





## 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                | Synchronous motors<br>Asynchronous motors                                                                                          |
| mounting mode                      | Wall mount                                                                                                                         |
| EMC filter                         | Without EMC filter                                                                                                                 |
| IP degree of protection            | IP21 conforming to IEC 60529<br>IP21 conforming to IEC 61800-5-1                                                                   |
| degree of protection               | UL type 1 conforming to UL 508C                                                                                                    |
| type of cooling                    | Forced convection                                                                                                                  |
| supply frequency                   | 50...60 Hz (- 5...5 %)                                                                                                             |
| network number of phases           | 3 phases                                                                                                                           |
| [Us] rated supply voltage          | 200...240 V (- 15...10 %)                                                                                                          |
| motor power kW                     | 45 kW (normal duty)<br>37 kW (heavy duty)                                                                                          |
| motor power hp                     | 60 hp (normal duty)<br>50 hp (heavy duty)                                                                                          |
| line current                       | 108.5 A at 240 V (heavy duty)<br>128.5 A at 200 V (heavy duty)<br>155.1 A at 200 V (normal duty)<br>130.4 A at 240 V (normal duty) |
| prospective line Isc               | 50 kA                                                                                                                              |
| apparent power                     | 45.1 kVA at 240 V (heavy duty)<br>54.2 kVA at 240 V (normal duty)                                                                  |
| continuous output current          | 176 A at 2.5 kHz (normal duty)<br>149 A at 2.5 kHz (heavy duty)                                                                    |
| maximum transient current          | 193.6 A during 60 s (normal duty)<br>223.5 A during 60 s (heavy duty)                                                              |
| asynchronous motor control profile | Variable torque standard<br>Constant torque standard<br>Optimized torque mode                                                      |
| synchronous motor control profile  | Permanent magnet motor                                                                                                             |
| output frequency                   | 0.0001...0.5 kHz                                                                                                                   |
| nominal switching frequency        | 2.5 kHz                                                                                                                            |
| switching frequency                | 2...8 kHz adjustable<br>2.5...8 kHz With derating factor                                                                           |
| safety function                    | STO (safe torque off) SIL 3                                                                                                        |
| discrete input logic               | 16 preset speeds                                                                                                                   |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| communication port protocol | Modbus TCP<br>Ethernet<br>Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| option card                 | Slot A : communication module for CANopen screw terminals<br>Slot A/slot B : output relay extension module<br>Slot A : communication module for Profibus DP V1<br>Slot A : communication module for Modbus TCP/EtherNet/IP<br>Slot A/slot B : digital and analog I/O extension module<br>Slot A : communication module for CANopen daisy chain RJ45<br>Slot A : communication module for DeviceNet<br>Slot A : communication module for CANopen SUB-D 9<br>Slot A : communication module for Profinet<br>Slot A : communication module for Ethernet IP/Modbus TCP/MD-Link |

