Specifications



variable speed drive ATV610 - 160 kW / 250HP - 380...415 V - IP20

ATV610C16N4

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	160 kW for normal duty 132 kW for heavy duty	
Motor power hp	250 hp for normal duty 200 hp for heavy duty	
Line current	284 A at 380 V (normal duty) 249.5 A at 460 V (normal duty) 237 A at 380 V (heavy duty) 205.9 A at 460 V (heavy duty)	
Prospective line Isc	50 kA	
Apparent power	198.8 kVA at 460 V (normal duty) 164.0 kVA at 460 V (heavy duty)	
Continuous output current	302 A at 2.5 kHz for normal duty 250 A at 2.5 kHz for heavy duty	
Maximum transient current	332 A during 60 s (normal duty) 375 A during 60 s (heavy duty)	
Asynchronous motor control profile	Constant torque standard Optimized torque mode Variable torque standard	
Output frequency	0.1500 Hz	
Nominal switching frequency	2.5 kHz	
Switching frequency	18 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

<u> </u>		
Output voltage	<= power supply voltage	
Motor slip compensation	Not available in permanent magnet motor law	
	Automatic whatever the load	
	Adjustable	
	Can be suppressed	
Acceleration and deceleration	Linear adjustable separately from 0.01 to 9000 s	
ramps	S, U or customized	
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 mm ²	
	Line side, screw terminal: 2 x 953 x 120 mm ²	
	Motor, screw terminal: $2 \times 953 \times 120 \text{ mm}^2$	
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 inpute: 24 V/DC (40 - 20 V) <4.25 mA - protection type:	
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	300 mm	
Height	850 mm	
	1161 mm with IP21 conformity kit	
 Depth	375 mm	
Net weight	85.5 kg	
Analogue input number	3	

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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	
	AI2, AI3 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)	
nput 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)	
Analogue output number	2	
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 (DI1DI6)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	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	76 dB conforming to 86/188/EEC	
Power dissipation in W	3270 W(forced convection) at 380 V, switching frequency 2.5 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	6 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	48.000 cm
Package 1 Width	65.000 cm
Package 1 Length	103.000 cm
Package 1 Weight	97.461 kg

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C Environmental Data

Environmental Data explained >

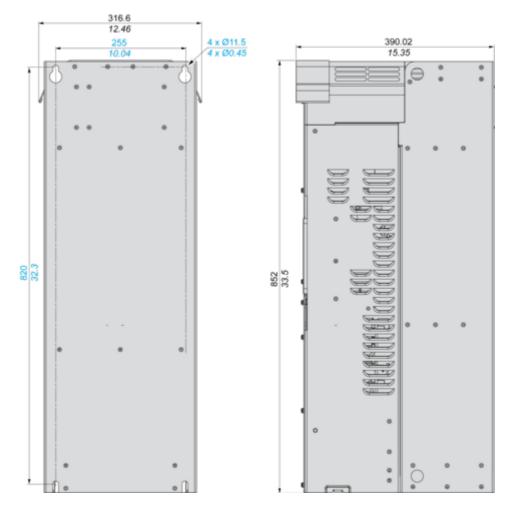
Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing "Use Better, Use Longer, Use Again" campaign to extend product lifetimes and recyclability.

How we assess product sustainability \geq		
Carbon footprint (kg.eq.CO2 per CR, Total Life cycle)	266780	
Environmental Disclosure	Product Environmental Profile	
Use Better		
Materials and Packaging		
Packaging made with recycled cardboard	Νο	
Packaging without single use plastic	No	
China RoHS Regulation	China RoHS declaration	
1 Energy efficiency		
Product contributes to saved and avoided emissions	Yes	
Use Longer		
$ m \mathring{O}$ Lifetime extension		
Upgradeability	Yes	
Use Again		
$^{\circlearrowright}$ Repack and remanufacture		
Circularity Profile	End of Life Information	
Take-back	No	

