Product data sheet
Characteristics

ATV610U15N4
variable speed drive ATV610 - 1.5 kW / 2HP - 380...415 V - IP20

Main

Range of product	Altivar Easy 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
Mounting mode	Cabinet mount
EMC filter	Integrated conforming to EN/IEC 61800-3 category C3 with 50 m maximum
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...415 V (- 15...10 %)
Motor power kW	1.5 kW normal duty 0.75 kW heavy duty
Motor power hp	2 hp normal duty 1 hp heavy duty
Line current	5.7 A at 380 V normal duty 5.3 A at 415 V normal duty 3.1 A at 380 V heavy duty 2.8 A at 415 V heavy duty
Prospective line Isc	5 kA
Apparent power	3.8 kVA at 415 V normal duty 2 kVA at 415 V heavy duty
Continuous output current	4 A at 4 kHz normal duty 2.2 A at 4 kHz 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	Constant torque standard Variable torque standard Optimized torque mode

Output frequency	0.0001...0.5 kHz
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	Automatic whatever the load Can be suppressed Not available in permanent magnet motor law 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	Motor : thermal protection Motor : motor phase break Drive : 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
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 (limits : 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	1 LED red for presence of voltage 2 LEDs for local diagnostic 1 LED yellow for embedded communication status 2 LEDs dual colour for communication module status
Width	145 mm
Height	297 mm 350 mm with EMC plate
Depth	203 mm
Product weight	2.4 kg
Analogue input number	3
Analogue input type	Software-configurable voltage AI1, AI2, AI3 : 0...10 V DC, impedance 30 kOhm, resolution 12 bits Software-configurable current AI1, AI2, AI3 : 0...20 mA, impedance 250 Ohm, resolution 12 bits Software-configurable temperature probe or water level sensor AI2, AI3
Discrete input number	6

Discrete input type	Programmable as pulse input DI5, DI6 0...30 kHz : 24 V DC (limits : <= 30 V) Programmable as logic input DI1...DI6 : 24 V DC (limits : <= 30 V), impedance 3.5 kOhm
Input compatibility	Level 1 PLC conforming to EN/IEC 61131-2, logic input DI1...DI6 Level 1 PLC conforming to IEC 65A-68, pulse input DI5, DI6
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 voltage AQ1, AQ2 : 0...10 V DC,impedance > 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2 : 0...20 mA, resolution 10 bits
Sampling duration	Analog input AI1, AI2, AI3 : 5 ms (+/- 0.1 ms) Analog output AQ1, AQ2 : 10 ms (+/- 1 ms) Discrete input DI1...DI6 : 2 ms (+/- 0.5 ms) configurable Pulse input DI5, DI6 : 5 ms (+/- 1 ms) configurable
Accuracy	Analog input AI1, AI2, AI3 : +/- 0.6 % for a temperature variation 60 °C Analog output AQ1, AQ2 : +/- 1 % for a temperature variation 60 °C
Linearity error	Analog input AI1, AI2, AI3 : +/- 0.15 % of maximum value Analog output AQ1, AQ2 : +/- 0.2 %
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 at 500 V DC for 1 minute to earth

Environment

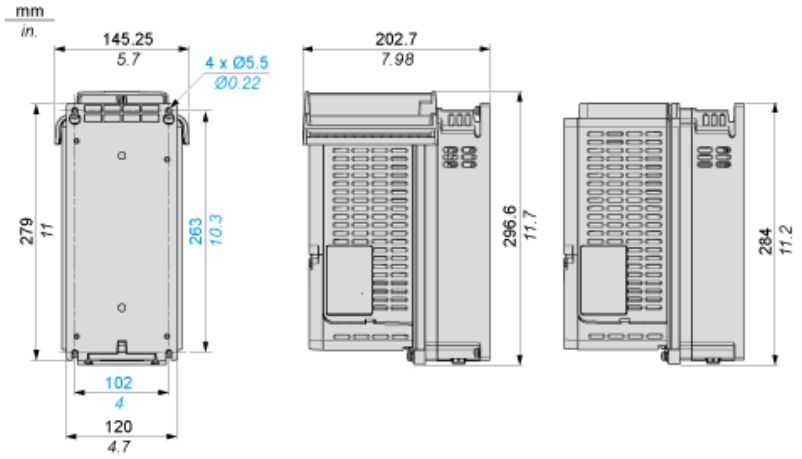
Noise level	55 dB conforming to 86/188/EEC
Power dissipation in W	40 W (forced convection) at 380 V, switching frequency 4 kHz 25 W (natural convection) at 380 V, switching frequency 4 kHz
Operating position	Vertical +/- 10 degree
Electromagnetic compatibility	1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 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 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
Pollution degree	2 conforming to EN/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 during 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...4800 m with current derating 1 % per 100 m <= 1000 m without derating
Environmental characteristic	Chemical pollution resistance class 3C3 conforming to EN/IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to EN/IEC 60721-3-3
Standards	EN/IEC 61800-3 EN/IEC 61800-3 environment 2 category C3 EN/IEC 61800-5-1 IEC 60721-3
Product certifications	REACH
Marking	CE

Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1443 - Schneider Electric declaration of conformity Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold Reference not containing SVHC above the threshold
Product environmental profile	Available Product environmental
Product end of life instructions	Available

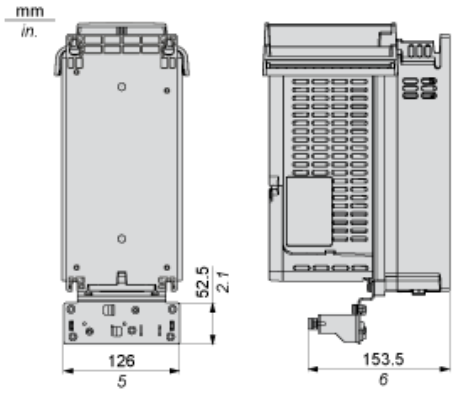
Dimensions

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.

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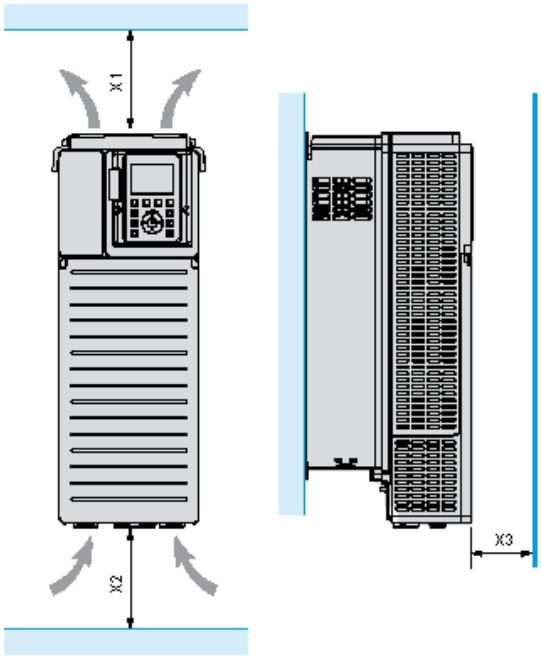
Clearances

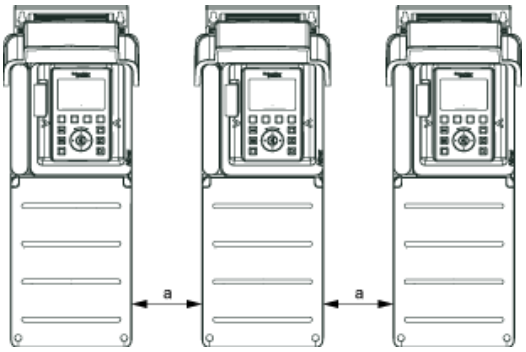


X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

- 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.

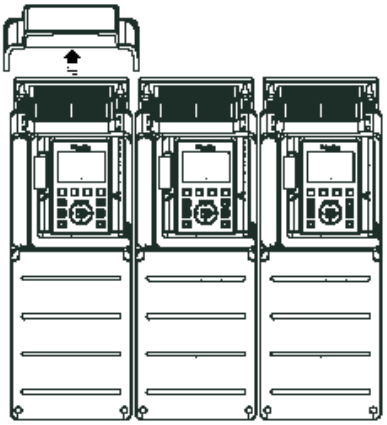
Mounting Types

Mounting Type A: Individual IP21

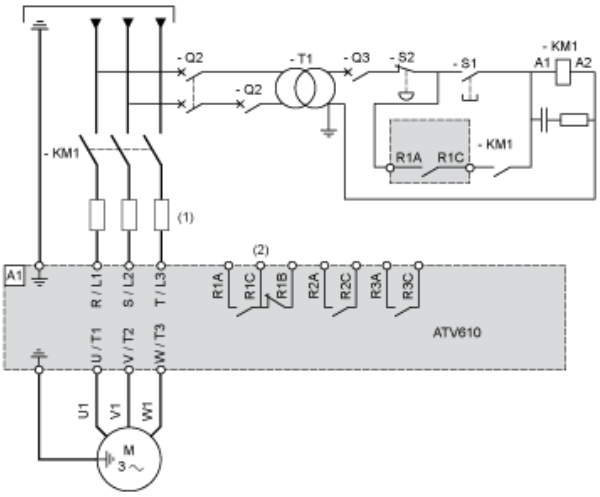


a ≥ = 100 mm (3.94 in.)

