# Product data sheet
## Characteristics

# ATV630C13N4
## Variable speed drive, Altivar Process ATV600, ATV630, 130 kW, 380...480 V, IP00

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein.
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.
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## Main

| | |
|---|---|
| Range of Product | Altivar Process ATV600 |
| Product or Component Type | Variable speed drive |
| Product Specific Application | Process and utilities |
| Device short name | ATV630 |
| Variant | Standard version |
| Product destination | Asynchronous motors<br>Synchronous motors |
| EMC filter | Integrated 492.13 ft (150 m) EN/IEC 61800-3 category C3 |
| IP degree of protection | IP00IEC 61800-5-1<br>IP00IEC 60529<br>IP21 with kit VW3A9704)IEC 61800-5-1<br>IP21 with kit VW3A9704)IEC 60529 |
| [Us] rated supply voltage | 380...480 V |
| Type of cooling | Forced convection |
| Supply frequency | 50...60 Hz - 5...5 % |
| [Us] rated supply voltage | 380...480 V - 15...10 % |
| Motor power kW | 132 KW normal duty)<br>110 kW heavy duty) |
| Maximum Horse Power Rating | 200 Hp normal duty<br>150 hp heavy duty |
| Line current | 237 A 380 V normal duty)<br>213 A 480 V normal duty)<br>201 A 380 V heavy duty)<br>165 A 480 V heavy duty) |
| Prospective line Isc | 50 kA |
| Apparent power | 161.4 KVA 480 V normal duty)<br>121.8 kVA 480 V heavy duty) |
| Continuous output current | 250 A 2.5 kHz normal duty<br>211 A 2.5 kHz heavy duty |
| Maximum transient current | 275 A 60 s normal duty)<br>316.5 A 60 s heavy duty) |
| Asynchronous motor control profile | Constant torque standard<br>Optimized torque mode<br>Variable torque standard |
| Synchronous motor control profile | Permanent magnet motor<br>Synchronous reluctance motor |
| Speed drive output frequency | 0.1…500 Hz |
| Nominal switching frequency | 2.5 kHz |
| Switching frequency | 2.5...8 kHz with derating factor<br>2...8 kHz adjustable |
| Safety function | STO (safe torque off) SIL 3 |
| Discrete input logic | 16 preset speeds |

| | |
|---|---|
| Communication Port Protocol | Ethernet<br>Modbus TCP<br>Modbus serial |
| Option card | Slot A communication module, Profibus DP V1<br>Slot A communication module, PROFINET<br>Slot A communication module, DeviceNet<br>Slot A communication module, Modbus TCP/ EtherNet/IP<br>Slot A communication module, CANopen daisy chain RJ45<br>Slot A communication module, CANopen SUB-D 9<br>Slot A communication module, CANopen screw terminals<br>Slot A/slot B digital and analog I/O extension module<br>Slot A/slot B output relay extension module<br>Slot A communication module, Ethernet IP/Modbus TCP/MD-Link<br>Communication module, BACnet MS/TP<br>Communication module, Ethernet Powerlink |

