# Product datasheet

Specifications



## Variable speed drive, Altivar 610, 250kW, 400hp, 380 to 460V, IP00

ATV610C25N4

## Main

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|---|---|
| **Range of product** | Altivar ATV610 |
| **Product specific application** | Fan, pump, compressor, conveyor |
| **Product or component type** | Variable speed drive |
| **Device short name** | ATV610 |
| **Variant** | Standard version |
| **Product destination** | Asynchronous motors |
| **Mounting mode** | Cabinet mount |
| **EMC filter** | Integrated conforming to IEC 61800-3 category C3 with 50 m |
| **IP degree of protection** | IP00 |
| **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** | 250 kW for normal duty<br>200 kW for heavy duty |
| **Motor power hp** | 400 hp for normal duty<br>300 hp for heavy duty |
| **Line current** | 451 A at 380 V (normal duty)<br>383 A at 460 V (normal duty)<br>365 A at 380 V (heavy duty)<br>313 A at 460 V (heavy duty) |
| **Prospective line Isc** | 50 kA |
| **Apparent power** | 305 kVA at 460 V (normal duty)<br>249 kVA at 460 V (heavy duty) |
| **Continuous output current** | 481 A at 2.5 kHz for normal duty<br>370 A at 2.5 kHz for heavy duty |
| **Maximum transient current** | 529 A during 60 s (normal duty)<br>555 A during 60 s (heavy duty) |
| **Asynchronous motor control profile** | Variable torque standard<br>Optimized torque mode |
| **Output frequency** | 0.1…500 Hz |
| **Nominal switching frequency** | 2.5 kHz |
| **Switching frequency** | 2...8 kHz adjustable |
| **number of preset speeds** | 16 preset speeds |
| **Communication port protocol** | Modbus serial |

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

| | |
|---|---|
| **Option card** | Slot A: communication card, Profibus DP V1<br>Slot A: digital or analog I/O extension card<br>Slot A: relay output card |

## Complementary

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| **Output voltage** | <= power supply voltage |
| **Motor slip compensation** | Can be suppressed<br>Adjustable<br>Not available in permanent magnet motor law<br>Automatic whatever the load |
| **Acceleration and deceleration ramps** | Linear adjustable separately from 0.01 to 9000 s<br>S, U or customized |
| **Braking to standstill** | By DC injection |
| **Protection type** | Thermal protection: motor<br>Motor phase break: motor<br>Thermal protection: drive<br>Overheating: drive<br>Overcurrent between output phases and earth: drive<br>Overload of output voltage: drive<br>Short-circuit protection: drive<br>Motor phase break: drive<br>Overvoltages on the DC bus: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Line supply phase loss: drive<br>Overspeed: drive<br>Break on the control circuit: drive |
| **Frequency resolution** | Display unit: 0.1 Hz<br>Analog input: 0.012/50 Hz |
| **Electrical connection** | Control, screw terminal: 0.5...1.5 mm²<br>Line side, screw terminal: 2 x 185 mm²<br>Motor, screw terminal: 2 x 185 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 (19…30 V), <1.25 mA, protection type: overload and short-circuit protection<br>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<br>1 LED (yellow) for embedded communication status<br>2 LEDs (dual colour) for communication module status<br>1 LED (red) for presence of voltage |
| **Width** | 440 mm |
| **Depth** | 379.4 mm |
| **Net weight** | 173 kg |
| **Analogue input number** | 3 |
| **Analogue input type** | AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits<br>AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits<br>AI2, AI3 software-configurable temperature probe or water level sensor |
| **Discrete input number** | 6 |

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|---|---|
| **Discrete input type** | DI1...DI6 programmable as logic input, 24 V DC (<= 30 V), impedance: 3.5 kOhm<br>DI5, DI6 programmable as pulse input: 0…30 kHz, 24 V DC (<= 30 V) |
| **Input compatibility** | DI1...DI6: logic input level 1 PLC conforming to IEC 61131-2<br>DI5, DI6: pulse input level 1 PLC conforming to IEC 65A-68 |
| **Discrete input logic** | Positive logic (source): DI1...DI6 configurable logic input, < 5 V (state 0), > 11 V (state 1)<br>Negative logic (sink): DI1...DI6 configurable logic input, > 16 V (state 0), < 10 V (state 1)<br>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: 0...20 mA, resolution 10 bits<br>Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits |
| **Sampling duration** | 5 ms +/- 0.1 ms (AI1, AI2, AI3) - analog input<br>2 ms +/- 0.5 ms (DI1...DI6)configurable - discrete input<br>5 ms +/- 1 ms (DI5, DI6)configurable - pulse input<br>10 ms +/- 1 ms (AQ1, AQ2) - analog output |
| **Accuracy** | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output |
| **Linearity error** | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input<br>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<br>Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles<br>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<br>Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC<br>Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>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

