Product data sheet
Characteristics

ATV310HU22N4A
variable speed drive, Altivar ATV310, 2.2 kW/3 hp heavy duty, 380 to 460 V, 3 phases, without EMC filter



Main

Range of product	Altivar 310
Product or component type	Variable speed drive
Product specific application	Simple machine
Assembly style	With heat sink
Device short name	ATV310
Network number of phases	Three phase
[Us] rated supply voltage	380...460 V - 15...10 %
Motor power kW	2.2 KW for heavy duty
Motor power hp	3 Hp for heavy duty
Noise level	50 DB

Complementary

Product destination	Asynchronous motors
Quantity per set	Set of 1
EMC filter	Without EMC filter
Type of cooling	Integrated fan
Supply frequency	50/60 Hz +/- 5 %
Communication port protocol	Modbus
Connector type	RJ45 (on front face) for Modbus
Physical interface	2-wire RS 485 for Modbus
Transmission frame	RTU for Modbus
Transmission rate	4800 bit/s 9600 bit/s 19200 bit/s 38400 bit/s
Number of addresses	1…247 for Modbus
Communication service	Read holding registers (03) 29 words Write single register (06) 29 words Write multiple registers (16) 27 words Read/Write multiple registers (23) 4/4 words Read device identification (43)
Line current	8.8 A at 380 V (heavy duty) 7.2 A at 460 V (heavy duty)
Apparent power	5.7 KVA at 460 V (heavy duty)
Prospective line Isc	5 KA
Continuous output current	5.5 A heavy duty
Maximum transient current	8.3 A during 60 s (heavy duty)
Power dissipation in W	65.5 W, at In (heavy duty)

Speed drive output frequency	0.5…400 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...12 kHz adjustable
Speed range	1…20
Transient overtorque	170…200 % of nominal motor torque depending on drive rating and type of motor
Braking torque	Up to 150 % of nominal motor torque with braking resistor at high inertia Up to 70 % of nominal motor torque without braking resistor
Asynchronous motor control profile	Energy saving ratio Sensorless flux vector control Quadratic voltage/frequency ratio
Motor slip compensation	Adjustable Preset in factory
Output voltage	380...460 V three phase
Electrical connection	Terminal, clamping capacity: 1.5...2.5 mm² (L1, L2, L3, PA/+, PB, U, V, W)
Tightening torque	0.8…1 N.M
Insulation	Electrical between power and control
Supply	Internal supply for reference potentiometer: 5 V (4.75…5.25 V)DC, <10 mA with overload and shor Internal supply for logic inputs: 24 V (20.4…28.8 V)DC, <100 mA with overload and short-circuit p
Analogue input number	1
Analogue input type	Configurable current AI1 0...20 mA 250 Ohm Configurable voltage AI1 0...10 V 30 kOhm Configurable voltage AI1 0...5 V 30 kOhm
Discrete input number	4
Discrete input type	Programmable LI1...LI4 24 V 18...30 V
Discrete input logic	Negative logic (sink), > 16 V (state 0), < 10 V (state 1), input impedance 3.5 kOhm Positive logic (source), 0...< 5 V (state 0), > 11 V (state 1)
Sampling duration	10 Ms for analogue input 20 Ms, tolerance +/- 1 ms for logic input
Linearity error	+/- 0.3 % of maximum value for analogue input
Analogue output number	1
Analogue output type	AO1 software-configurable voltage: 0...10 V, impedance: 470 Ohm, resolution 8 bits AO1 software-configurable current: 0...20 mA, impedance: 800 Ohm, resolution 8 bits
Discrete output number	2
Discrete output type	Logic output LO+, LO- Protected relay output R1A, R1B, R1C 1 C/O
Minimum switching current	5 MA at 24 V DC for logic relay
Maximum switching current	2 A at 250 V AC on inductive load cos phi = 0.4 L/R = 7 ms for logic relay 2 A at 30 V DC on inductive load cos phi = 0.4 L/R = 7 ms for logic relay 3 A at 250 V AC on resistive load cos phi = 1 L/R = 0 ms for logic relay 4 A at 30 V DC on resistive load cos phi = 1 L/R = 0 ms for logic relay
Acceleration and deceleration ramps	U Linear from 0...999.9 s S
Braking to standstill	By DC injection, <30 s
Protection type	Line supply overvoltage Line supply undervoltage Overcurrent between output phases and earth Overheating protection Short-circuit between motor phases Against input phase loss in three-phase Thermal motor protection via the drive by continuous calculation of I²t
Frequency resolution	Analog input: converter A/D, 10 bits Display unit: 0.1 Hz
Time constant	20 Ms +/- 1 ms for reference change
Operating position	Vertical +/- 10 degree
Height	143 Mm
Width	105 Mm
Depth	151 Mm
Net weight	1.1 Kg