## Complementary

| | |
|---|---|
| Mounting Mode | Wall mount |
| Phase | 3 phase |
| Discrete output number | 0 |
| Discrete output type | Relay outputs R1A, R1B, R1C 250 V AC 3000 mA<br>Relay outputs R1A, R1B, R1C 30 V DC 3000 mA<br>Relay outputs R2A, R2C 250 V AC 5000 mA<br>Relay outputs R2A, R2C 30 V DC 5000 mA<br>Relay outputs R3A, R3C 250 V AC 5000 mA<br>Relay outputs R3A, R3C 30 V DC 5000 mA |
| Output voltage | <= power supply voltage |
| Permissible temporary current boost | 1.1 x In 60 s normal duty)<br>1.5 x In 60 s heavy duty) |
| Motor slip compensation | Adjustable<br>Not available in permanent magnet motor law<br>Automatic whatever the load<br>Can be suppressed |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s |
| Physical interface | Ethernet<br>2-wire RS 485 |
| Braking to standstill | By DC injection |
| Protection type | Thermal protection motor<br>Safe torque off motor<br>Motor phase break motor<br>Thermal protection drive<br>Safe torque off 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 |
| Transmission Rate | 10, 100 Mbits<br>4800 bps, 9600 bps, 19200 bps, 38.4 Kbps |
| Frequency resolution | Display unit 0.1 Hz<br>Analog input 0.012/50 Hz |
| Transmission frame | RTU |
| Electrical connection | Control removable screw terminals 0.5...1.5 mm² AWG 20...AWG 16<br>Line side screw terminal 2 x 70...3 x 120 mm² 2 x AWG 2/0...2 x 300 kcmil<br>Motor screw terminal 2 x 70...3 x 120 mm² 2 x AWG 2/0...2 x 300 kcmil |
| Connector type | RJ45 on the remote graphic terminal)Ethernet/Modbus TCP<br>RJ45 on the remote graphic terminal)Modbus serial |
| Data format | 8 bits, configurable odd, even or no parity |
| Type of polarization | No impedance |
| Exchange mode | Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP |

| | |
|---|---|
| Number of addresses | 1…247 Modbus serial |
| Method of access | Slave Modbus TCP |
| Supply | External supply for digital inputs 24 V DC 19…30 V), <1.25 mA overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection<br>Internal supply for digital inputs and STO 24 V DC 21…27 V), <200 mA overload and short-circuit protection |
| Local signalling | For local diagnostic 3 LEDs<br>For embedded communication status 3 LEDs (dual colour)<br>For communication module status 4 LEDs (dual colour)<br>For presence of voltage 1 LED (red) |
| Width | 12.60 in (320 mm) |
| Height | 33.54 in (852 mm) |
| Depth | 15.35 in (390 mm) |
| Net Weight | 180.78 lb(US) (82 kg) |
| Analogue input number | 3 |
| Analogue input type | AI1, AI2, AI3 software-configurable voltage 0...10 V DC 31.5 kOhm 12 bits<br>AI1, AI2, AI3 software-configurable current 0...20 mA 250 Ohm 12 bits<br>AI2 voltage analog input - 10...10 V DC 31.5 kOhm 12 bits |
| Discrete input number | 8 |
| Discrete input type | DI7, DI8 programmable as pulse input 0…30 kHz, 24 V DC <= 30 V) |
| Input compatibility | DI1...DI6 discrete input level 1 PLC EN/IEC 61131-2<br>DI5, DI6 discrete input level 1 PLC IEC 65A-68<br>STOA, STOB discrete input level 1 PLC EN/IEC 61131-2 |
| Discrete input logic | Positive logic (source) DI1...DI8), < 5 V, > 11 V<br>Negative logic (sink) DI1...DI8), > 16 V, < 10 V |
| Analogue output number | 2 |
| Analogue output type | Software-configurable voltage AQ1, AQ2 0...10 V DC 470 Ohm 10 bits<br>Software-configurable current AQ1, AQ2 0...20 mA 10 bits<br>Software-configurable current DQ-, DQ+ 30 V DC<br>Software-configurable current DQ-, DQ+ 100 mA |
| Sampling duration | 2 Ms +/- 0.5 ms DI1...DI4) - discrete input<br>5 Ms +/- 1 ms DI5, DI6) - discrete input<br>5 Ms +/- 0.1 ms AI1, AI2, AI3) - analog input<br>10 ms +/- 1 ms AO1) - analog output |
| Accuracy | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AO1, AO2 for a temperature variation 60 °C analog output |
| Linearity error | AI1, AI2, AI3 +/- 0.15 % of maximum value analog input<br>AO1, AO2 +/- 0.2 % analog output |
| Relay output number | 3 |
| Relay output type | Configurable relay logic R1 fault relay NO/NC 100000 cycles<br>Configurable relay logic R2 sequence relay NO 100000 cycles<br>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<br>Relay output R1, R2, R3 resistive, cos phi = 1 3 A 30 V DC<br>Relay output R1, R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC<br>Relay output R1, R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC |
| Isolation | Between power and control terminals |
| Maximum output frequency | 500 kHz |
| Maximum Input Current per Phase | 237.0 A |

