

# Product datasheet

Specifications



## variable speed drive ATV610, 2.2 kW/3HP, 380...460 V, IP20

ATV610U22N4

### Main

<b>Range of product</b>	Easy Altivar 610
<b>Product or component type</b>	Variable speed drive
<b>Product specific application</b>	Fan, pump, compressor, conveyor
<b>Device short name</b>	ATV610
<b>Variant</b>	Standard version
<b>Product destination</b>	Asynchronous motors
<b>Mounting mode</b>	Cabinet mount
<b>EMC filter</b>	Integrated conforming to EN/IEC 61800-3 category C3 with 50 m
<b>IP degree of protection</b>	IP20
<b>Type of cooling</b>	Forced convection
<b>Supply frequency</b>	50...60 Hz +/- 5 %
<b>Network number of phases</b>	3 phases
<b>[Us] rated supply voltage</b>	380...460 V - 15...10 %
<b>Motor power kW</b>	2.2 kW for normal duty 1.5 kW for heavy duty
<b>Motor power hp</b>	3 hp for normal duty 2 hp for heavy duty
<b>Line current</b>	7.8 A at 380 V (normal duty) 6.5 A at 460 V (normal duty) 5.6 A at 380 V (heavy duty) 4.6 A at 460 V (heavy duty)
<b>Prospective line I<sub>sc</sub></b>	5 kA
<b>Apparent power</b>	5.2 kVA at 460 V (normal duty) 3.7 kVA at 460 V (heavy duty)
<b>Continuous output current</b>	5.6 A at 4 kHz for normal duty 4 A at 4 kHz for heavy duty
<b>Maximum transient current</b>	6.2 A during 60 s (normal duty) 6 A during 60 s (heavy duty)
<b>Asynchronous motor control profile</b>	Variable torque standard Optimized torque mode Constant torque standard
<b>Output frequency</b>	0.0001...0.5 kHz
<b>Nominal switching frequency</b>	4 kHz
<b>Switching frequency</b>	2...12 kHz adjustable

<b>Number of preset speeds</b>	16 preset speeds
<b>Communication port protocol</b>	Modbus serial
<b>Option card</b>	Slot A: communication card, Profibus DP V1 Slot A: digital or analog I/O extension card Slot A: relay output card

## Complementary

<b>Output voltage</b>	<= power supply voltage
<b>Motor slip compensation</b>	Not available in permanent magnet motor law Automatic whatever the load Can be suppressed Adjustable
<b>Acceleration and deceleration ramps</b>	S, U or customized Linear adjustable separately from 0.01 to 9000 s
<b>Braking to standstill</b>	By DC injection
<b>Protection type</b>	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
<b>Frequency resolution</b>	Display unit: 0.1 Hz Analog input: 0.012/50 Hz
<b>Electrical connection</b>	Control, screw terminal: 0.5...1.5 mm <sup>2</sup> Line side, screw terminal: 2.5...16 mm <sup>2</sup> Motor, screw terminal: 2.5...16 mm <sup>2</sup>
<b>Connector type</b>	1 RJ45 (on the remote graphic terminal) for Modbus serial
<b>Physical interface</b>	2-wire RS 485 for Modbus serial
<b>Transmission frame</b>	RTU for Modbus serial
<b>Transmission rate</b>	4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial
<b>Type of polarization</b>	No impedance for Modbus serial
<b>Number of addresses</b>	1...247 for Modbus serial
<b>Method of access</b>	Slave
<b>Supply</b>	External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection
<b>Local signalling</b>	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
<b>Width</b>	145 mm
<b>Height</b>	297 mm 350 mm with EMC plate
<b>Depth</b>	203 mm
<b>Net weight</b>	3.135 kg
<b>Analogue input number</b>	3
<b>Analogue input type</b>	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
<b>Discrete input number</b>	6
<b>Discrete input type</b>	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)

<b>Input compatibility</b>	DI1...DI6: logic input level 1 PLC conforming to EN/IEC 61131-2 DI5, DI6: pulse input level 1 PLC conforming to IEC 65A-68
<b>Discrete input logic</b>	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)
<b>Analogue output number</b>	2
<b>Analogue output type</b>	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
<b>Sampling duration</b>	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
<b>Accuracy</b>	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output
<b>Linearity error</b>	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input AQ1, AQ2: +/- 0.2 % for analog output
<b>Relay output number</b>	3
<b>Relay output type</b>	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
<b>Refresh time</b>	Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)
<b>Minimum switching current</b>	Relay output R1, R2, R3: 5 mA at 24 V DC
<b>Maximum switching current</b>	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
<b>Isolation</b>	Between power and control terminals
<b>Insulation resistance</b>	> 1 MOhm 500 V DC for 1 minute to earth

## Environment

<b>Noise level</b>	55 dB conforming to 86/188/EEC
<b>Power dissipation in W</b>	54 W(forced convection) at 380 V, switching frequency 4 kHz 27 W(natural convection) at 380 V, switching frequency 4 kHz
<b>Operating position</b>	Vertical +/- 10 degree
<b>Electromagnetic compatibility</b>	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 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
<b>Pollution degree</b>	2 conforming to EN/IEC 61800-5-1
<b>Vibration resistance</b>	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
<b>Shock resistance</b>	15 gn for 11 ms conforming to IEC 60068-2-27
<b>Relative humidity</b>	5...95 % without condensation conforming to IEC 60068-2-3
<b>Ambient air temperature for operation</b>	-15...45 °C (without derating) 45...60 °C (with derating factor)
<b>Operating altitude</b>	<= 1000 m without derating 1000...4800 m with current derating 1 % per 100 m
<b>Environmental characteristic</b>	Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3
<b>Standards</b>	EN/IEC 61800-3 Environment 2 category C3 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 60721-3
<b>Marking</b>	CE

## Packing Units

<b>Unit Type of Package 1</b>	PCE
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<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	19.0 cm
<b>Package 1 Width</b>	30.5 cm
<b>Package 1 Length</b>	41.0 cm
<b>Package 1 Weight</b>	4.313 kg
<b>Unit Type of Package 2</b>	S06
<b>Number of Units in Package 2</b>	6
<b>Package 2 Height</b>	75.0 cm
<b>Package 2 Width</b>	80.0 cm
<b>Package 2 Length</b>	60.0 cm
<b>Package 2 Weight</b>	33.878 kg

## Offer Sustainability

<b>Sustainable offer status</b>	Green Premium product
<b>REACH Regulation</b>	<a href="#">REACH Declaration</a>
<b>EU RoHS Directive</b>	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
<b>Mercury free</b>	Yes
<b>China RoHS Regulation</b>	<a href="#">China RoHS declaration</a>
<b>RoHS exemption information</b>	Yes
<b>Environmental Disclosure</b>	<a href="#">Product Environmental Profile</a>
<b>Circularity Profile</b>	<a href="#">End of Life Information</a>
<b>WEEE</b>	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
<b>Upgradeability</b>	Upgradeable through digital modules and upgraded components

## Recommended replacement(s)