Environment

Electromagnetic compatibility	Electrical fast transient/burst immunity test - test level: level 4 conforming to IEC 61000-4-4 Electrostatic discharge immunity test - test level: level 3 conforming to IEC 61000-4-2 Immunity to conducted disturbances - test level: level 3 conforming to IEC 61000-4-6 Radiated radio-frequency electromagnetic field immunity test - test level: level 3 conforming to Voltage dips and interruptions immunity test conforming to IEC 61000-4-11 Surge immunity test - test level: level 3 conforming to IEC 61000-4-5
Standards	IEC 61800-3 IEC 61800-5-1
IP degree of protection	IP20 without blanking plate on upper part IP41 top
Pollution degree	2 conforming to IEC 61800-5-1
Environmental characteristic	Dust pollution resistance class 3S2 conforming to IEC 60721-3-3 Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3
Shock resistance	15 gn conforming to IEC 60068-2-27 for 11 ms
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…55 °C without derating 55…60 °C protective cover from the top of the drive removed with current derating 2.2 % per °C
Operating altitude	<= 1000 m without derating

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	16.208 Cm
Package 1 Width	17.58 Cm
Package 1 Length	19.23 Cm
Package 1 Weight	1.351 Kg
Unit Type of Package 2	S04
Number of Units in Package 2	6
Package 2 Height	30 Cm
Package 2 Width	40 Cm
Package 2 Length	60 Cm
Package 2 Weight	9.341 Kg

Offer Sustainability

Recyclability potential, in %	23
Total lifecycle Carbon footprint	2 633 kg CO2 eq.
Carbon footprint of the manufacturing phase [A1 to A3]	40.501918416009005
Carbon footprint of the manufacturing phase [A1 to A3]	41 kg CO2 eq.
Carbon footprint of the distribution phase [A4]	0.1307967123616742
Carbon footprint of the distribution phase [A4]	0.1 kg CO2 eq.
Carbon footprint of the installation phase [A5]	0.36346716835011983
Carbon footprint of the installation phase [A5]	0.4 kg CO2 eq.
Carbon footprint of the use phase [B2, B3, B4, B6]	2589.4611896079996
Carbon footprint of the use phase [B2, B3, B4, B6]	2 589 kg CO2 eq.
Mercury free	Yes
Sustainable packaging	Yes
Carbon footprint of the end-of-life phase [C1 to C4]	3.020050566453964
Carbon footprint of the end-of-life phase [C1 to C4]	3 kg CO2 eq.
Environmental Disclosure	Product Environmental Profile
Total lifecycle Carbon footprint	2633
Packaging made with recycled cardboard	Yes
Packaging without single use plastic	Yes
SCIP Number	5b939136-3ce6-4efd-8751-a5f6e107c9f2
REACh Regulation	Reference contains Substances of Very High Concern above the threshold

EU RoHS Directive	Compliant By Exemption
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which
Product contributes to saved and avoided emissions	Yes
End of life manual availability	End Of Life Information
Take-back	No

Contractual warranty

Warranty (in months)	18

Product Life Status : Commercialised