Product data sheet
Characteristics

ATV312HU30N4
variable speed drive ATV312 - 3kW - 7.1kVA - 125 W - 380..500 V - 3-phase supply

Main

Commercial Status	Commercialised
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	3 kW
[Us] rated supply voltage	380...500 V (- 15...10 %)
Supply frequency	50...60 Hz (- 5...5 %)
Network number of phases	3 phases
Line current	8.3 A for 500 V 10.9 A for 380 V, 1 kA
EMC filter	Integrated
Apparent power	7.1 kVA
Maximum transient current	10.7 A for 60 s
Power dissipation in W	125 W at nominal load
Speed range	1...50
Asynchronous motor control profile	Factory set : constant torque Sensorless flux vector control with PWM type motor control signal
Electrical connection	L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- terminal 5 mm² AWG 10 AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6 terminal 2.5 mm² AWG 14
Supply	Internal supply for reference potentiometer (2.2 to 10 kOhm) at 10...10.8 V <= 10 mA for overload and short-circuit protection Internal supply for logic inputs at 19...30 V <= 100 mA for overload and short-circuit protection
Communication port protocol	CANopen Modbus
IP degree of protection	IP41 on upper part IP31 on upper part IP21 on connection terminals IP20 on upper part without cover plate
Option card	Profibus DP communication card Modbus TCP communication card Fipio communication card DeviceNet communication card CANopen daisy chain communication card

Complementary

Supply voltage limits	323...550 V
Network frequency limits	47.5...63 Hz
Prospective line Isc	1 kA
Continuous output current	7.1 A at 4 kHz
Speed drive output frequency	0.5...500 Hz
Nominal switching frequency	4 kHz

Switching frequency	2...16 kHz adjustable
Transient overtorque	170...200 % of nominal motor torque
Braking torque	30 % without braking resistor 150 % with braking resistor for 60 s 100 % with braking resistor continuously
Regulation loop	Frequency PI regulator
Motor slip compensation	Adjustable Automatic whatever the load Suppressable
Output voltage	<= power supply voltage
Tightening torque	1.2 N.m L1, L2, L3, U, V, W, PA, PB, PA/+, PC/- 0.6 N.m AI1, AI2, AI3, AOV, AOC, R1A, R1B, R1C, R2A, R2B, LI1...LI6
Insulation	Electrical between power and control
Analogue input number	3
Analogue input type	AI3 configurable current 0...20 mA, impedance 250 Ohm AI2 configurable voltage +/- 10 V, input voltage 30 V max, impedance 30000 Ohm AI1 configurable voltage 0...10 V, input voltage 30 V max, impedance 30000 Ohm
Sampling duration	LI1...LI6 4 ms for discrete AI1, AI2, AI3 8 ms for analog
Response time	R1A, R1B, R1C, R2A, R2B 8 ms for discrete AOV, AOC 8 ms for analog
Linearity error	+/- 0.2 % for output
Analogue output number	2
Analogue output type	AOV configurable voltage 0...10 V, impedance 470 Ohm, resolution 8 bits AOC configurable current 0...20 mA, impedance 800 Ohm, resolution 8 bits
Discrete input logic	(LI1...LI6)Positive logic (source) state 0 < 5 V state 1 > 11 V (LI1...LI6)Negative logic (source) state 0 > 19 V (LI1...LI4)Logic input not wired state 1 < 13 V
Discrete output number	2
Discrete output type	(R2A, R2B) configurable relay logic NC, electrical durability 100000 cycles (R1A, R1B, R1C) configurable relay logic 1 NO + 1 NC, electrical durability 100000 cycles
Minimum switching current	R1-R2 10 mA at 5 V DC
Maximum switching current	R1-R2 on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms R1-R2 on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms R1-R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms R1-R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms
Discrete input number	6
Discrete input type	(LI1...LI6) programmable, 24 V 0...100 mA with 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	Thermal protection motor Short-circuit between motor phases drive Overheating protection drive Overcurrent between output phases and earth (on power up only) drive Motor phase breaks drive Line supply phase loss safety function, for three phases supply drive Line supply overvoltage and undervoltage safety circuits drive Input phase breaks drive
Insulation resistance	>= 500 mOhm at 500 V DC for 1 minute
Local signalling	Four 7-segment display units for CANopen bus status 1 LED red for drive voltage
Time constant	5 ms for reference change
Frequency resolution	Display unit 0.1 Hz Analog input 0.1...100 Hz
Type of connector	1 RJ45 Modbus/CANopen
Physical interface	RS485 multidrop serial link
Transmission frame	RTU
Transmission rate	4800, 9600 or 19200 bps Modbus 10, 20, 50, 125, 250, 500 kbps or 1 Mbps CANopen
Number of addresses	1...247 Modbus 1...127 CANopen

Number of drive	31 Modbus 127 CANopen
Marking	CE
Operating position	Vertical +/- 10 degree
Outer dimension	184 x 140 x 150 mm 215 x 185 x 158 mm 402 x 239 x 192 mm
Height	184 mm
Width	142 mm
Depth	152 mm
Product weight	3.1 kg

Environment

Dielectric strength	3400 V AC between control and power terminals 2410 V DC between earth and power terminals
Electromagnetic compatibility	Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3 Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3 Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4 1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3
Standards	IEC 61800-3 IEC 61800-5-1
Product certifications	CSA C-Tick GOST NOM UL
Pollution degree	2
Protective treatment	TC
Vibration resistance	1.5 mm (f = 3...13 Hz) conforming to EN/IEC 60068-2-6 1 gn (f = 13...150 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 dripping water conforming to IEC 60068-2-3 5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for storage	-25...70 °C
Ambient air temperature for operation	-10...60 °C with derating factor without protective cover on top of the drive -10...50 °C without derating with protective cover on top of the drive
Operating altitude	1000...3000 m with current derating 1 % per 100 m <= 1000 m without derating

RoHS compliance

RoHS EUR status	Compliant
RoHS EUR conformity date(YYWW)	0913

Contractual warranty

Period	18 months