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|---|---|
| **Noise level** | 76 dB conforming to 86/188/EEC |
| **Power dissipation in W** | 3231 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<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>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= 2…13 Hz) conforming to IEC 60068-2-6<br>1 gn (f= 13…200 Hz) conforming to IEC 60068-2-6 |
| **Shock resistance** | 6 gn for 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** | -10…40 °C (without derating)<br>40…60 °C (with derating factor) |

| | |
|---|---|
| **Operating altitude** | <= 1000 m without derating<br>1000...4800 m with current derating 1 % per 100 m |
| **Environmental characteristic** | Chemical pollution resistance class 3C2 conforming to IEC 60721-3-3<br>Dust pollution resistance class 3S2 conforming to IEC 60721-3-3 |
| **Standards** | IEC 61800-3<br>Environment 2 category C3 IEC 61800-3<br>IEC 61800-5-1<br>IEC 60721-3 |
| **Marking** | CE |

## Packing Units

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|---|---|
| **Unit Type of Package 1** | PCE |
| **Number of Units in Package 1** | 1 |
| **Package 1 Height** | 68 cm |
| **Package 1 Width** | 60 cm |
| **Package 1 Length** | 140 cm |
| **Package 1 Weight** | 181 kg |

## Contractual warranty

| | |
|---|---|
| **Warranty (in months)** | 18 |

## Environmental Data

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

| | |
|---|---|
| Total lifecycle Carbon footprint | **226 ton CO2 eq.** |
| Carbon footprint of the manufacturing phase [A1 to A3] | **5 749 kg CO2 eq.** |
| Carbon footprint of the distribution phase [A4] | **279 kg CO2 eq.** |
| Carbon footprint of the installation phase [A5] | **31 kg CO2 eq.** |
| Carbon footprint of the use phase [B2, B3, B4, B6] | **220 ton CO2 eq.** |
| Carbon footprint of the end-of-life phase [C1 to C4] | **236 kg CO2 eq.** |
| Environmental Disclosure | **Product Environmental Profile** |

## Use Better

### Materials and Substances

| | |
|---|---|
| Packaging made with recycled cardboard | **Yes** |
| Packaging without single use plastic | **No** |
| SCIP Number | **3831ba88-2e47-4c32-b67b-d4fd10c543e0** |
| EU RoHS Directive | **Compliant By Exemption** |
| REACh Regulation | **Reference contains Substances of Very High Concern above the threshold** |