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| output voltage                      | $\leq$ power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| permissible temporary current boost | 1.1 x $I_n$ for 60 s (normal duty)<br>1.5 x $I_n$ for 60 s (heavy duty)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| motor slip compensation             | Not available in permanent magnet motor law<br>Can be suppressed<br>Adjustable<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                     | Drive : safe torque off<br>Drive : overload of output voltage<br>Drive : overheating<br>Motor : thermal protection<br>Drive : thermal protection<br>Drive : motor phase break<br>Drive : line supply phase loss<br>Drive : break on the control circuit<br>Drive : short-circuit protection<br>Motor : motor phase break<br>Drive : overcurrent between output phases and earth<br>Drive : overvoltages on the DC bus<br>Motor : safe torque off<br>Drive : overspeed<br>Drive : line supply undervoltage<br>Drive : line supply overvoltage |
| frequency resolution                | Display unit : 0.1 Hz<br>Analog input : 0.012/50 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| electrical connection               | Motor : screw terminal 120 mm <sup>2</sup> (250 kcmil)<br>Line side : screw terminal 120 mm <sup>2</sup> (AWG 4/0...250 kcmil)<br>Control : removable screw terminals 0.5...1.5 mm <sup>2</sup> (AWG 20...AWG 16)                                                                                                                                                                                                                                                                                                                            |
| type of connector                   | RJ45 (on the remote graphic terminal) for Modbus serial<br>RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                     |
| physical interface                  | 2-wire RS 485 for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| transmission frame                  | RTU for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| transmission rate                   | 10/100 Mbit/s for Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| exchange mode                       | Half duplex, full duplex, autonegotiation for Ethernet/Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| data format                         | 8 bits, configurable odd, even or no parity for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| type of polarization                | No impedance for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| number of addresses                 | 1...247 for Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| method of access                    | Slave for Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| supply                              | External supply for digital inputs : 24 V DC (19...30 V) current $\leq$ 1.25 mA (overload and short-circuit protection)<br>Internal supply for digital inputs and STO : 24 V DC (21...27 V) current $\leq$ 200 mA (overload and short-circuit protection)<br>Internal supply for reference potentiometer (1 to 10 kOhm) : 10.5 V DC $\pm$ 5 % current $\leq$ 10 mA (overload and short-circuit protection)                                                                                                                                   |

|                           |                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| local signalling          | 1 LED red for presence of voltage<br>3 LEDs dual colour for embedded communication status<br>3 LEDs for local diagnostic<br>4 LEDs dual colour for communication module status                                                                                                                                                                                             |
| width                     | 290 mm                                                                                                                                                                                                                                                                                                                                                                     |
| height                    | 922 mm                                                                                                                                                                                                                                                                                                                                                                     |
| depth                     | 323 mm                                                                                                                                                                                                                                                                                                                                                                     |
| product weight            | 56.6 kg                                                                                                                                                                                                                                                                                                                                                                    |
| analogue input number     | 3                                                                                                                                                                                                                                                                                                                                                                          |
