

ATV610D55N4

variable speed drive, Easy Altivar 610, 55kW,
75hp, 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 IEC 61800-3 category C3 164.04 ft (50 m)
IP degree of protection	IP20
Type of cooling	Forced convection
Supply frequency	50...60 Hz +/- 5 %
Phase	3 phase
[Us] rated supply voltage	380...460 V - 15...10 %
Motor power kW	55 KW normal duty 45 kW heavy duty
Maximum Horse Power Rating	75 Hp normal duty 60 hp heavy duty
Line current	111.5 A 380 V normal duty) 99.7 A 460 V normal duty) 95.9 A 380 V heavy duty) 84.0 A 460 V heavy duty)
Prospective line Isc	22 kA
Apparent power	79.5 KVA 460 V normal duty) 66.9 kVA 460 V heavy duty)
Continuous output current	88 A 2.5 kHz heavy duty 120 A 2.5 kHz normal duty
Maximum transient current	132 A 60 s heavy duty) 132 A 60 s normal duty)
Asynchronous motor control profile	Optimized torque mode Constant torque standard Variable torque standard
Output frequency	0.1...500 Hz
Nominal switching frequency	2.5 kHz
Switching frequency	1...8 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

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Complementary

Output voltage	$\leq$ power supply voltage
Motor slip compensation	Automatic whatever the load Adjustable 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 mm ² Line side, screw terminal 70...120 mm ² Motor, screw terminal 70...120 mm ²
Connector type	1 RJ45 on the remote graphic terminal) Modbus serial
Physical interface	2-wire RS 485 Modbus serial
Transmission frame	RTU Modbus serial
Transmission Rate	4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial
Type of polarization	No impedance Modbus serial
Number of addresses	1...247 Modbus serial
Method of access	Slave
Supply	External supply for digital inputs 24 V DC 19...30 V), <1.25 mA overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection
Local signalling	For local diagnostic 2 LEDs For embedded communication status 1 LED (yellow) For communication module status 2 LEDs (dual colour) For presence of voltage 1 LED (red)
Width	11.42 in (290 mm)
Height	30.00 in (762 mm) 36.30 in (922 mm) with EMC plate
Depth	12.72 in (323 mm)
Net Weight	116.85 lb(US) (53 kg)
Analogue input number	3
Analogue input type	AI1, AI2, AI3 software-configurable voltage 0...10 V DC 30 kOhm 12 bits AI1, AI2, AI3 software-configurable current 0...20 mA 250 Ohm 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 $\leq$ 30 V) 3.5 kOhm DI5, DI6 programmable as pulse input 0...30 kHz, 24 V DC $\leq$ 30 V)
Input compatibility	DI1...DI6 logic input level 1 PLC IEC 61131-2 DI5, DI6 pulse input level 1 PLC IEC 65A-68
Discrete input logic	Positive logic (source) DI1...DI6 configurable logic input, < 5 V, > 11 V Negative logic (sink) DI1...DI6 configurable logic input, > 16 V, < 10 V Positive logic (source) DI5, DI6 configurable pulse input, < 0.6 V, > 2.5 V
Analogue output number	2
Analogue output type	Software-configurable current AQ1, AQ2 0...20 mA 10 bits Software-configurable voltage AQ1, AQ2 0...10 V DC 470 Ohm 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 analog input AQ1, AQ2 +/- 0.2 % analog output
Relay output number	3
Relay output type	Configurable relay logic R1 fault relay NO/NC 100000 cycles Configurable relay logic R2 sequence relay NO 100000 cycles Configurable relay logic R3 sequence relay NO 100000 cycles
Refresh time	Relay output R1, R2, R3)5 ms +/- 0.5 ms)
Minimum switching current	Relay output R1, R2, R3 5 mA 24 V DC
Maximum switching current	Relay output R1, R2, R3 resistive, cos phi = 1 3 A 250 V AC Relay output R1, R2, R3 resistive, cos phi = 1 3 A 30 V DC Relay output R1, R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R1, R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC
Isolation	Between power and control terminals
Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth

Environment

Noise level	78 dB 86/188/EEC
Power dissipation in W	969 W(Forced convection)380 V 2.5 kHz 131 W(natural convection)380 V 2.5 kHz
Volume of cooling air	77932.15 Gal/hr(US) (295 m3/h)
Operating position	Vertical +/- 10 degree
Electromagnetic compatibility	Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 Conducted radio-frequency immunity test level 3 IEC 61000-4-6
Pollution degree	2 IEC 61800-5-1
Vibration resistance	1.5 mm peak to peak 2...13 Hz)IEC 60068-2-6 1 gn 13...200 Hz)IEC 60068-2-6
Shock resistance	15 gn 11 ms IEC 60068-2-27
Relative humidity	5...95 % without condensation IEC 60068-2-3
Ambient air temperature for operation	5...113 °F (-15...45 °C) without derating) 113...140 °F (45...60 °C) with derating factor)
Ambient Air Temperature for Storage	-40...158 °F (-40...70 °C)
Operating altitude	<= 3280.84 ft (1000 m) without derating 1000...4800 m with current derating 1 % per 100 m
Environmental characteristic	Chemical pollution resistance class 3C3 IEC 60721-3-3 Dust pollution resistance class 3S3 IEC 60721-3-3
Standards	IEC 61800-3 Environment 2 category C3 IEC 61800-3 IEC 61800-5-1 IEC 60721-3
Marking	CE

Ordering and shipping details

Category	US1CP4B22153
Discount Schedule	CP4B
GTIN	3606480700620
Returnability	No
Country of origin	CN

Packing Units

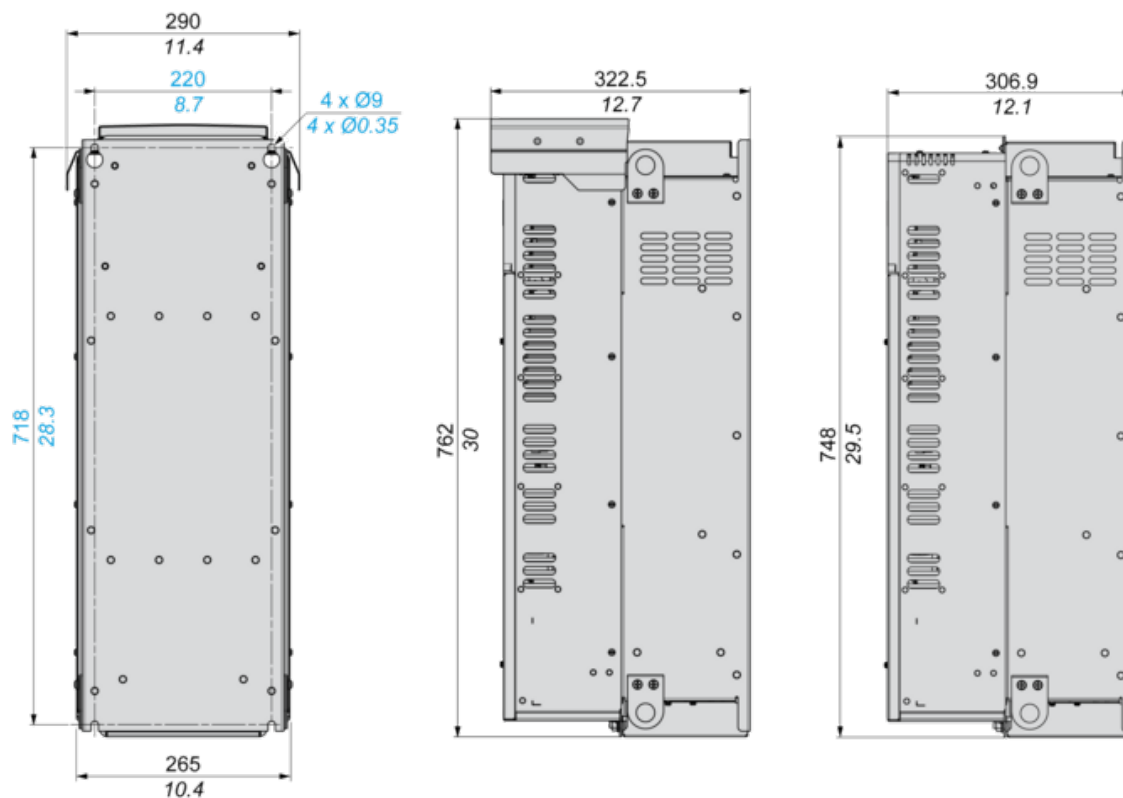
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	18.50 in (47.000 cm)
Package 1 Width	23.23 in (59.000 cm)
Package 1 Length	34.25 in (87.000 cm)
Package 1 Weight	155.43 lb(US) (70.500 kg)