| | |
|---|---|
| Variable speed drive application selection | Building - HVAC compressor centrifugal<br>Food and beverage processing other application<br>Mining mineral and metal fan<br>Mining mineral and metal pump<br>Oil and gas fan<br>Water and waste water other application<br>Building - HVAC screw compressor<br>Food and beverage processing pump<br>Food and beverage processing fan<br>Food and beverage processing atomization<br>Oil and gas electro submersible pump (ESP)<br>Oil and gas water injection pump<br>Oil and gas jet fuel pump<br>Oil and gas compressor for refinery<br>Water and waste water centrifuge pump<br>Water and waste water positive displacement pump<br>Water and waste water electro submersible pump (ESP)<br>Water and waste water screw pump<br>Water and waste water lobe compressor<br>Water and waste water screw compressor<br>Water and waste water compressor centrifugal<br>Water and waste water fan<br>Water and waste water conveyor<br>Water and waste water mixer |
| Motor power range AC-3 | 110…220 KW 380…440 V 3 phase<br>110…220 kW 480…500 V 3 phase |
| Quantity per Set | 1 |
| Enclosure mounting | Wall mounted |

## Environment

| | |
|---|---|
| Insulation resistance | > 1 MOhm 500 V DC for 1 minute to earth |
| Noise level | 69.9 dB 86/188/EEC |
| Power dissipation in W | Forced convection 2755 W 380 V 2.5 kHz |
| Volume of cooling air | 158506.07 Gal/hr(US) (600 m3/h) |
| Operating position | Vertical +/- 10 degree |
| Maximum THDI | <48 % full load IEC 61000-3-12 |
| Electromagnetic compatibility | Electrostatic discharge immunity test level 3 IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 IEC 61000-4-6 |
| Pollution degree | 2 EN/IEC 61800-5-1 |
| Vibration resistance | 1.5 mm peak to peak 2…13 Hz)IEC 60068-2-6<br>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…122 °F (-15…50 °C) without derating)<br>122…140 °F (50…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<br>1000...4800 m with current derating 1 % per 100 m |
| Standards | UL 508C<br>EN/IEC 61800-3<br>Environment 1 category C2 EN/IEC 61800-3<br>Environment 2 category C3 EN/IEC 61800-3<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1 |
| Product Certifications | DNV-GL<br>ATEX zone 2/22<br>UL<br>CSA<br>TÜV<br>ATEX INERIS |
| Marking | CE |

| | |
|---|---|
| Standards | UL 508C<br>EN/IEC 61800-3<br>EN/IEC 61800-3 environment 1 category C2<br>EN/IEC 61800-3 environment 2 category C3<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1 |
| Overvoltage category | III |
| Regulation loop | Adjustable PID regulator |
| Noise level | 69.9 dB |
| Pollution degree | 2 |

## Ordering and shipping details

| | |
|---|---|
| Category | 22207-ATV630 FRAMES 5 & 6 |
| Discount Schedule | CP4E |
| GTIN | 3606480796043 |
| Returnability | Yes |
| Country of origin | IN |

## Packing Units

| | |
|---|---|
| Unit Type of Package 1 | PCE |
| Number of Units in Package 1 | 1 |
| Package 1 Height | 25.98 in (66 cm) |
| Package 1 Width | 18.90 in (48 cm) |
| Package 1 Length | 40.55 in (103 cm) |
| Package 1 Weight | 201.72 lb(US) (91.5 kg) |