| analogue input type       | Software-configurable current AI1, AI2, AI3 : 0...20 mA impedance 250 Ohm, resolution 12 bits<br>Software-configurable voltage AI1, AI2, AI3 : 0...10 V DC impedance 30 kOhm, resolution 12 bits                                                                                                                                                                           |
| discrete input number     | 8                                                                                                                                                                                                                                                                                                                                                                          |
| discrete input type       | Programmable DI1...DI6 : 24 V DC $\leq$ 30 V impedance 3.5 kOhm<br>Safe torque off STOA, STOB : 24 V DC $\leq$ 30 V impedance $>$ 2.2 kOhm<br>Programmable as pulse input DI5, DI6 0...30 kHz : 24 V DC $\leq$ 30 V                                                                                                                                                        |
| input compatibility       | Discrete input DI5, DI6 : level 1 PLC conforming to IEC 65A-68<br>Discrete input STOA, STOB : level 1 PLC conforming to EN/IEC 61131-2<br>Discrete input DI1...DI6 : level 1 PLC conforming to EN/IEC 61131-2                                                                                                                                                              |
| discrete input logic      | DI1...DI6, positive logic (source) : , $<$ 5 V (state 0), $>$ 11 V (state 1)<br>STOA, STOB, positive logic (source) : , $<$ 5 V (state 0), $>$ 11 V (state 1)<br>DI5, DI6, positive logic (source) : , $<$ 0.6 V (state 0), $>$ 2.5 V (state 1)<br>DI1...DI6, negative logic (sink) : , $>$ 16 V (state 0), $<$ 10 V (state 1)                                             |
| analogue output number    | 2                                                                                                                                                                                                                                                                                                                                                                          |
| analogue output type      | Software-configurable voltage AO1, AO2 : 0...10 V DC impedance 470 Ohm, resolution 10 bits<br>Software-configurable current AO1, AO2 : 0...20 mA, resolution 10 bits                                                                                                                                                                                                       |
| sampling duration         | Discrete input DI5, DI6 : 5 ms (+/- 1 ms)<br>Analog input AI1, AI2, AI3 : 5 ms (+/- 0.1 ms)<br>Discrete input DI1...DI4 : 2 ms (+/- 0.5 ms)<br>Analog output AO1 : 10 ms (+/- 1 ms)                                                                                                                                                                                        |
| accuracy                  | Analog input AI1, AI2, AI3 : +/- 0.6 % for a temperature variation 60 °C<br>Analog output AO1, AO2 : +/- 1 % for a temperature variation 60 °C                                                                                                                                                                                                                             |
| linearity error           | Analog output AO1, AO2 : +/- 0.2 %<br>Analog input AI1, AI2, AI3 : +/- 0.15 % of maximum value                                                                                                                                                                                                                                                                             |
| relay output number       | 3                                                                                                                                                                                                                                                                                                                                                                          |
| relay output type         | Configurable relay logic R1 : fault relay NO/NC electrical durability 100000 cycles<br>Configurable relay logic R3 : sequence relay NO electrical durability 100000 cycles<br>Configurable relay logic R2 : 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                                                                                                                                                                                                                                                                                                                                        |
| functionality             | Full                                                                                                                                                                                                                                                                                                                                                                       |
| specific application      | Centrifugal pumps and fans                                                                                                                                                                                                                                                                                                                                                 |
| IP degree of protection   | IP21                                                                                                                                                                                                                                                                                                                                                                       |

