

# Product datasheet

Specifications



## variable speed drive, Easy Altivar 610, 55kW, 75hp, 380 to 460V, IP20

ATV610D55N4

### 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	50...60 Hz +/-5 %
Network number of phases	3 phases
[Us] rated supply voltage	380...460 V - 15...10 %
Motor power kW	55 kW for normal duty 45 kW for heavy duty
Motor power hp	75 hp for normal duty 60 hp for heavy duty
Line current	111.5 A at 380 V (normal duty) 99.7 A at 460 V (normal duty) 95.9 A at 380 V (heavy duty) 84.0 A at 460 V (heavy duty)
Prospective line Isc	22 kA
Apparent power	79.5 kVA at 460 V (normal duty) 66.9 kVA at 460 V (heavy duty)
Continuous output current	88 A at 2.5 kHz for heavy duty 120 A at 2.5 kHz for normal duty
Maximum transient current	132 A during 60 s (heavy duty) 132 A during 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

<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
<b>Complementary</b>	
<b>Output voltage</b>	<= power supply voltage
<b>Motor slip compensation</b>	Automatic whatever the load Adjustable Not available in permanent magnet motor law Can be suppressed
<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: 70...120 mm <sup>2</sup> Motor, screw terminal: 70...120 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>	290 mm
<b>Height</b>	762 mm 922 mm with EMC plate
<b>Depth</b>	323 mm
<b>Product weight</b>	53 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 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>	78 dB conforming to 86/188/EEC
<b>Power dissipation in W</b>	969 W(forced convection) at 380 V, switching frequency 2.5 kHz 131 W(natural convection) at 380 V, switching frequency 2.5 kHz
<b>Volume of cooling air</b>	295 m3/h
<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 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>Ambient air temperature for storage</b>	-40...70 °C
<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 IEC 60721-3-3 Dust pollution resistance class 3S3 conforming to IEC 60721-3-3
<b>Standards</b>	IEC 61800-3 Environment 2 category C3 IEC 61800-3 IEC 61800-5-1 IEC 60721-3
<b>Marking</b>	CE

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	47.000 cm
<b>Package 1 Width</b>	59.000 cm
<b>Package 1 Length</b>	87.000 cm
<b>Package 1 Weight</b>	70.500 kg



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.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)

### Environmental footprint

Carbon footprint (kg.eq.CO2 per CR, Total Life cycle)	<b>80472</b>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>

## Use Better

### Materials and Substances

Packaging made with recycled cardboard	No
Packaging without single use plastic	No
<a href="#">EU RoHS Directive</a>	Pro-active compliance (Product out of EU RoHS legal scope)
REACH Regulation	<a href="#">REACH Declaration</a>

### Energy efficiency

Product contributes to saved and avoided emissions	<b>Yes</b>
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## Use Longer

### Lifetime extension

Upgradeability	<b>Yes</b>
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## Use Again