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)
Mercury free	Yes
China RoHS Regulation	China RoHS Declaration
RoHS exemption information	Yes
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End Of Life Information
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
Upgradeability	Upgradeable through digital modules and upgraded components

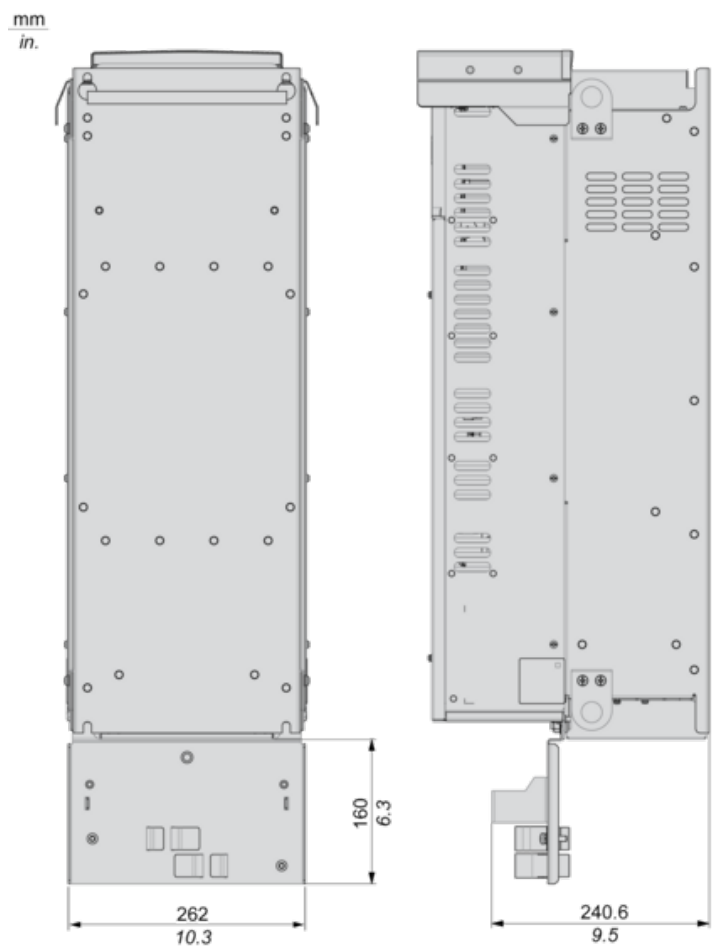
Dimensions

IP20 Drives