## Environment

|                        |                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| insulation resistance  | $>$ 1 mOhm at 500 V DC for 1 minute to earth                                                                                       |
| noise level            | 62.4 dB conforming to 86/188/EEC                                                                                                   |
| power dissipation in W | 175 W (natural convection) at 200 V switching frequency 2.5 kHz<br>1367 W (forced convection) at 200 V switching frequency 2.5 kHz |
| volume of cooling air  | 295 m <sup>3</sup> /h                                                                                                              |
| operating position     | Vertical +/- 10 degree                                                                                                             |
| THDI                   | $\leq$ 48 % from 80...100 % of load conforming to IEC 61000-3-12                                                                   |

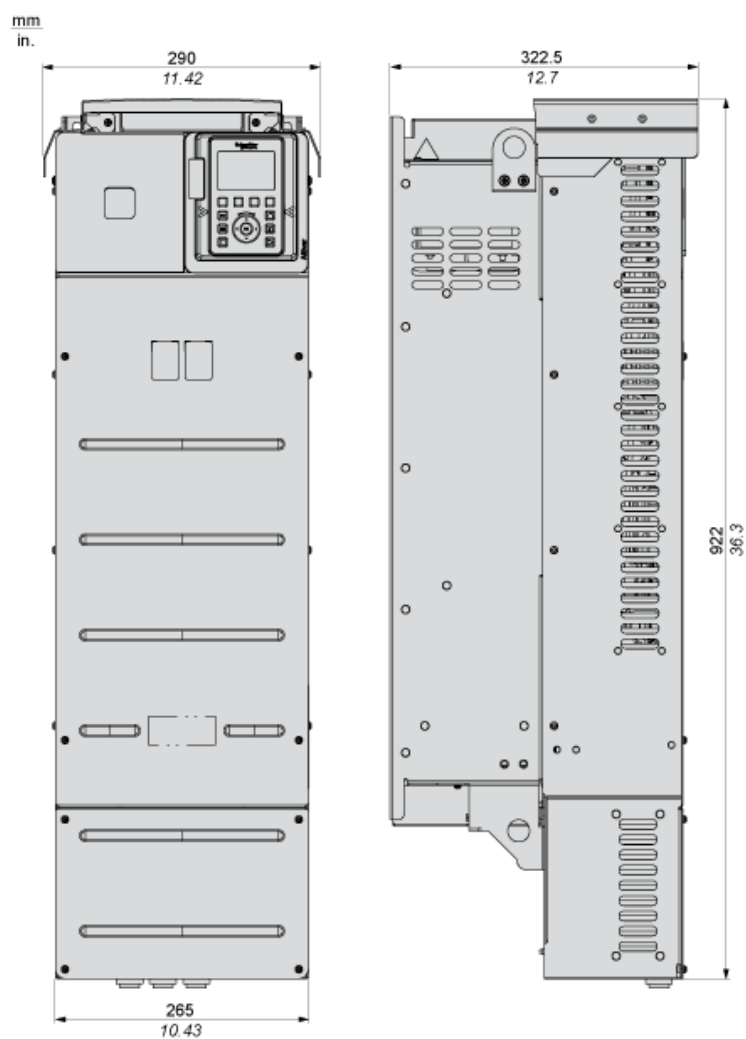
|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| electromagnetic compatibility         | Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3<br>1.2/50 µs - 8/20 µs surge immunity test conforming to IEC 61000-4-5 level 3<br>Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4<br>Conducted radio-frequency immunity test conforming to IEC 61000-4-6 level 3<br>Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3 |
| pollution degree                      | 2 conforming to EN/IEC 61800-5-1                                                                                                                                                                                                                                                                                                                                                                                                 |
| vibration resistance                  | 1 gn (f = 13...200 Hz) conforming to IEC 60068-2-6<br>1.5 mm peak to peak (f = 2...13 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 | 50...60 °C with derating factor<br>-15...50 °C without derating                                                                                                                                                                                                                                                                                                                                                                  |
| ambient air temperature for storage   | -40...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                      |
| operating altitude                    | <= 1000 m without derating<br>1000...4800 m with current derating 1 % per 100 m                                                                                                                                                                                                                                                                                                                                                  |
| environmental characteristic          | Chemical pollution resistance class 3C3 EN/IEC 60721-3-3<br>Dust pollution resistance class 3S3 EN/IEC 60721-3-3                                                                                                                                                                                                                                                                                                                 |
| standards                             | EN/IEC 61800-5-1<br>IEC 61508<br>IEC 60721-3<br>IEC 13849-1<br>EN/IEC 61800-3<br>EN/IEC 61800-3 environment 2 category C3<br>UL 508C<br>IEC 61000-3-12<br>EN/IEC 61800-3 environment 1 category C2                                                                                                                                                                                                                               |
| product certifications                | UL<br>TÜV<br>ATEX zone 2/22<br>REACH<br>CSA<br>ATEX INERIS<br>DNV-GL                                                                                                                                                                                                                                                                                                                                                             |
| marking                               | CE                                                                                                                                                                                                                                                                                                                                                                                                                               |