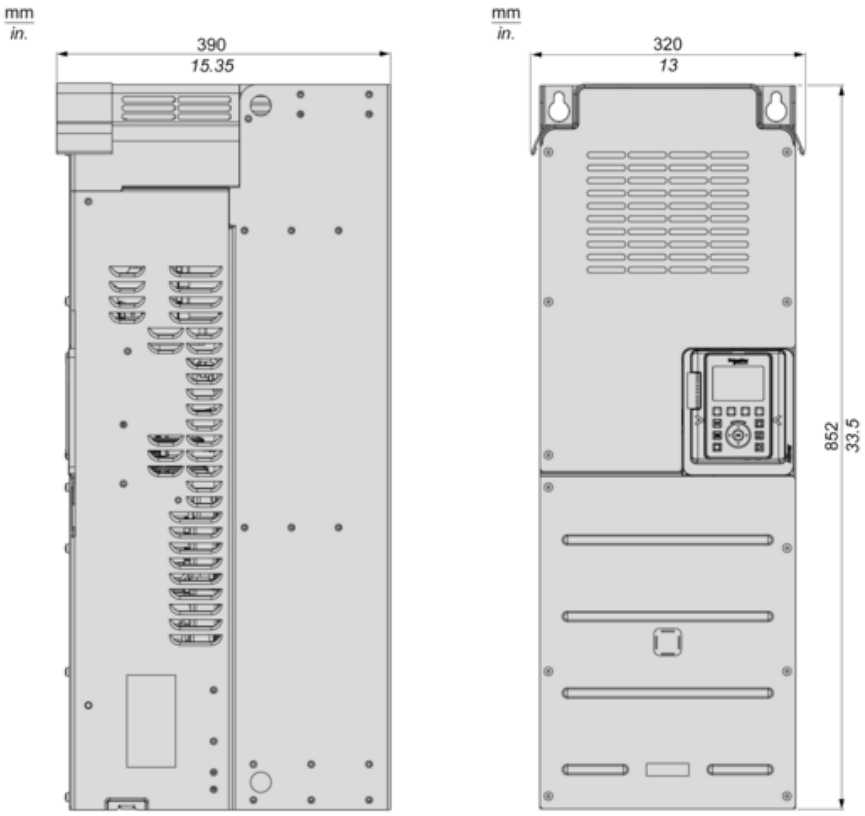
## Offer Sustainability

| | |
|---|---|
| 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) EU RoHS Declaration |
| 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 | Upgraded components available |