## Use Again

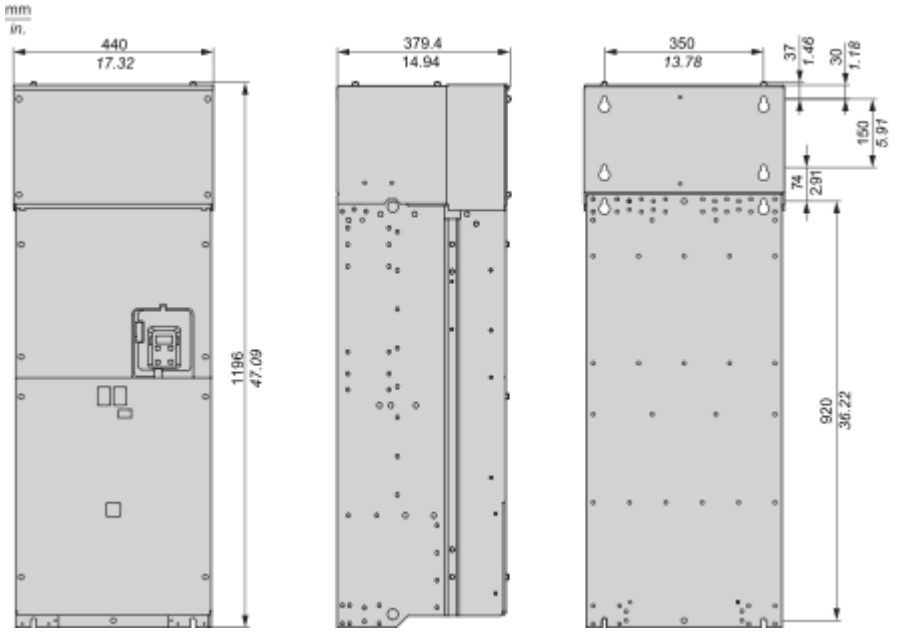
### Repack and remanufacture

| | |
|---|---|
| Recyclability potential, in % | **90** |
| End of life manual availability | **End of Life Information** |
| Take-back | **No** |
| WEEE Label | **The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins** |

Dimensions Drawings

## Dimensions

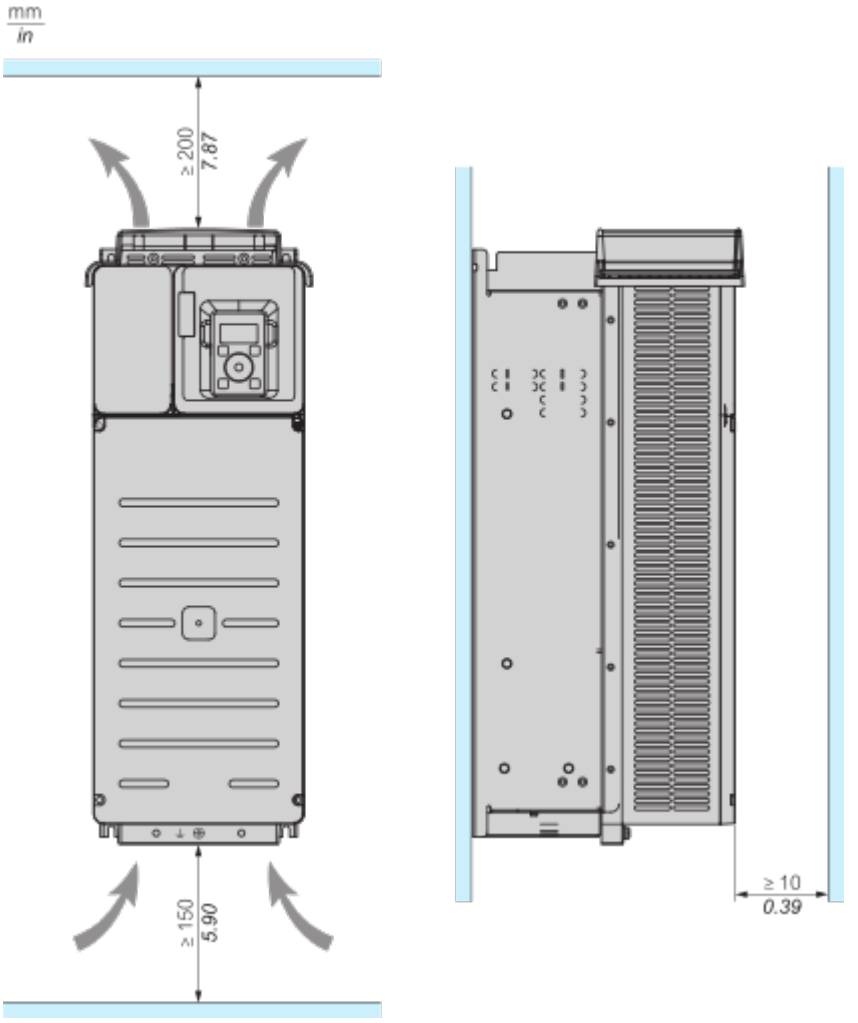
### IP20 on Upper Part and IP00 on Lower Part Drives - Front, Side and rear View




**NOTE :** Lower Conduit Box part sold separately. This part enables wall mounting of the product. It provides IP21 protection degree on the bottom side.