### Offer Sustainability

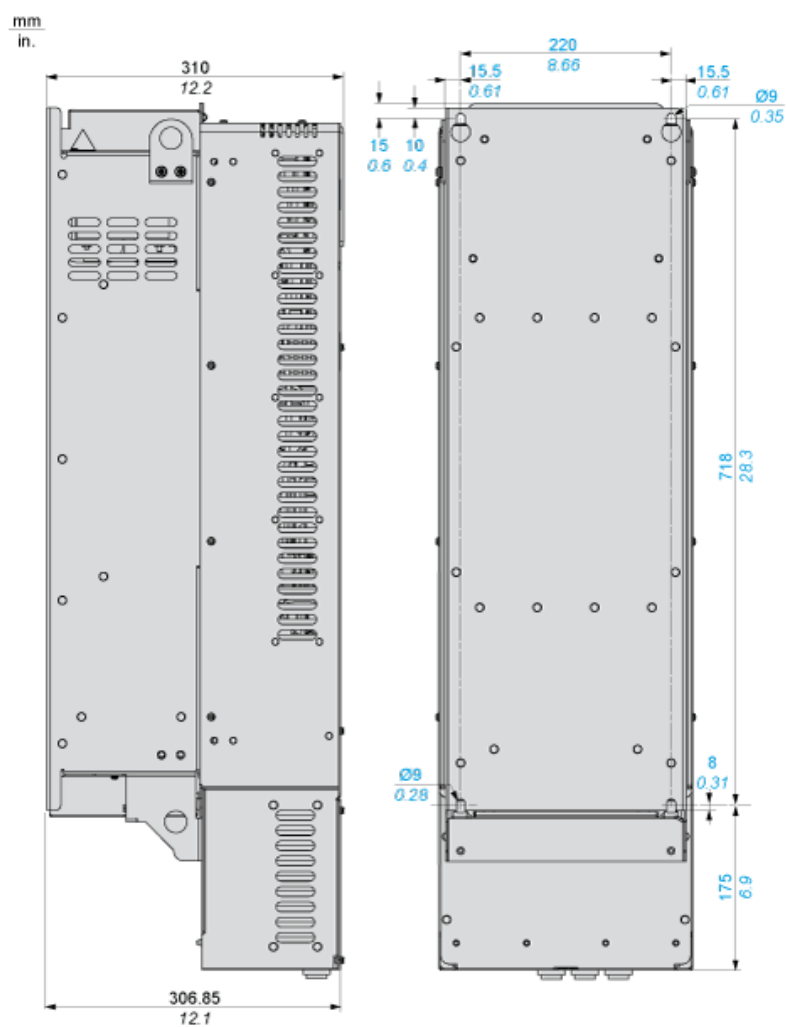
|                                  |                                                                                                                                        |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status         | Green Premium product                                                                                                                  |
| RoHS (date code: YYWW)           | Compliant - since 1426 - Schneider Electric declaration of conformity-<br><a href="#">Schneider Electric declaration of conformity</a> |
| REACH                            | Reference contains SVHC above the threshold - go to CaP for more details <a href="#">Go to CaP for more details</a>                    |
| Product environmental profile    | Available <a href="#">Product Environmental</a>                                                                                        |
| Product end of life instructions | Available <a href="#">End Of Life Manual</a>                                                                                           |

## Dimensions

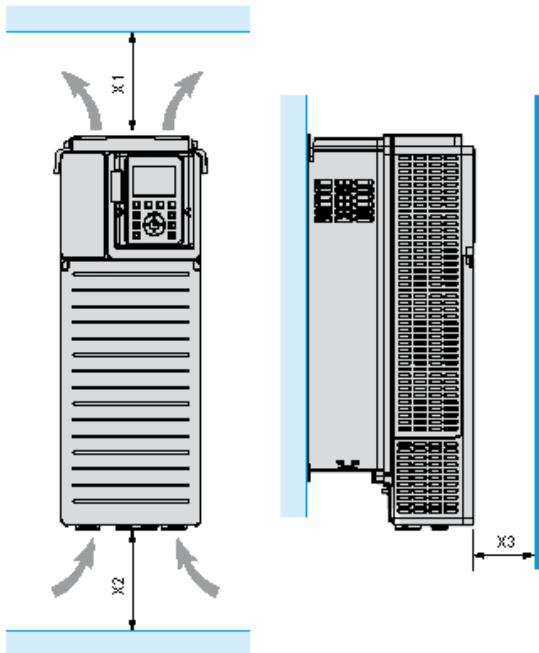
### IP21 / UL Type 1 Drives - Front and Left View



## Drives Without IP21 Top Cover - Left and Rear View



Clearances

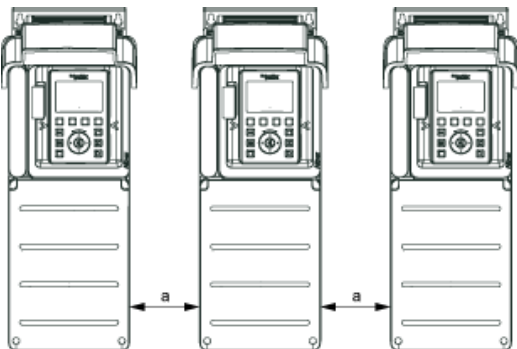


| X1                  | X2                  | X3                 |
|---------------------|---------------------|--------------------|
| ≥ 100 mm (3.94 in.) | ≥ 100 mm (3.94 in.) | ≥ 10 mm (0.39 in.) |

- Mount the device in a vertical position ( $\pm 10^\circ$ ). 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.