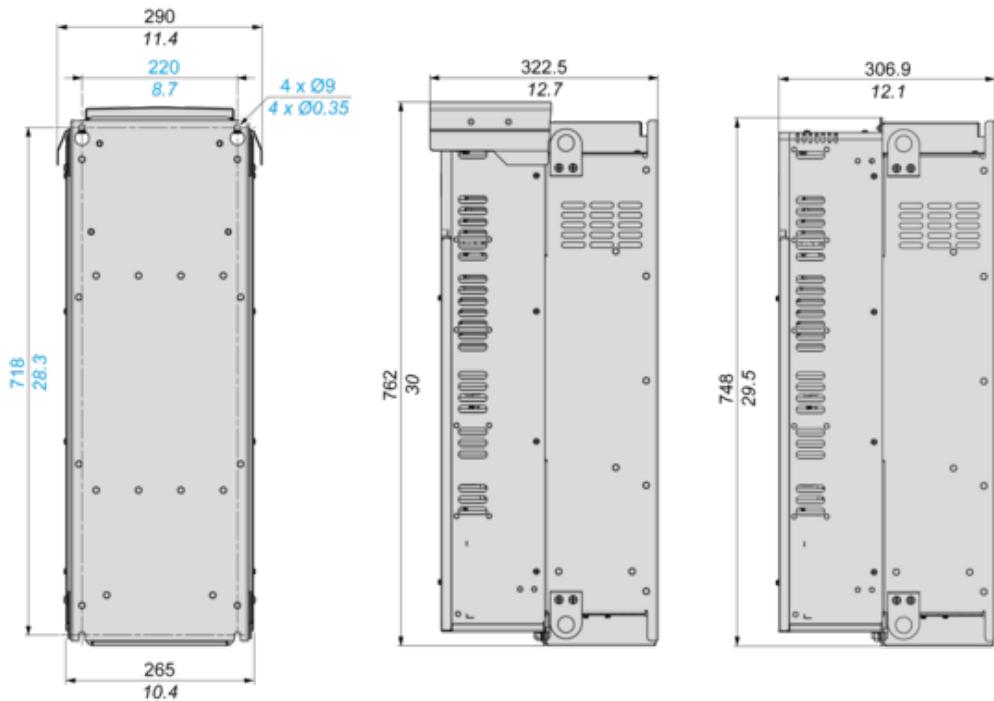
### Repack and remanufacture

Circularity Profile	<a href="#">End of Life Information</a>
Take-back	No

## Dimensions Drawings

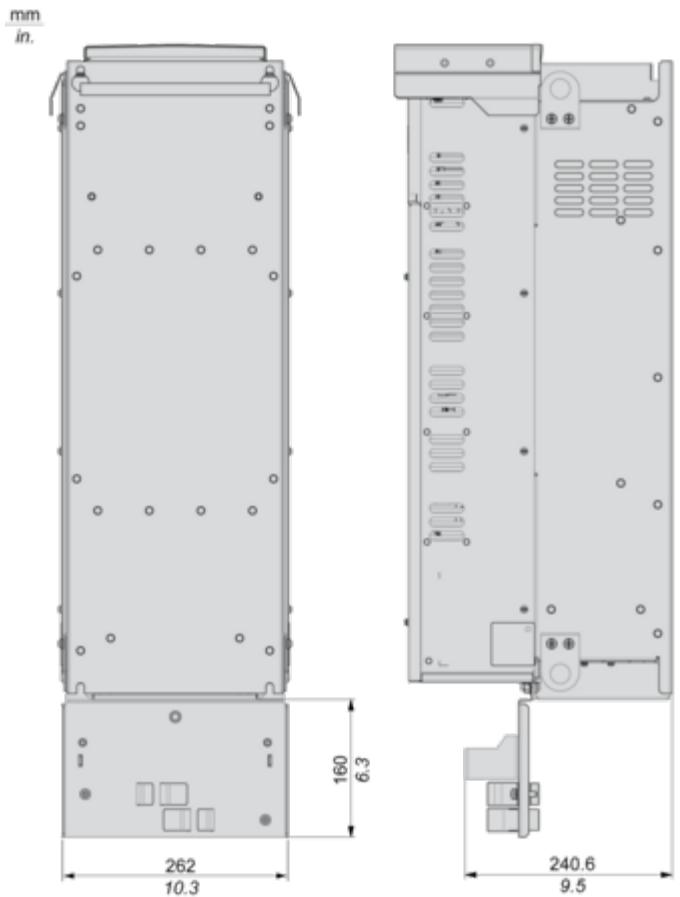
## Dimensions

## IP20 Drives



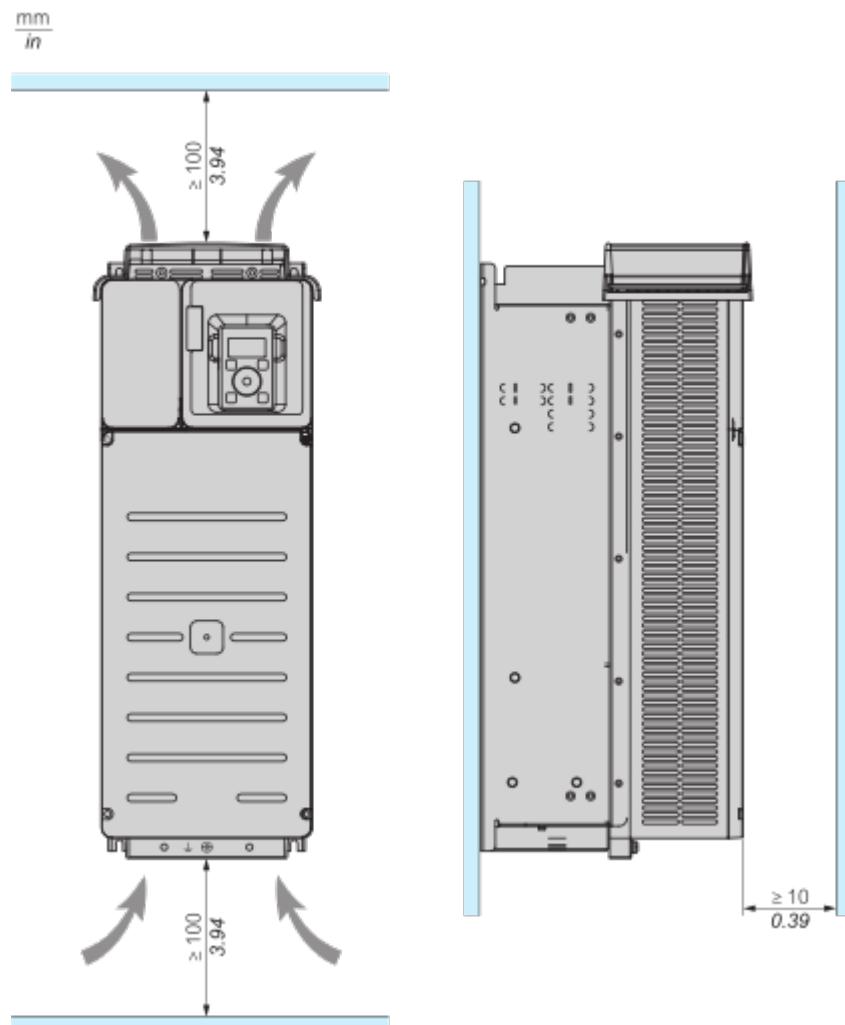
Drawings from left to right: rear view, right side view with top cover, right side view without top cover.