Mounting Type B: Side by Side IP20

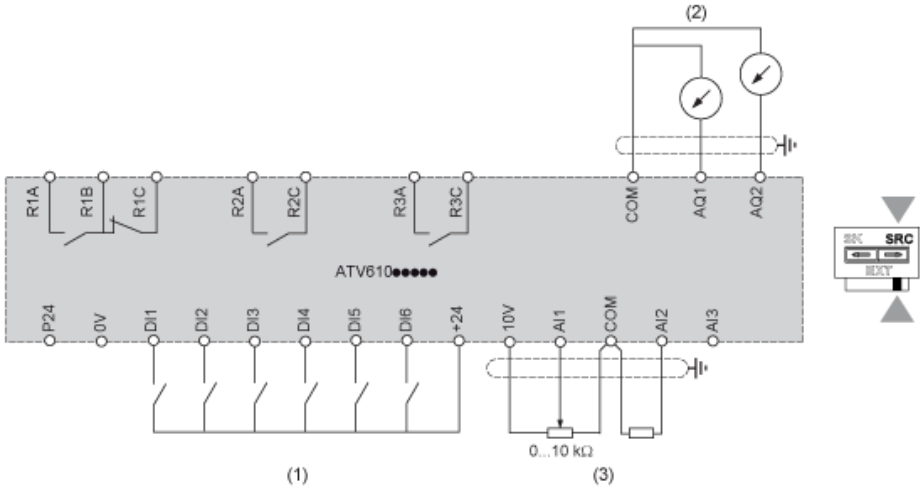


Single or Three-phase Power Supply - Diagram With Line Contactor



(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

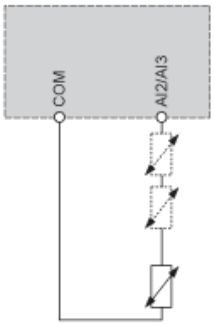
Control Block Wiring Diagram



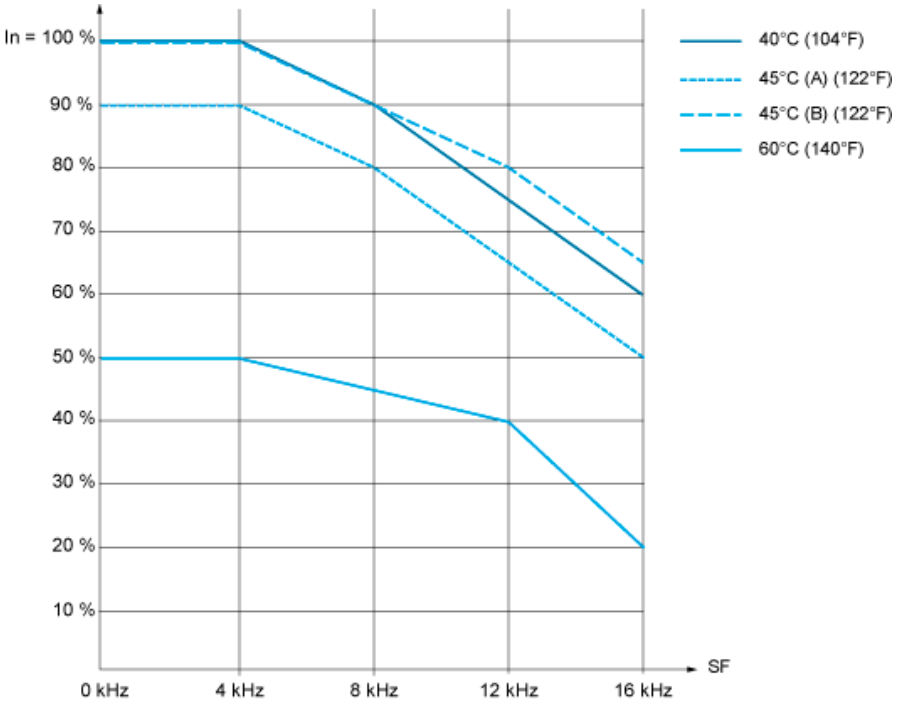
(1) Digital Input
(2) Analog Output
(3) Analog Input
R1A, R1B, R1C : Fault relay output
R2A, R2C : Sequence relay output
R3A, R3C : Sequence relay output

Sensor Connection

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



Derating Curves



In : Nominal Drive Current
SF : Switching Frequency