## Mounting and Clearance

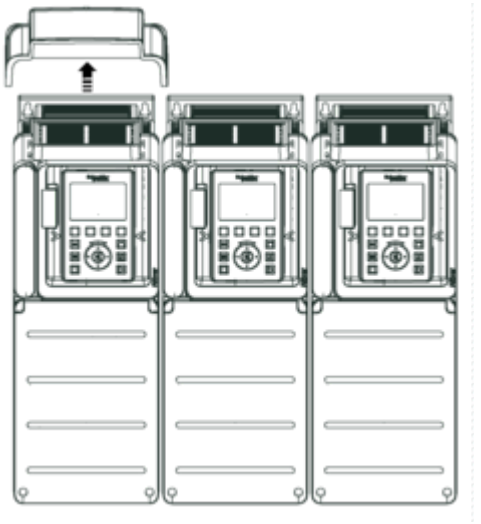
### Clearances and Mounting Position - Wall Mounting



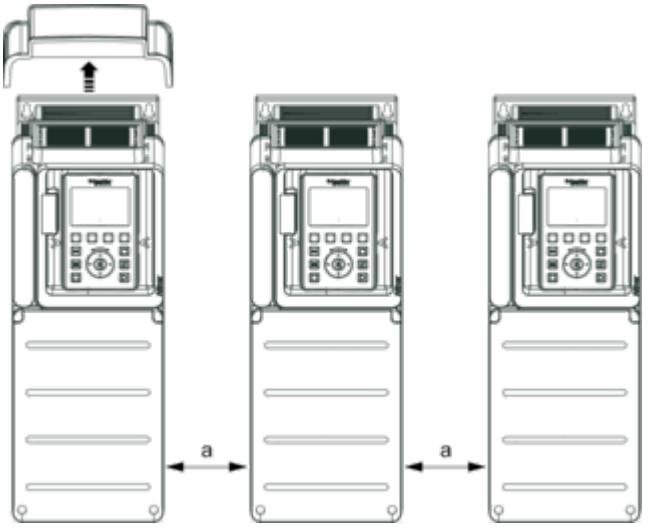

- Mount the device in a vertical position. This is required for cooling the device.
- Attach it on the mounting surface in compliance with standards, using 4 screws with captive washer.
- The use of washers is required with all mounting screws.
- Tighten the fixation screws.
- Do not mount the device 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.

