Product data sheet Characteristics

ATV610D15N4

variable speed drive, Easy Altivar 610, 15kW, 20hp, 380 to 460V, IP20





Main

Range of product	Easy Altivar 610	
Product or component type	Variable speed drive	
Product specific application	Fan, pump, compressor, conveyor	
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	5060 Hz +/-5 %	
Network number of phases	3 phases	
[Us] rated supply voltage	380460 V - 1510 %	
Motor power kW	15 KW for normal duty 11 kW for heavy duty	
Motor power hp	20 Hp for normal duty 15 hp for heavy duty	
Line current	29.4 A at 380 V (normal duty) 26.0 A at 460 V (normal duty) 23 A at 380 V (heavy duty) 20.8 A at 460 V (heavy duty)	
Prospective line Isc	22 kA	
Apparent power	20.7 KVA at 460 V (normal duty) 16.6 kVA at 460 V (heavy duty)	
Continuous output current	31.7 A at 4 kHz for normal duty 23.5 A at 4 kHz for heavy duty	
Maximum transient current	34.9 A during 60 s (normal duty) 35.3 A during 60 s (heavy duty)	
Asynchronous motor control profile	Variable torque standard Optimized torque mode Constant torque standard	
Output frequency	0.1500 Hz	
Nominal switching frequency	4 kHz	
Switching frequency	212 kHz adjustable	
Number of preset speeds	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	<= nowor aunaly yeltogo	
Output voltage	<= power supply voltage	
Motor slip compensation	Can be suppressed Not available in permanent magnet motor law Automatic whatever the load Adjustable	
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: 0.51.5 mm² Line side, screw terminal: 616 mm² Motor, screw terminal: 616 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	1247 for Modbus serial	
Method of access	Slave	
Supply	External supply for digital inputs: 24 V DC (1930 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	
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	171 mm	
Height	360 Mm 423 mm with EMC plate	
Depth	233 mm	
Net weight	7.730 kg	
Analogue input number	3	
Analogue input type	Al1, Al2, Al3 software-configurable voltage: 010 V DC, impedance: 30 kOhm, resolution 12 bits Al1, Al2, Al3 software-configurable current: 020 mA, impedance: 250 Ohm, resolution 12 bits Al2, Al3 software-configurable temperature probe or water level sensor	
Discrete input number	6	
Discrete input type	DI1DI6 programmable as logic input, 24 V DC (<= 30 V), impedance: 3.5 kOhm DI5, DI6 programmable as pulse input: 030 kHz, 24 V DC (<= 30 V)	
Input compatibility	DI1DI6: 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): DI1DI6 configurable logic input, < 5 V (state 0), > 11 V (state 1) Negative logic (sink): DI1DI6 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)	
	Positive logic (source): DI5, DI6 configurable pulse input, < 0.6 V (state 0), > 2.5 V (state 1)	

Analogue output type	Software-configurable current AQ1, AQ2: 020 mA, resolution 10 bits Software-configurable voltage AQ1, AQ2: 010 V DC impedance 470 Ohm, resolution 10 bits	
Sampling duration	5 Ms +/- 0.1 ms (Al1, Al2, Al3) - analog input 2 Ms +/- 0.5 ms (Dl1Dl6)configurable - discrete input 5 Ms +/- 1 ms (Dl5, Dl6)configurable - pulse input 10 ms +/- 1 ms (AQ1, AQ2) - analog output	
Accuracy	+/- 0.6 % Al1, Al2, Al3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output	
Linearity error	Al1, Al2, Al3: +/- 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	65 dB conforming to 86/188/EEC	
Power dissipation in W	408 W(Forced convection) at 380 V, switching frequency 4 kHz 62 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 61000-4-3 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	
Pollution degree	2 conforming to IEC 61800-5-1	
Vibration resistance	1.5 mm peak to peak (f= 213 Hz) conforming to IEC 60068-2-6 1 gn (f= 13200 Hz) conforming to IEC 60068-2-6	
Shock resistance	15 gn for 11 ms conforming to IEC 60068-2-27	
Relative humidity	595 % without condensation conforming to IEC 60068-2-3	
Ambient air temperature for operation	-1545 °C (without derating) 4560 °C (with derating factor)	
Operating altitude	<= 1000 m without derating 10004800 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	21.5 cm	
Package 1 Width	34.5 cm	
Package 1 Length	58.0 cm	
Package 1 Weight	10.12 kg	
Unit Type of Package 2	S06	
Number of Units in Package 2	3	

Package 2 Height	75.0 cm
Package 2 Width	80.0 cm
Package 2 Length	60.0 cm
Package 2 Weight	38.36 kg

