



Main

Range of product	Altivar 312
Product or component type	Variable speed drive
Product destination	Asynchronous motors
Product specific application	Simple machine
Assembly style	With heat sink
Component name	ATV312
Motor power kW	2.2 kW
Motor power hp	3 hp
[Us] rated supply voltage	525...600 V - 15...10 %
Supply frequency	50...60 Hz - 5...5 %
Network number of phases	3 phases
Line current	6.4 A at 525 V, I _{sc} = 5 kA 5.6 A at 600 V
EMC filter	Without EMC filter
Apparent power	5.8 kVA
Maximum transient current	5.9 A for 60 s
Power dissipation in W	62 W at nominal load
Speed range	1...50
Asynchronous motor control profile	Sensorless flux vector control with PWM type motor control signal Factory set : constant torque
Electrical connection	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/- terminal 5 mm ² AWG 10
Supply	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
Communication port protocol	CANopen Modbus
IP degree of protection	IP20 on upper part without cover plate IP21 on connection terminals

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

IP31 on upper part
IP41 on upper part

Option card	Communication cardfor CANopen daisy chain Communication cardfor DeviceNet Communication cardfor Fipio Communication cardfor Modbus TCP Communication cardfor Profibus DP
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Complementary

Supply voltage limits	446.25...660 V
Network frequency	47.5...63 Hz
Prospective line I _{sc}	5 kA
Continuous output current	3.9 A at 4 kHz
Output frequency	0...500 kHz
Nominal switching frequency	4 kHz
Switching frequency	2...16 kHz adjustable
Transient overtorque	170...200 % of nominal motor torque
Braking torque	150 % during 60 s with braking resistor 100 % with braking resistor continuously 150 % without braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Suppressable Adjustable Automatic whatever the load
Output voltage	<= power supply voltage
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/-: 1.2 N.m
Insulation	Electrical between power and control
Analogue input number	3
Analogue input type	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 AI3 configurable current 0...20 mA, impedance: 250 Ohm
Sampling duration	AI1, AI2, AI3: 8 ms analog LI1...LI6: 4 ms discrete
Response time	AOV, AOC 8 msfor analog R1A, R1B, R1C, R2A, R2B 8 msfor discrete
Linearity error	+/- 0.2 %for output
Analogue output number	1
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	Logic input not wired (LI1...LI4), < 13 V (state 1) Negative logic (source) (LI1...LI6), > 19 V (state 0) Positive logic (source) (LI1...LI6), < 5 V (state 0), > 11 V (state 1)
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	R1-R2 10 mA at 5 V DC
Maximum switching current	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
Discrete input number	6
Discrete input type	(LI1...LI6) programmable at 24 V, 0...100 mAfor 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	Drive voltage: 1 LED (red) CANopen bus status: four 7-segment display units
Time constant	5 ms for reference change
Frequency resolution	Analog input: 0.1...100 Hz Display unit: 0.1 Hz
Connector type	1 RJ45for Modbus/CANopen
Physical interface	RS485 multidrop serial link
Transmission frame	RTU
Transmission rate	10, 20, 50, 125, 250, 500 kbps or 1 Mbpsfor CANopen 4800, 9600 or 19200 bpsfor Modbus
Number of addresses	1...127for CANopen 1...247for Modbus
Number of drive	127for CANopen 31for Modbus
Marking	CE
Operating position	Vertical +/- 10 degree
Height	184 mm
Width	142 mm
Depth	152 mm
Product weight	2.9 kg

Environment

Dielectric strength	2550 V DC between earth and power terminals 3600 V AC between control and power terminals
Electromagnetic compatibility	1.2/50 μ s - 8/20 μ 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
Standards	IEC 61800-3 IEC 61800-5-1
Product certifications	GOST UL DNV C-Tick CSA NOM
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 gnfor 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 (with protective cover on top of the drive) -10...60 °C with (without protective cover on top of the drive)
Operating altitude	<= 1000 m without 1000...3000 m with current derating 1 % per 100 m

Contractual warranty

Warranty	18 months
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