## Dimensions

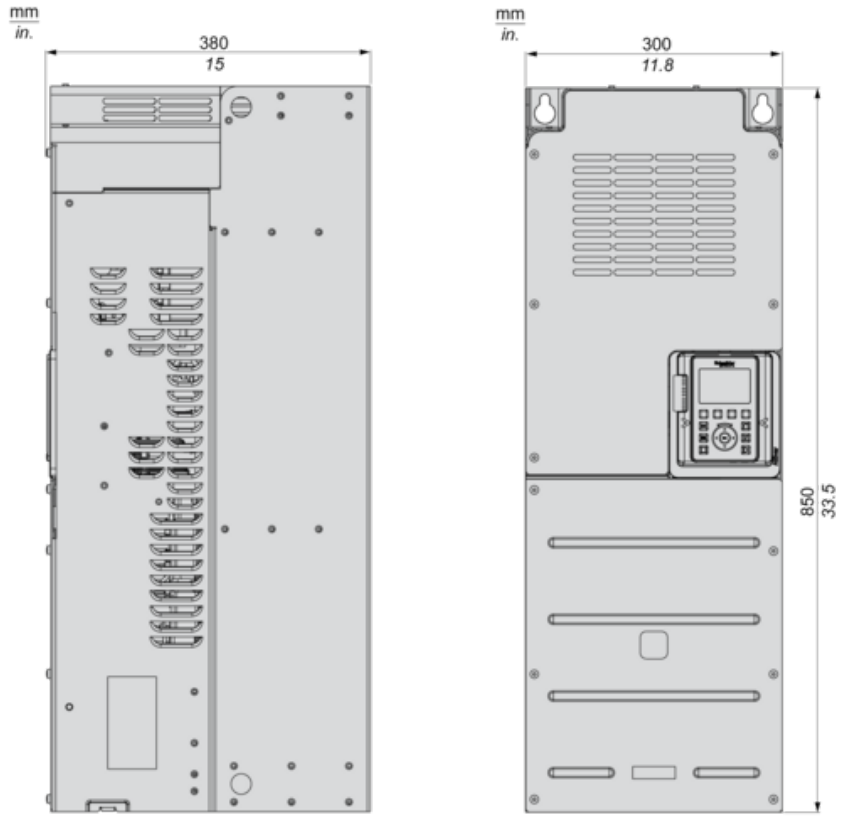
### Drives with IP21 Top Cover

Right and Front Views



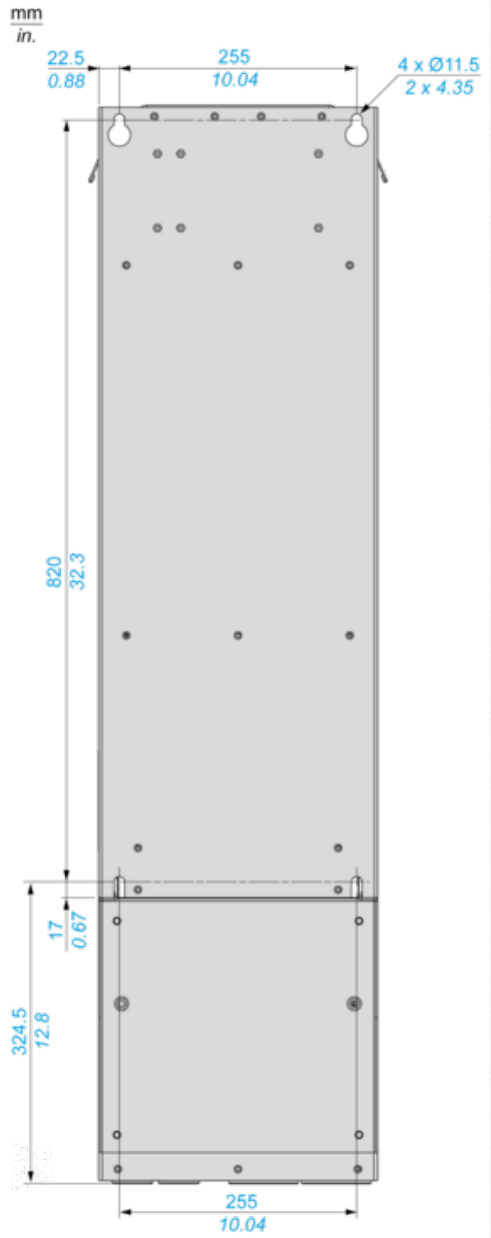

### Drives Without IP21 Top Cover

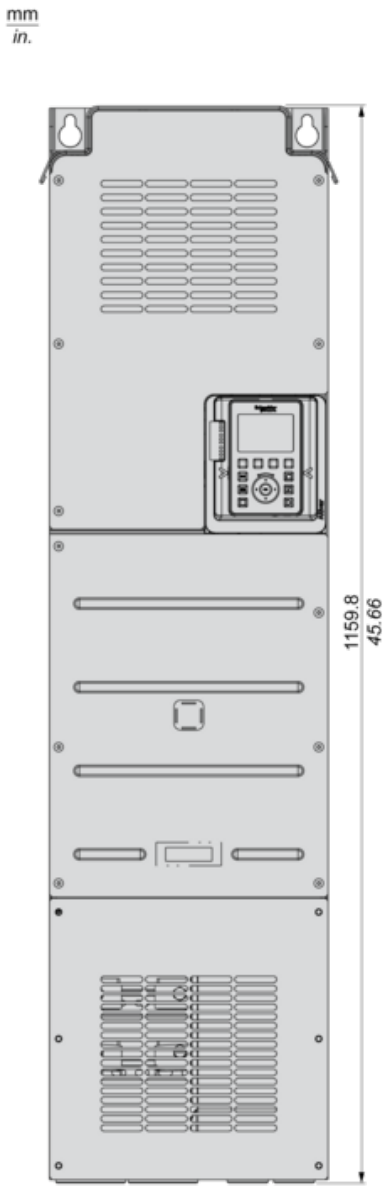
Right and Front Views




## Drives with Lower Conduit Box Sold Separately

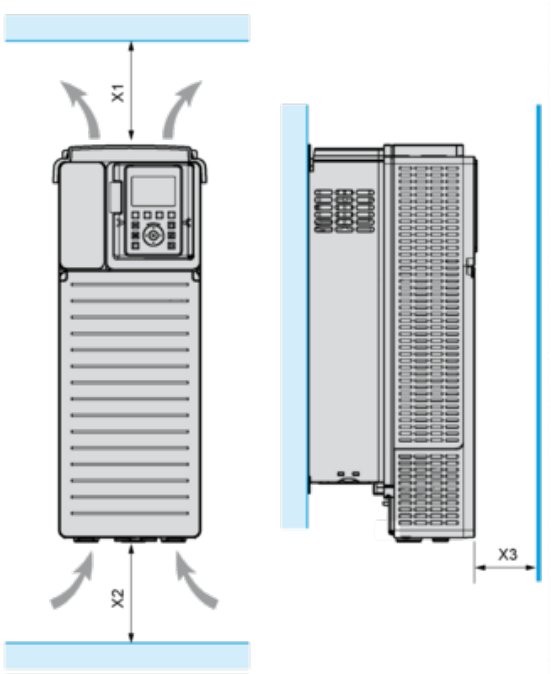
Rear, Front and Left Views


mm
in.
22.5
0.88
255
10.04