## IP20 Drives With EMC Plate



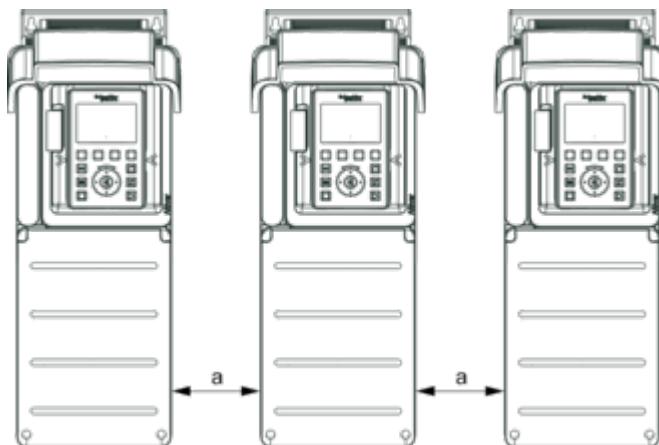
Drawings from left to right: rear view, right side view with top cover.

## Mounting and Clearance

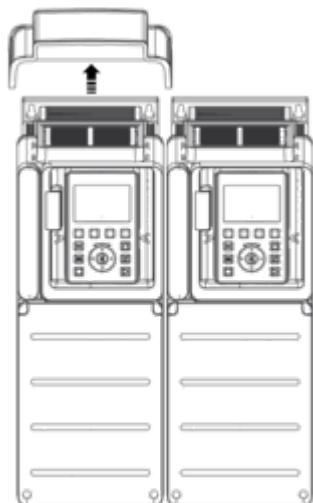
Clearances and Mounting Position - Wall Mounting

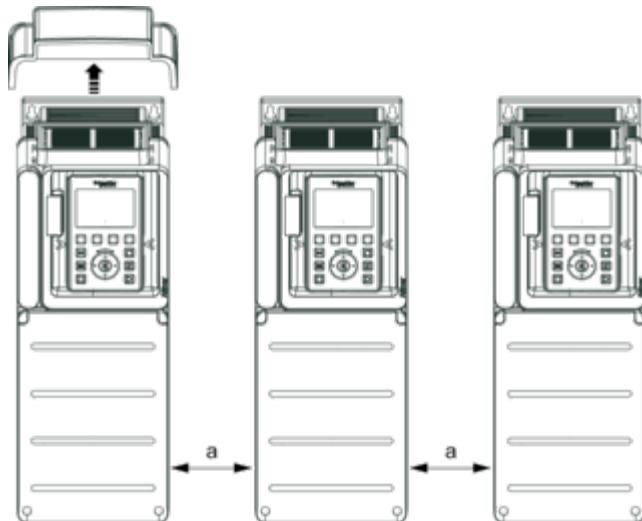
- Mount the device in a vertical position. This is required for cooling the device.
- Attach it on the mounting surface in compliance with standards, using 4 screws with captive washer.
- The use of washers is required with all mounting screws.
- Tighten the fixation screws.
- Do not mount the device close to heat sources.
- Avoid environmental effects like high temperatures and high humidity as well as dust, dirt and conductive gases.
- Adhere to the minimum installation distances for required cooling.
- Do not mount the device on flammable materials.

