protective cover on top of the drive)
Operating altitude	<= 1000 m without derating >= 1000 m with current derating 1 % per 100 m