4 x Ø11.5
2 x 4.35
820
32.3
17
0.67
324.5
12.8
255
10.04


mm
in.
1159.8
45.66


mm
in.

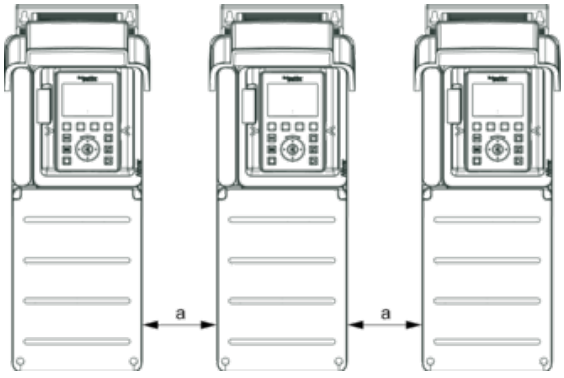
## Clearances




| X1 | X2 | X3 |
|---|---|---|
| ≥ 250 mm (10 in.) | ≥ 250 mm (10 in.) | ≥ 100 mm (3.94 in.) |

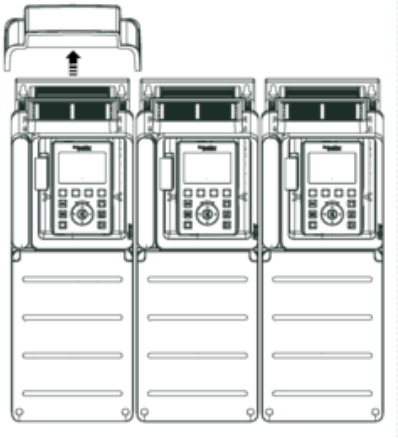
## Mounting Types

### Mounting Type A: Individual IP21

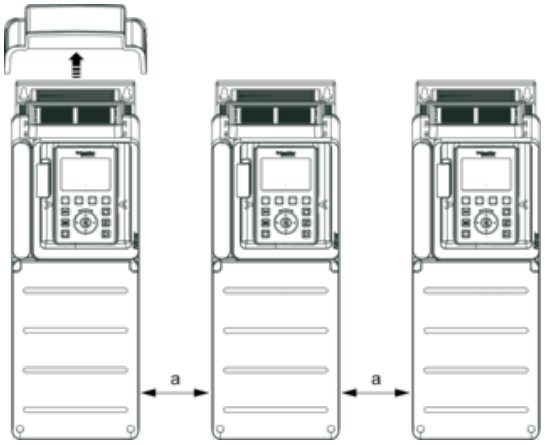



a ≥ = 110 mm (4.33 in.)