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**Mounting Types****Mounting Type A: Individual IP21**

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

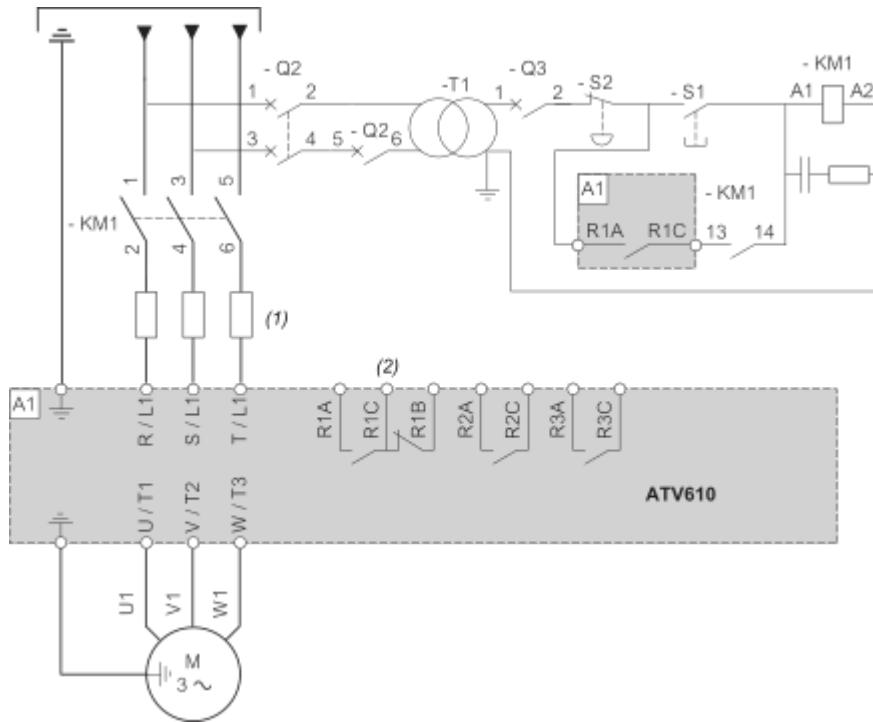
**Mounting Type B: Side by Side IP20 (Possible, 2 Drives Only)****Mounting Type C: Individual IP20**



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

## Connections and Schema

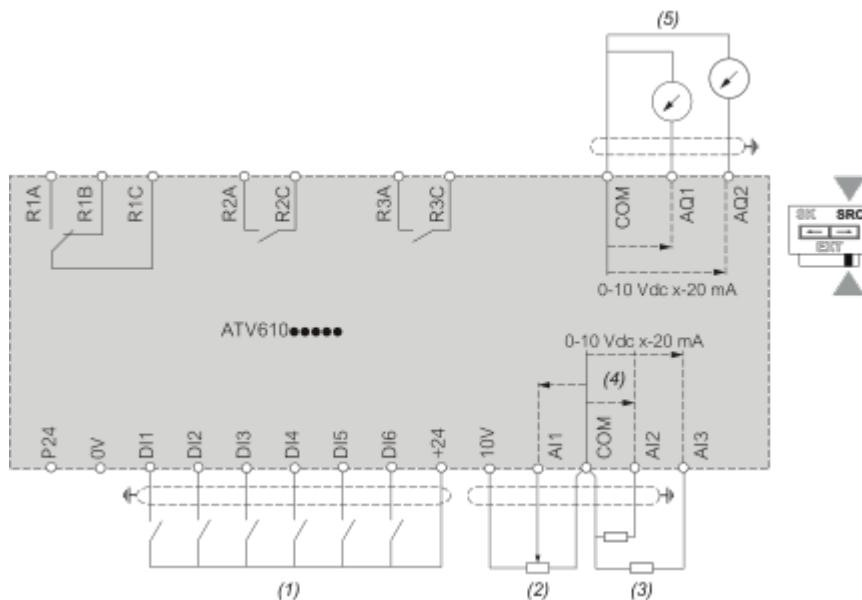
## Three-phase Power Supply - Diagram With Line Contactor



(1) Line choke (if used).

(2) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.

