Product data sheet
Characteristics

ATV610U15N4
variable speed drive, Altivar ATV610, 1.5kW, 2hp, 380 to 460V, IP20



Main

Range of product	Altivar ATV610
Product specific application	Fan, pump, compressor, conveyor
Product or component type	Variable speed drive
Device short name	ATV610
Variant	Standard version
Product destination	Asynchronous motors Synchronous motors
Mounting mode	Cabinet mount
EMC filter	Integrated conforming to IEC 61800-3 category C3 with 50 m
IP degree of protection	IP20
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/-5 %
Network number of phases	3 phases
[Us] rated supply voltage	380...460 V - 15...10 %
Motor power kW	1.5 KW for normal duty 0.75 KW for heavy duty
Motor power hp	2 Hp for normal duty 1 Hp for heavy duty
Line current	5.7 A at 380 V (normal duty) 4.8 A at 460 V (normal duty) 3.1 A at 380 V (heavy duty) 2.6 A at 460 V (heavy duty)
Prospective line Isc	5 KA
Apparent power	3.8 KVA at 460 V (normal duty) 2.1 KVA at 460 V (heavy duty)
Continuous output current	4 A at 4 kHz for normal duty 2.2 A at 4 kHz for heavy duty
Maximum transient current	4.4 A during 60 s (normal duty) 3.3 A during 60 s (heavy duty)
Asynchronous motor control profile	Optimized torque mode Constant torque standard Variable torque standard
Speed drive output frequency	0.1…500 Hz
Nominal switching frequency	4 kHz
Switching frequency	2...12 kHz adjustable
Discrete input logic	16 preset speeds
Communication port protocol	Modbus serial
Option card	Slot A: communication card, Profibus DP V1 Slot A: digital or analog I/O extension card Slot A: relay output card

Complementary

Output voltage	<= power supply voltage
Motor slip compensation	Adjustable Automatic whatever the load Not available in permanent magnet motor law Can be suppressed
Acceleration and deceleration ramps	S, U or customized Linear adjustable separately from 0.01 to 9000 s
Braking to standstill	By DC injection
Protection type	Thermal protection: motor Motor phase break: motor Thermal protection: drive Overheating: drive Overcurrent between output phases and earth: drive Overload of output voltage: drive Short-circuit protection: drive Motor phase break: drive Overvoltages on the DC bus: drive Line supply overvoltage: drive Line supply undervoltage: drive Line supply phase loss: drive Overspeed: drive Break on the control circuit: drive
Frequency resolution	Display unit: 0.1 Hz Analog input: 0.012/50 Hz
Electrical connection	Control, screw terminal: 0.5...1.5 mm² Line side, screw terminal: 2.5...16 mm² Motor, screw terminal: 2.5...16 mm²
Connector type	1 RJ45 (on the remote graphic terminal) for Modbus serial
Physical interface	2-wire RS 485 for Modbus serial
Transmission frame	RTU for Modbus serial
Transmission rate	4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial
Type of polarization	No impedance for Modbus serial
Number of addresses	1…247 for Modbus serial
Method of access	Slave
Supply	External supply for digital inputs: 24 V DC (19…30 V), <1.25 mA, protection type: overload and sho Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection
Local signalling	2 LEDs for local diagnostic 1 LED (yellow) for embedded communication status 2 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage
Width	145 Mm
Depth	203 Mm
Net weight	3.135 Kg
Analogue input number	3
Analogue input type	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits AI2, AI3 software-configurable temperature probe or water level sensor
Discrete input number	6
Discrete input type	DI1...DI6 programmable as logic input, 24 V DC (<= 30 V), impedance: 3.5 kOhm DI5, DI6 programmable as pulse input: 0…30 kHz, 24 V DC (<= 30 V)
Input compatibility	DI1...DI6: logic input level 1 PLC conforming to IEC 61131-2 DI5, DI6: pulse input level 1 PLC conforming to IEC 65A-68
Discrete input logic	Positive logic (source): DI1...DI6 configurable logic input, < 5 V (state 0), > 11 V (state 1) Negative logic (sink): DI1...DI6 configurable logic input, > 16 V (state 0), < 10 V (state 1) Positive logic (source): DI5, DI6 configurable pulse input, < 0.6 V (state 0), > 2.5 V (state 1)
Analogue output number	2
Analogue output type	Software-configurable current AQ1, AQ2: 0...20 mA, resolution 10 bits Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits
Sampling duration	5 Ms +/- 0.1 ms (AI1, AI2, AI3) - analog input 2 Ms +/- 0.5 ms (DI1...DI6)configurable - discrete input 5 Ms +/- 1 ms (DI5, DI6)configurable - pulse input 10 Ms +/- 1 ms (AQ1, AQ2) - analog output
Accuracy	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output

Linearity error	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AQ1, AQ2: +/- 0.2 % for analog output
Relay output number	3
Relay output type	Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles
Refresh time	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)
Minimum switching current	Relay output R1, R2, R3: 5 mA at 24 V DC
Maximum switching current	Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC
Isolation	Between power and control terminals
Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth

Environment

Noise level	55 DB conforming to 86/188/EEC
Power dissipation in W	40 W(Forced convection) at 380 V, switching frequency 4 kHz 25 W(Natural convection) at 380 V, switching frequency 4 kHz
Operating position	Vertical +/- 10 degree
Electromagnetic compatibility	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- Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
Pollution degree	2 conforming to IEC 61800-5-1
Vibration resistance	1.5 mm peak to peak (f= 2…13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13…200 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27
Relative humidity	5…95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	-15…45 °C (without derating) 45…60 °C (with derating factor)
Operating altitude	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
Environmental characteristic	Chemical pollution resistance class 3C3 conforming to IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to IEC 60721-3-3
Standards	IEC 61800-3 Environment 2 category C3 IEC 61800-3 IEC 61800-5-1 IEC 60721-3
Marking	CE

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	19.6 Cm
Package 1 Width	12.8 Cm
Package 1 Length	28.0 Cm
Package 1 Weight	5.7 Kg

Offer Sustainability

Recyclability potential, in %	48
Total lifecycle Carbon footprint	1 616 kg CO2 eq.
Carbon footprint of the manufacturing phase [A1 to A3]	55.81640262849364
Carbon footprint of the manufacturing phase [A1 to A3]	56 kg CO2 eq.
Carbon footprint of the distribution phase [A4]	0.6641396592123799
Carbon footprint of the distribution phase [A4]	0.7 kg CO2 eq.
Carbon footprint of the use phase [B2, B3, B4, B6]	1553.064076597677
Carbon footprint of the use phase [B2, B3, B4, B6]	1 553 kg CO2 eq.
Mercury free	Yes
Sustainable packaging	No

Carbon footprint of the end-of-life phase [C1 to C4]	6.804313997539246
Carbon footprint of the end-of-life phase [C1 to C4]	7 kg CO2 eq.
Environmental Disclosure	Product Environmental Profile
Total lifecycle Carbon footprint	1616
Packaging made with recycled cardboard	No
Packaging without single use plastic	No
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
Updatability	Yes
End of life manual availability	End Of Life Information
Take-back	No
WEEE Label	The product must be disposed on European Union markets following specific waste collection and

Contractual warranty

Warranty (in months)	18

Product Life Status : Commercialised