## Mounting Type B: Side by Side IP20 , Only possible at ambient temperature lower than 40 °C (104 °F)



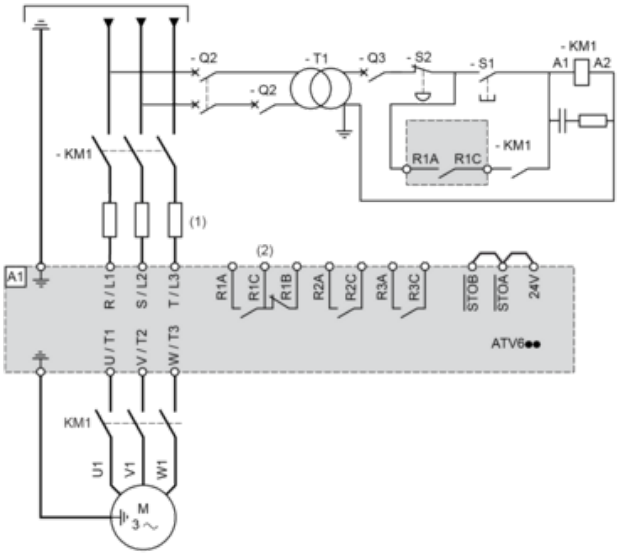
## Mounting Type C: Individual IP20




a ≥ = 110 mm (4.33 in.)