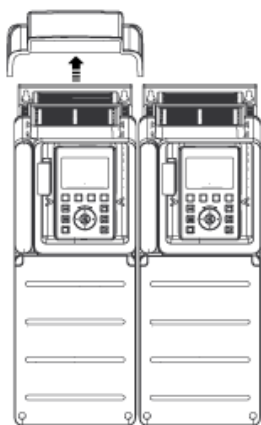
Mounting Types

Mounting Type A: Individual IP21

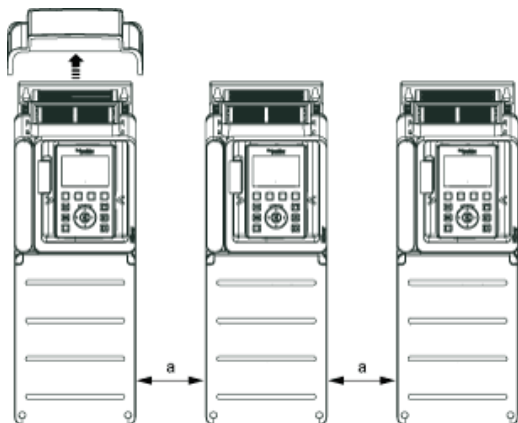


$a \geq 110 \text{ mm (4.33 in.)}$

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

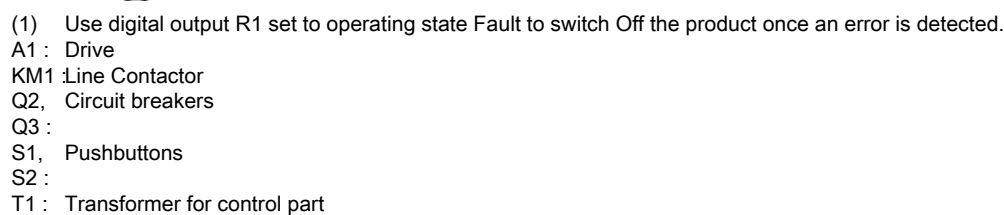


Mounting Type C: Individual IP20

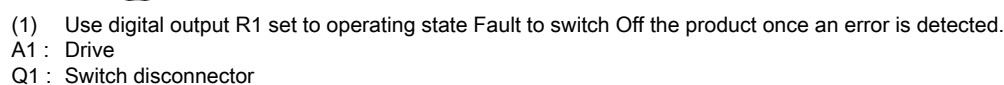


$a \geq 110 \text{ mm (4.33 in.)}$

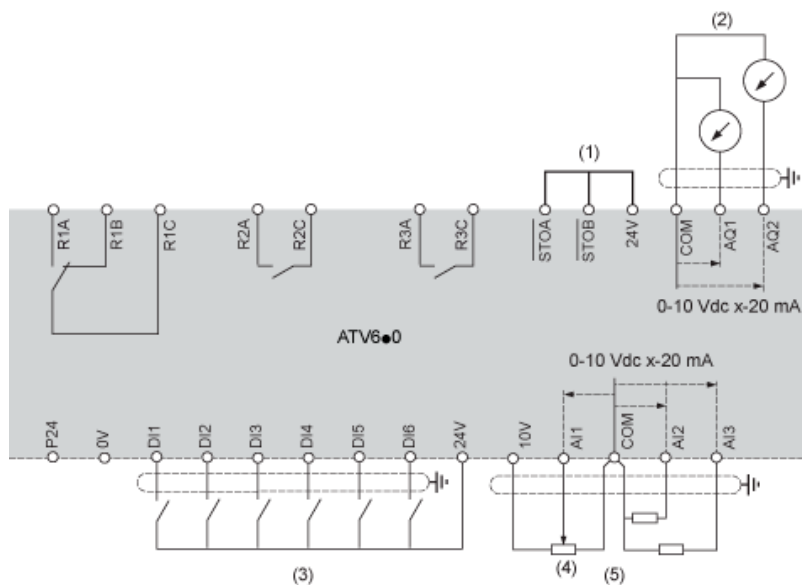
Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



