



## 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	4 kW
Maximum Horse Power Rating	5 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
Phase	3 phase
Line current	21.1 A 240 V 24.2 A 200 V, I <sub>sc</sub> = 1 kA
EMC filter	Without EMC filter
Apparent power	8.4 kVA
Prospective line I <sub>sc</sub>	1 kA
Continuous output current	17.5 A 4 kHz
Maximum transient current	26.3 A 60 s
Power dissipation in W	180 W at nominal load
Speed drive output frequency	0.5...500 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...16 kHz adjustable
Speed range	1...50
Transient overtorque	150...170 % of nominal motor torque
Braking torque	<= 150 % 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	Adjustable Suppressable Automatic whatever the load
Output voltage	<= power supply voltage
Electrical connection	AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 0.00 in <sup>2</sup> (2.5 mm <sup>2</sup> ) AWG 14 L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 0.00 in <sup>2</sup> (2.5 mm <sup>2</sup> ) AWG 14
Tightening torque	AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 5.31 lbf.in (0.6 N.m) L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- 7.08 lbf.in (0.8 N.m)
Insulation	Electrical between power and control

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Supply	Internal supply for logic inputs 19...30 V, <100 A overload and short-circuit protection Internal supply for reference potentiometer (2.2 to 10 kOhm) 10...10.8 V, <10 A overload and short-circuit protection
Analogue input number	3
Analogue input type	AI1 configurable voltage 0...10 V 30 V max 30000 Ohm AI2 configurable voltage +/- 10 V 30 V max 30000 Ohm AI3 configurable current 0...20 mA 250 Ohm
Sampling duration	AI1, AI2, AI3 8 ms analog LI1...LI6 4 ms discrete
Response time	AOV, AOC 8 ms analog R1A, R1B, R1C, R2A, R2B 8 ms discrete
Linearity error	+/- 0.2 % output
Analogue output number	2
Analogue output type	AOC configurable current 0...20 mA 800 Ohm 8 bits AOV configurable voltage 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
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 5 V DC
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	LI1...LI6) programmable 24 V, 0...100 mA PLC 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	For drive voltage 1 LED (red) For 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
Communication Port Protocol	CANopen Modbus
Connector type	1 RJ45 Modbus/CANopen
Physical interface	RS485 multidrop serial link
Transmission frame	RTU
Transmission Rate	10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen 4800, 9600 or 19200 bps Modbus
Number of addresses	1...127 CANopen 1...247 Modbus
Number of drive	127 CANopen 31 Modbus
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 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3
Standards	IEC 61800-5-1 IEC 61800-3

Marking	CE
Height	7.24 in (184 mm)
Width	5.59 in (142 mm)
Depth	5.98 in (152 mm)
Net Weight	6.39 lb(US) (2.9 kg)
Option card	Communication card CANopen daisy chain Communication card DeviceNet Communication card Fipio Communication card Modbus TCP Communication card Profibus DP

## Environment

IP degree of protection	IP20 without cover plate
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	-13...158 °F (-25...70 °C)
Ambient air temperature for operation	14...122 °F (-10...50 °C) without derating with protective cover on top of the drive) 14...140 °F (-10...60 °C) with derating factor without protective cover on top of the drive)
Operating altitude	<= 3280.84 ft (1000 m) without derating >= 3280.84 ft (1000 m) with current derating 1 % per 100 m
Operating position	Vertical +/- 10 degree

## Ordering and shipping details

Category	22152 - ATV320/ATV312/ATV32 (.25 THRU 7.5HP)
Discount Schedule	CP4B
GTIN	3606480508547
Nbr. of units in pkg.	1
Package weight(Lbs)	6.37 lb(US) (2.89 kg)
Returnability	No
Country of origin	ID

## Packing Units

Unit Type of Package 1	PCE
Package 1 Height	8.46 in (21.5 cm)
Package 1 width	8.27 in (21 cm)
Package 1 Length	8.46 in (21.5 cm)

## Contractual warranty

Warranty	18 months
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