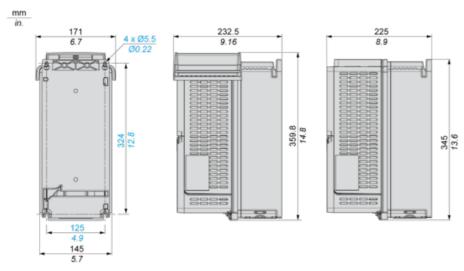
Offer Sustainability

Green Premium product	
REACh Declaration	
Pro-active compliance (Product out of EU RoHS legal scope)	
Yes	
☑ China RoHS Declaration	
₫Yes	
Product Environmental Profile	
End Of Life Information	
The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins	
Upgradeable through digital modules and upgraded components	

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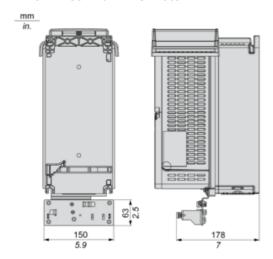
Dimensions

IP20 Drives



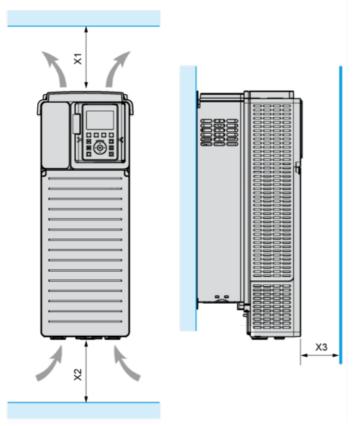
Drawings from left to right: rear view, right side view with top cover, right side view without top cover.

IP20 Drives With EMC Plate



Drawings from left to right: rear view, right side view with top cover.

Clearances

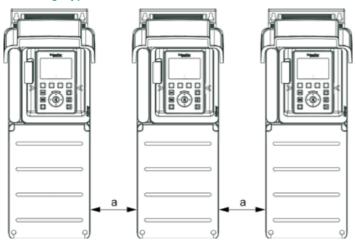


X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

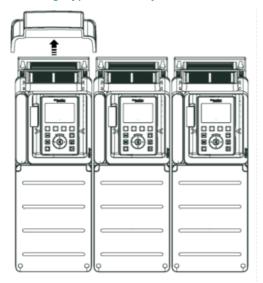
- Mount the device in a vertical position (±10°). This is required for cooling the device.
- Do not mount the device close to heat sources.
- Leave sufficient free space so that the air required for cooling purposes can circulate from the bottom to the top of the drive.

Mounting Types

Mounting Type A: Individual IP21

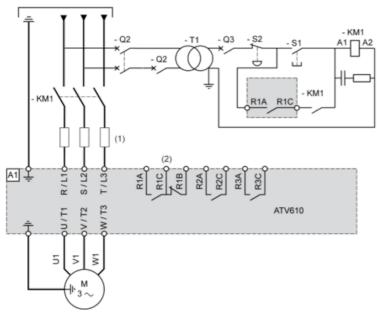


Mounting Type B: Side by Side IP20



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Single or Three-phase Power Supply - Diagram With Line Contactor



(1) Line chokes

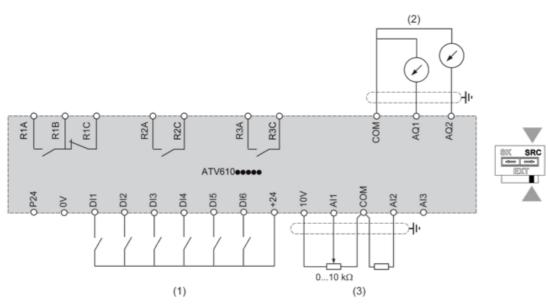
(2) See control block wiring diagram

A1: Drive

KM1 : Line Contactor Q2, Q3 : Circuit breakers S1, S2 : Pushbuttons

T1: Transformer for control part

Control Block Wiring Diagram



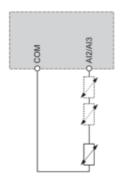
- (1) Digital Input
- (2) Analog Output
- (3) Analog Input

R1A, R1B, R1C: Fault relay output

R2A, R2C : Sequence relay output R3A, R3C : Sequence relay output

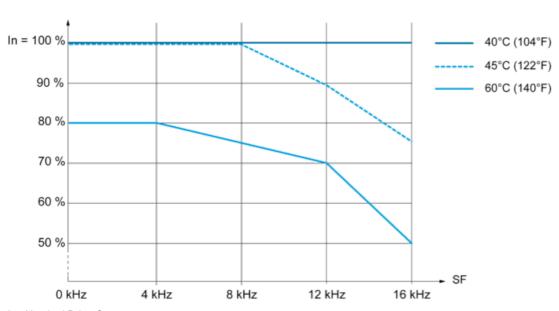
Sensor Connection

It is possible to connect either 1 or 3 sensors on terminals Al2 or Al3.



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Derating Curves



In : Nominal Drive Current SF : Switching Frequency