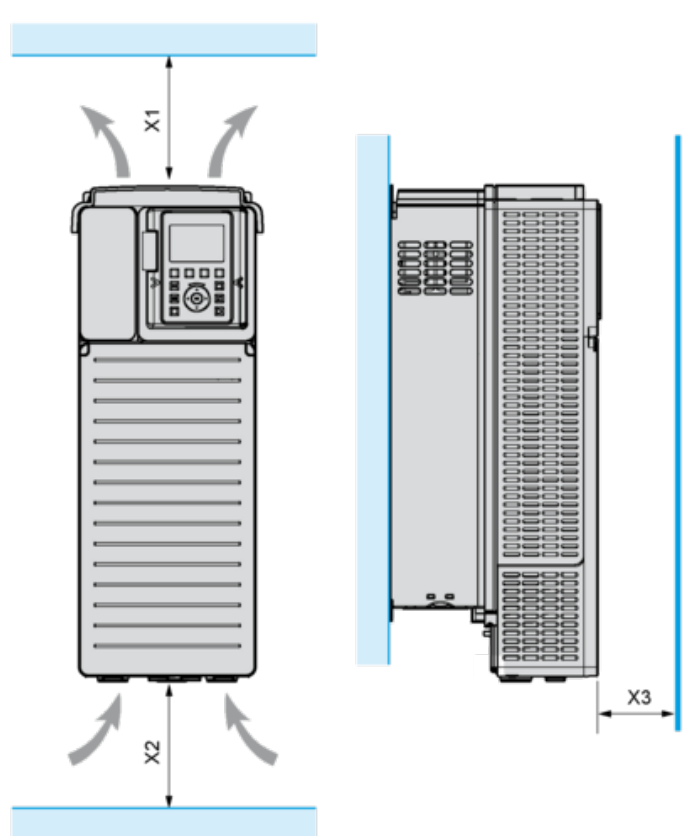
Drawings from left to right: rear view, right side view with top cover, right side view without top cover.

IP20 Drives With EMC Plate



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

Clearances

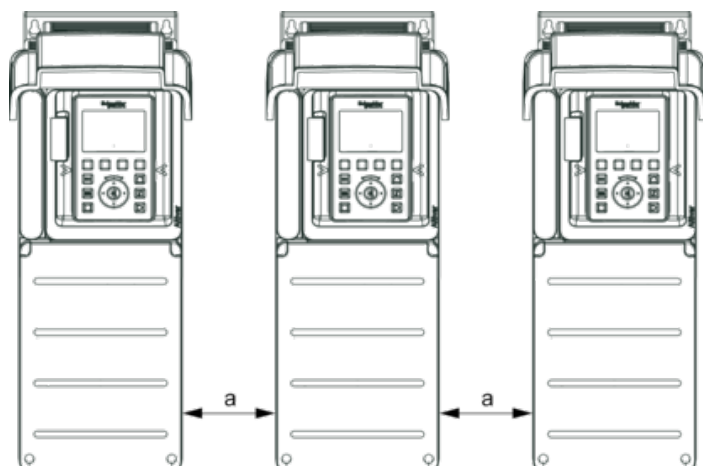


X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

- Mount the device in a vertical position ($\pm 10^\circ$). 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.