## Control Block Wiring Diagram



## (1) : Digital Inputs

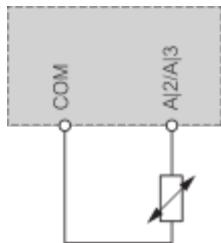
(2) : Reference potentiometer

### (3) : Analog inputs

(3) Analog inputs

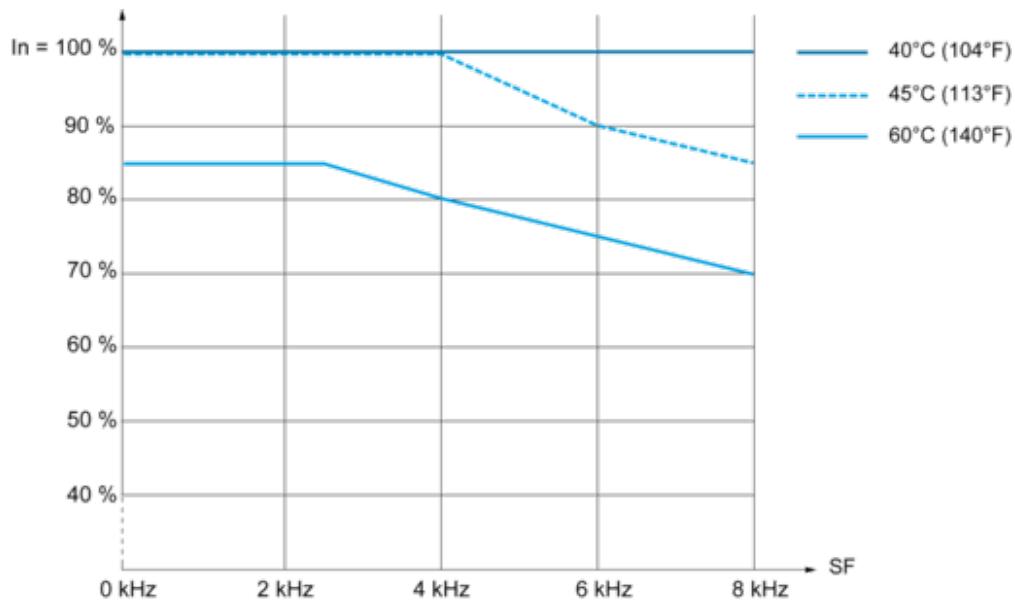
(5) : Analog outputs

## Sensor Connection



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

## Performance Curves

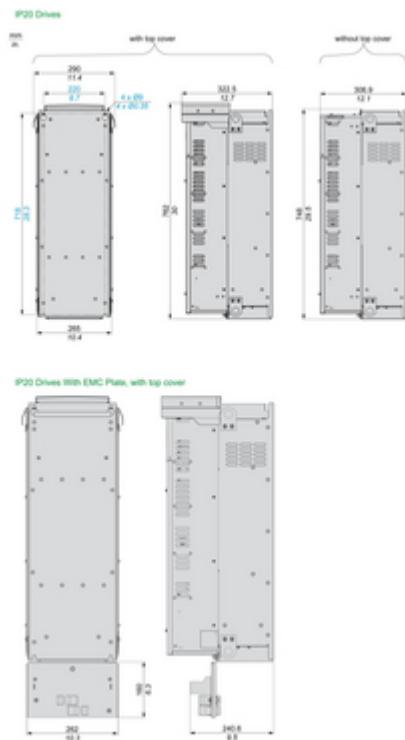
Derating Curves

In : Nominal Drive Current

SF : Switching Frequency

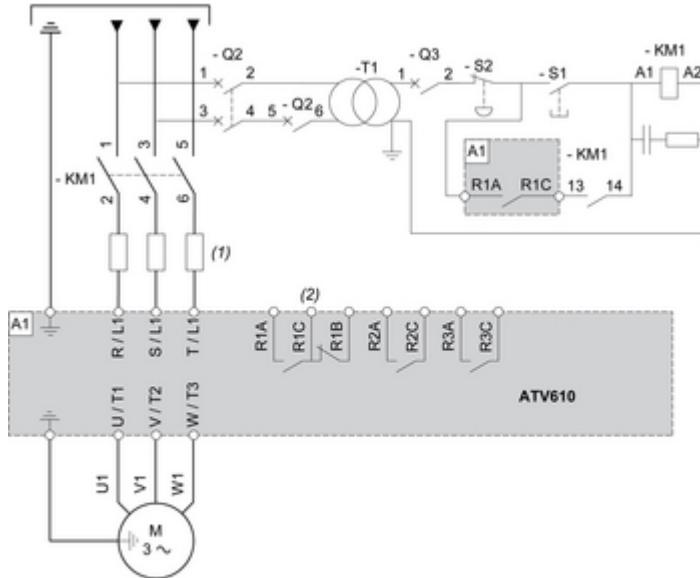
## Technical Illustration

## Dimensions



## Technical Illustration

## Wiring diagram



(1) Line choke (if used).

(2) Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.