## Mounting Types

### Mounting Type B: Side by Side IP20



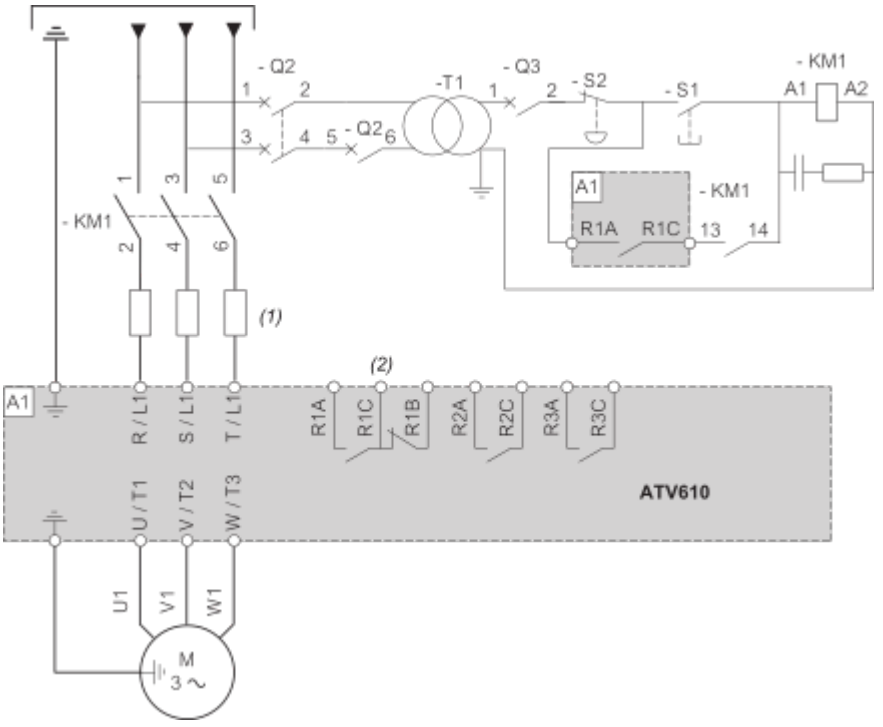
### Mounting Type C: Individual IP20




**a ≥ =** 110 mm (4.33 in.)

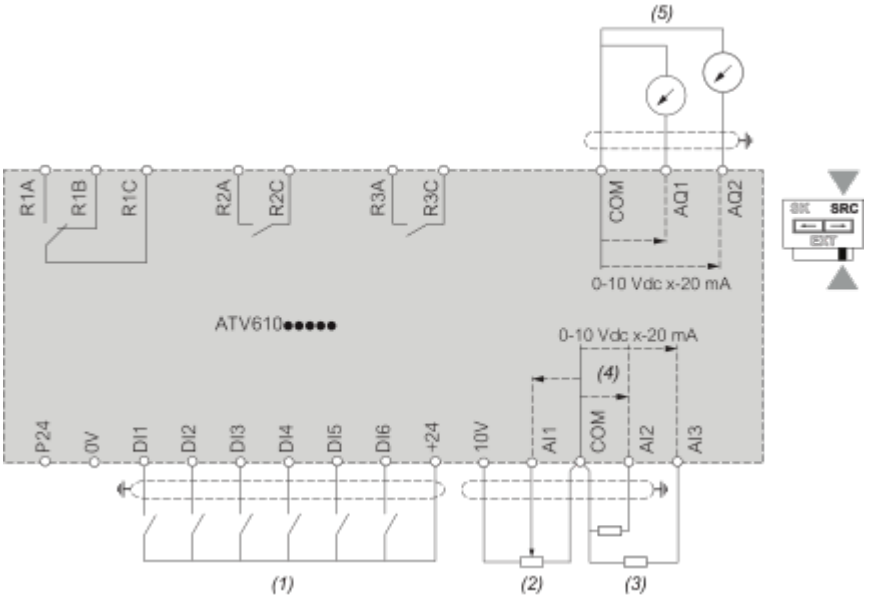
## Connections and Schema

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



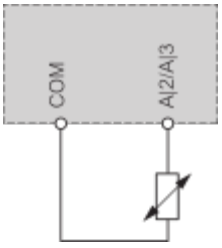

**(1)** Line choke (if used).
**(2)** Use relay output R1 set to operating state Fault to switch Off the product once an error is detected.

### Control Block Wiring Diagram




**(1)** : Digital Inputs
**(2)** : Reference potentiometer
**(3)** : Analog inputs
**(4)** : -10...+10 Vdc
**(5)** : Analog outputs

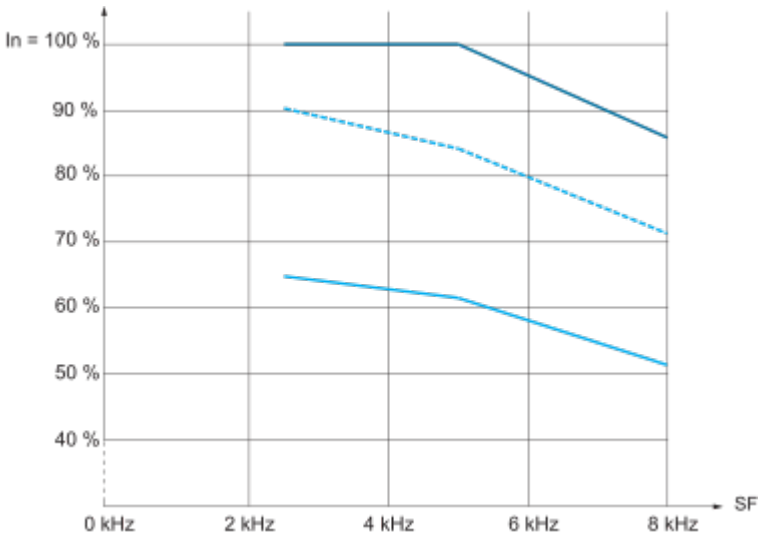
### Sensor Connection




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

Performance Curves

## Derating Curves




40 °C (104 °F) - Mounting type A, B and C
50 °C (122 °F) - Mounting type A, B and C
60 °C (140 °F) - Mounting type B and C
**In :** Nominal Drive Current
**SF :** Switching Frequency

Image of product / Alternate images

**Alternative**