## Three-Phase Power Supply with Upstream Breaking via Line Contactor

Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1




(1) Line choke if used

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

A1 : Drive

KM1 : Line Contactor

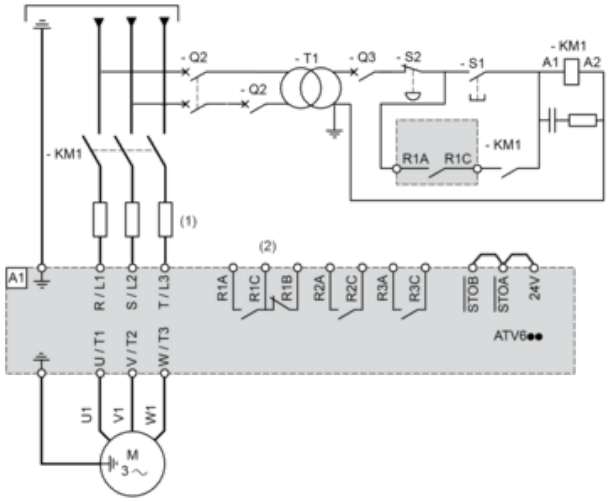
Q2, Q3 : Circuit breakers

S1, S2 : Pushbuttons

T1 : Transformer for control part

## Three-Phase Power Supply with Downstream Breaking via Contactor

Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



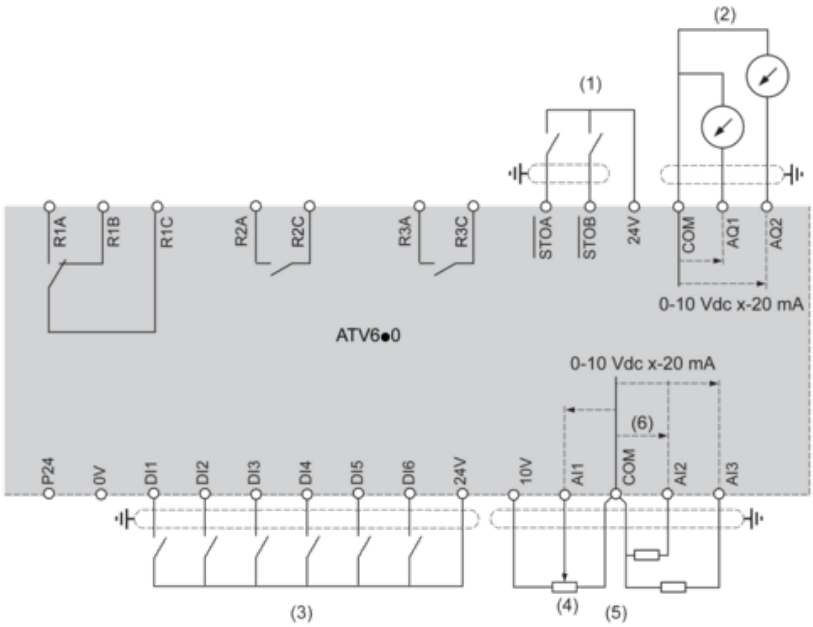

(1) Line choke if used

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

A1 : Drive

KM1 : Contactor

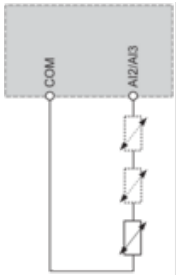
## Control Block Wiring Diagram




(1) Safe Torque Off
(2) Analog Output
(3) Digital Input
(4) Reference potentiometer
(5) Analog Input
R1A, R1B, R1C : Fault relay
R2A, R2C : Sequence relay
R3A, R3C : Sequence relay

## Sensor Connection

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

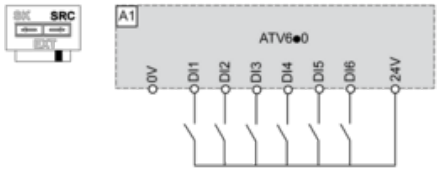



## Sink / Source Switch Configuration

The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- Set the switch to Source (factory setting) if using PLC outputs with PNP transistors.
- Set the switch to Ext if using PLC outputs with NPN transistors.

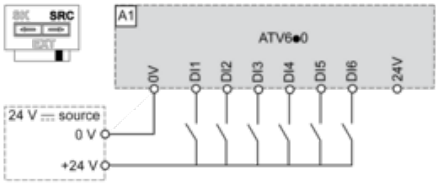
## Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



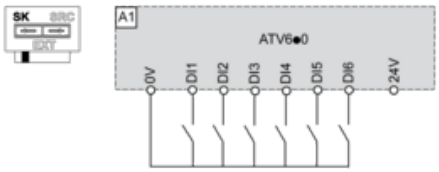


Life Is On Schneider Electric

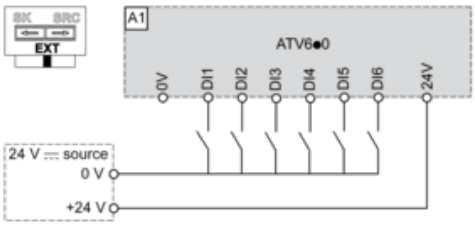
## Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



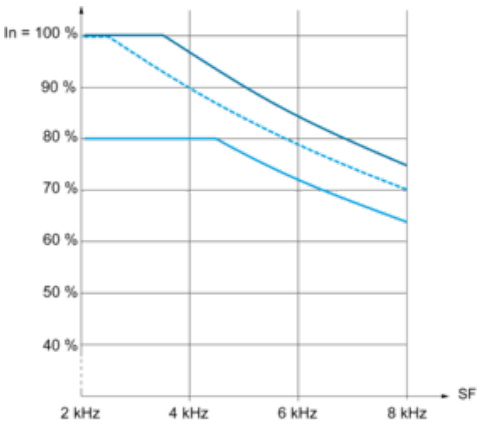

## Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs




## Switch Set to EXT Position Using an External Power Supply for the DIs



## Derating Curves




40 °C (104 °F) - Mounting type A, B and C
50 °C (122 °F) - Mounting type A and C
60 °C (140 °F) - Mounting type C

In : Nominal Drive Current

SF : Switching Frequency