



Main

Range of product	Altivar 312 Solar
Product or component type	Variable speed drive
Product destination	Asynchronous motors
Product specific application	Pumping station with photovoltaic arrays
Assembly style	With heat sink
Device short name	ATV312

Complementary

Motor power kW	2.2 kW
Motor power hp	3 hp
[Us] rated supply voltage	200...240 V - 5...5 %
Supply voltage limits	170...264 V
Supply frequency	50...60 Hz - 5...5 %
Network frequency	47.5...63 Hz
Network number of phases	Single phase
Line current	18.4 A at 240 V 21.9 A at 200 V, I _{sc} = 1 kA
EMC filter	Integrated
Apparent power	4.4 kVA
Prospective line I _{sc}	1 kA
Continuous output current	11 A at 4 kHz
Maximum transient current	16.5 A for 60 s
Power dissipation in W	123 W at nominal load
Speed drive output frequency	0.5...500 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...16 kHz adjustable

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

Speed range	1...50
Transient overtorque	150...170 % of nominal motor torque
Braking torque	<= 150 % during 60 s with braking resistor 100 % with braking resistor continuously 150 % without braking resistor
Asynchronous motor control profile	Factory set: energy saving mode
Regulation loop	Frequency PI regulator
Motor slip compensation	Automatic whatever the load Adjustable Suppressable
Output voltage	<= power supply voltage
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 2.5 mm ² 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 at 19...30 V, <100 A, protection type: overload and short-circuit protection Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V, <10 A, protection type: overload and short-circuit protection
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 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	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	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	S, U or customized Linear adjustable separately from 0.1 to 999.9 s
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
Dielectric strength	2040 V DC between earth and power terminals 2880 V AC between control and power terminals
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	Analog input: 0.1...100 Hz Display unit: 0.1 Hz
Communication port protocol	CANopen Modbus
Connector type	1 RJ45 for Modbus/CANopen
Physical interface	RS485 multidrop serial link
Transmission frame	RTU
Transmission rate	10, 20, 50, 125, 250, 500 kbps or 1 Mbps for CANopen 4800, 9600 or 19200 bps for Modbus
Number of addresses	1...127 for CANopen 1...247 for Modbus
Number of drive	127 for CANopen 31 for Modbus
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 61800-5-1 IEC 61800-3
Marking	CE
Height	184 mm
Width	142 mm
Depth	152 mm
Net weight	3.1 kg
Option card	Communication card for CANopen daisy chain Communication card for DeviceNet Communication card for Fipio Communication card for Modbus TCP Communication card for Profibus DP

Environment

IP degree of protection	IP20 without cover plate
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
Operating position	Vertical +/- 10 degree

Packing Units

Package 1 Weight	2.885 kg
Package 1 Height	2.000 dm
Package 1 width	2.150 dm
Package 1 Length	2.550 dm

Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration

Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End of Life Information
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Contractual warranty

Warranty	18 months
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