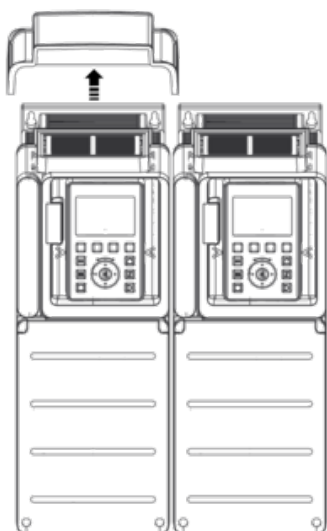
Mounting Types

Mounting Type A: Individual IP21

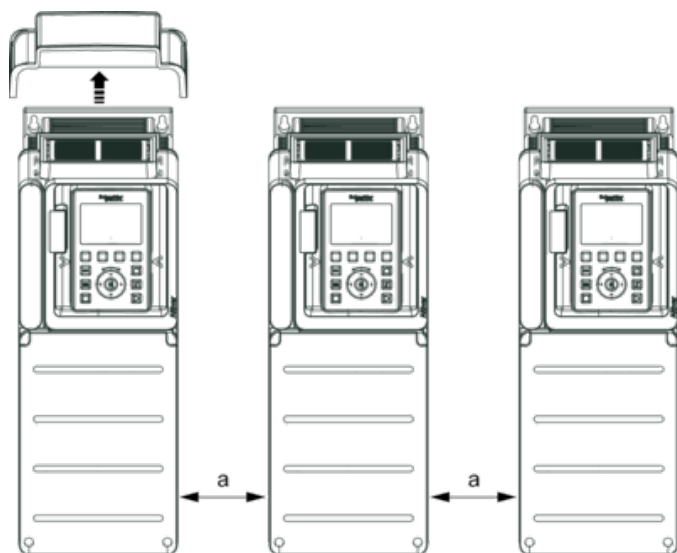


$a \geq 110 \text{ mm (4.33 in.)}$

Mounting Type B: Side by Side IP20 (Possible, 2 Drives Only)



Mounting Type C: Individual IP20



$a \geq 110 \text{ mm (4.33 in.)}$

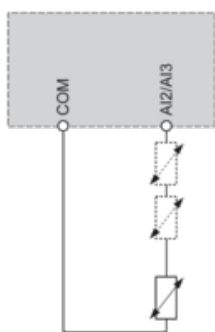
T1 : Transformer for control part

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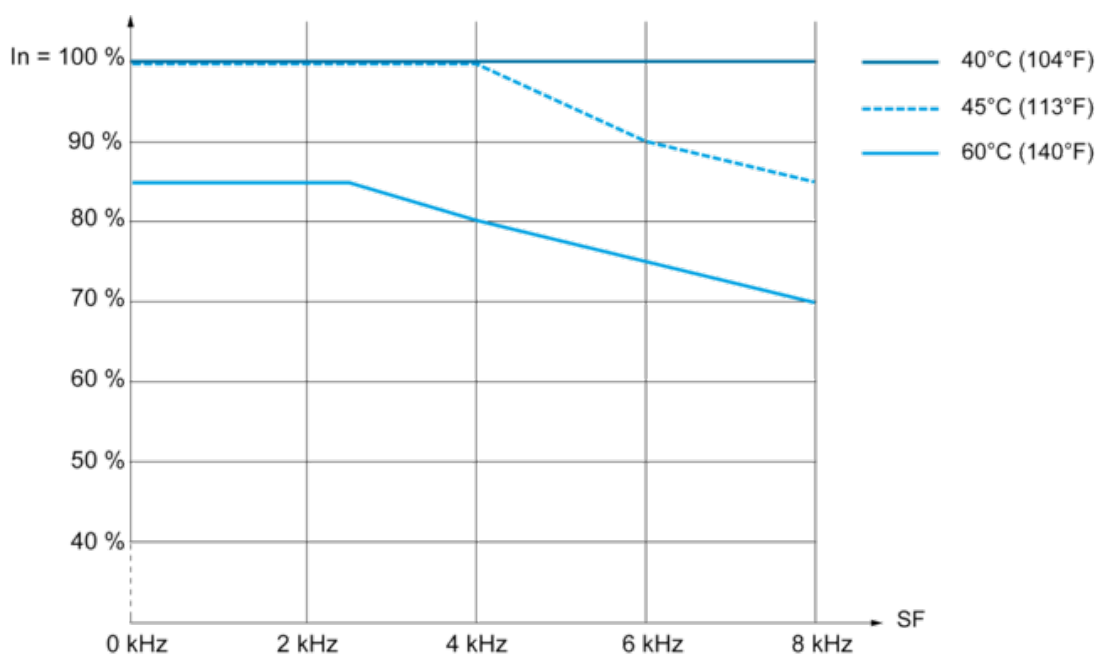
R2A, R2C : Sequence relay output
R3A, R3C : Sequence relay output

Sensor Connection

It is possible to connect either 1 or 3 sensors on terminals AI2 or AI3.



Derating Curves



I_n : Nominal Drive Current

SF : Switching Frequency