

Main

Range of product	Altivar 31
Product or component type	Variable speed drive
Product destination	Asynchronous motors
Product specific application	Simple machine
Assembly style	Enclosed
Component name	ATV31
EMC filter	Integrated
[Us] rated supply voltage	380...500 V - 15...10 %
Supply frequency	50...60 Hz - 5...5 %
Network number of phases	3 phases
Motor power kW	15 kW
Motor power hp	20 hp
Line current	36.8 A 500 V 1 kA 48.2 A 380 V 1 kA
Apparent power	32 kVA
Prospective line I _{sc}	22 kA
Nominal output current	33 A 4 kHz
Maximum transient current	49.5 A 60 s
Power dissipation in W	492 W at nominal load
Speed range	1...50
Transient overtorque	Of nominal motor torque
Asynchronous motor control profile	Factory set : constant torque Sensorless flux vector control with PWM type motor control signal
Analogue input number	3
IP degree of protection	IP55

Complementary

Supply voltage limits	323...550 V
Network 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 % with braking resistor 60 s 100 % with braking resistor continuously 30 % without braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Adjustable Automatic whatever the load Suppressable
Output voltage	<= power supply voltage
Electrical connection	Terminal 2.5 mm ² AWG 14 AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 Terminal 2.5 mm ² AWG 14 L1, L2, L3, U, V, W, PA, PB, PA+/, PC/-
Tightening torque	0.6 N.m AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 0.8 N.m L1, L2, L3, U, V, W, PA, PB, PA+/, PC/-
Insulation	Electrical between power and control
Supply	Internal supply for logic inputs 19...30 V > 0...0.1 A overload protection Internal supply for logic inputs 19...30 V > 0...0.1 A short-circuit protection Internal supply for reference potentiometer 10...10.8 V > 0...0.01 A overload protection Internal supply for reference potentiometer 10...10.8 V > 0...0.01 A short-circuit protection

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Analogue input type	Configurable current AI3 0...20 mA 250 Ohm Configurable voltage AI1 0...10 V 30 V max 30000 Ohm Configurable voltage AI2 +/- 10 V 30 V max 30000 Ohm
Sampling duration	4 ms LI1...LI6 discrete 8 ms AI1, AI2, AI3 analog
Response time	8 ms analog AOV, AOC 8 ms discrete R1A, R1B, R1C, R2A, R2B
Linearity error	+/- 0.2 % output
Analogue output number	2
Analogue output type	Configurable current AOC 0...20 mA 800 Ohm 8 bits Configurable voltage AOV 0...10 V 470 Ohm 8 bits
Discrete input logic	Logic input not wired LI1...LI4 < 13 V Negative logic (source) LI1...LI6 > 19 V Positive logic (source) LI1...LI6 < 5 V > 11 V Positive logic (source) LI1...LI6 < 5 V > 11 V
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 250 V AC inductive cos phi = 0.4 L/R = 7 ms R1-R2 2 A 30 V DC inductive cos phi = 0.4 L/R = 7 ms R1-R2 5 A 250 V AC resistive cos phi = 1 L/R = 0 ms R1-R2 5 A 30 V DC resistive cos phi = 1 L/R = 0 ms R1-R2
Discrete input number	6
Discrete input type	Programmable LI1...LI6 24 V 0...100 mA PLC 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 drive voltage Four 7-segment display units CANopen bus status
Time constant	5 ms for reference change
Frequency resolution	0.1 Hz display unit 0.1...100 Hz analog input
Communication port protocol	CANopen Modbus
Type of connector	1 RJ45 CANopen via VW3 CANTAP2 adaptor 1 RJ45 Modbus
Physical interface	RS485 multidrop serial link Modbus
Transmission frame	RTU Modbus
Transmission rate	10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen via VW3 CANTAP2 adaptor 4800, 9600 or 19200 bps Modbus
Number of addresses	1...127 CANopen via VW3 CANTAP2 adaptor 1...247 Modbus
Number of drive	127 CANopen via VW3 CANTAP2 adaptor 31 Modbus
Marking	CE
Operating position	Vertical +/- 10 degree
Product weight	32.5 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 IEC 61000-4-5 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 Electrostatic discharge immunity test level 3 IEC 61000-4-2

standards	EN 50178
product certifications	C-Tick
pollution degree	2
protective treatment	TC
vibration resistance	1 gn 13...150 Hz EN/IEC 60068-2-6 1.5 mm 3...13 Hz EN/IEC 60068-2-6
shock resistance	15 gn 11 ms EN/IEC 60068-2-27
relative humidity	5...95 % without condensation IEC 60068-2-3 5...95 % without dripping water 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 with current derating 1 % per 100 m