Dimensions Drawings

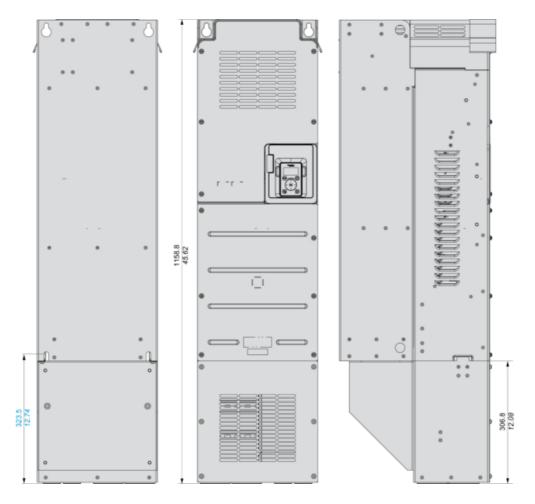
Dimensions

IP20 Drives



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

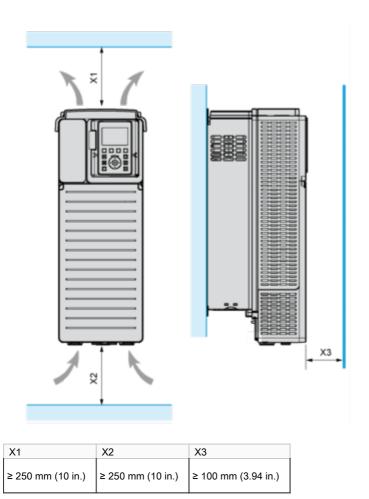
IP21 Drives with Lower Conduit Box Sold Separately



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

Mounting and Clearance

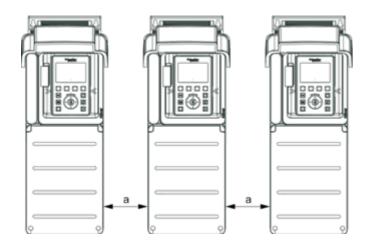
Clearances



- $_{\bullet}$ 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.

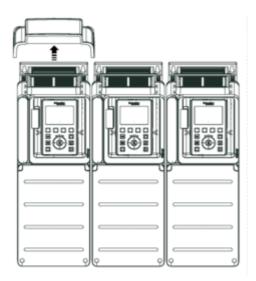
Mounting Types

Mounting Type A: Individual IP21

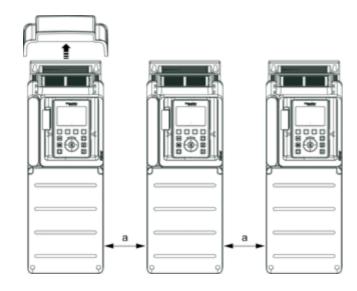


a ≥ **=** 110 mm (4.33 in.)

Mounting Type B: Side by Side IP20 , Only possible at ambient temperature lower than 40 $^{\circ}\text{C}$ (104 $^{\circ}\text{F})$



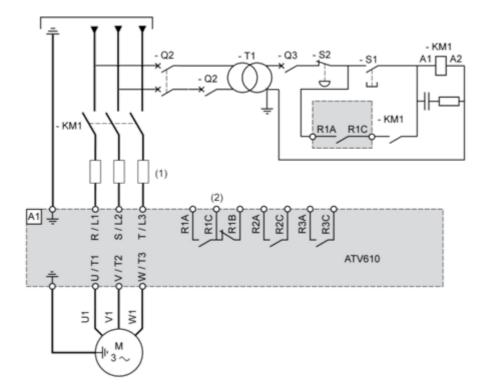
Mounting Type C: Individual IP20



a ≥ **=** 110 mm (4.33 in.)

Connections and Schema

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



(1) Line chokes

(2) See control block wiring diagram

A1 : Drive

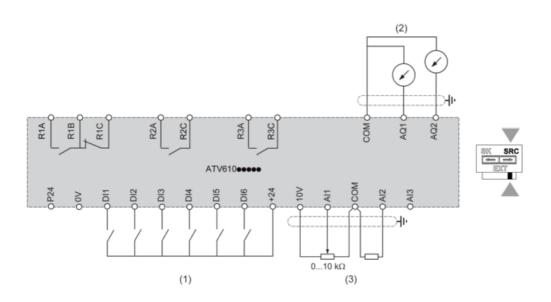
KM1 : Line Contactor

Q2, Q3 : Circuit breakers

S1, S2 : Pushbuttons

T1 : Transformer for control part

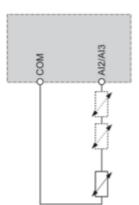
Control Block Wiring Diagram



(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

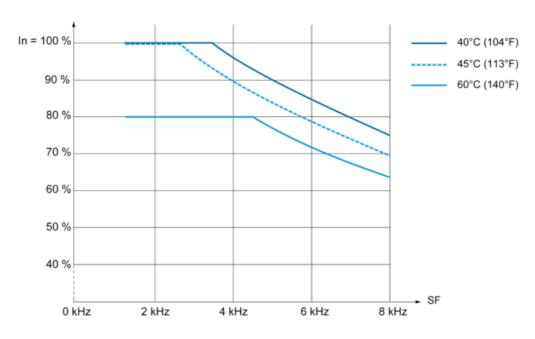
Sensor Connection

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



Performance Curves

Derating Curves



In : Nominal Drive Current

SF: Switching Frequency