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



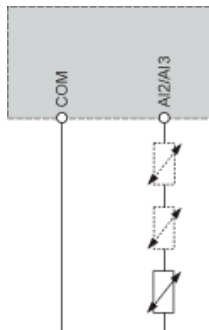
## 10



- (1) Safe Torque Off  
 (2) Analog Output  
 (3) Digital Input  
 (4) Reference potentiometer  
 (5) Analog Input  
 A1 : ATV6.. Drive  
 R1A, Fault relay  
 R1B,  
 R1C :  
 R2A, Sequence relay  
 R2C :  
 R3A, Sequence relay  
 R3C :

### Sensor Connection

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

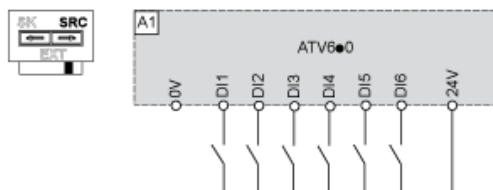


### Sink / Source Switch Configuration

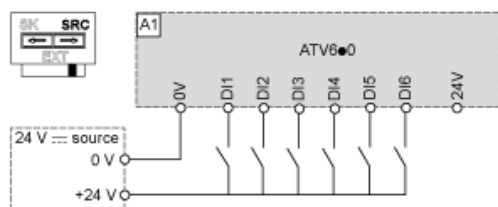
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

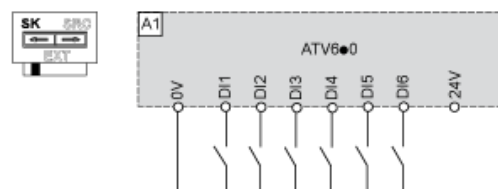
### Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



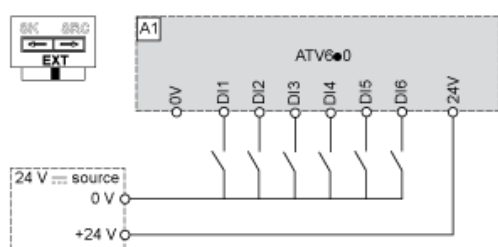
### Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



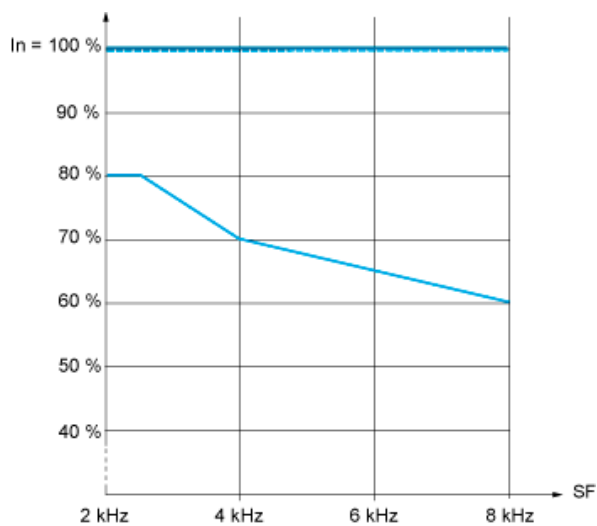
### Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



### 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, B and C  
— 60 °C (140 °F) - Mounting type B and C

In : Nominal Drive Current

SF : Switching Frequency