

# ATV630D45N4

variable speed drive ATV630 - 45kW/60HP -  
380...480V - IP21/UL type 1

Product availability : Non-Stock - Not normally stocked in distribution facility



Price\* : 6,515.00 USD



## 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                                                                |
| Mounting mode                | Wall mount                                                                                               |
| EMC filter                   | Integrated EN/IEC 61800-3 category C3 <= 150 m<br>Integrated EN/IEC 61800-3 category C2 <= 50 m          |
| IP degree of protection      | IP21 conforming to IEC 61800-5-1<br>IP21 conforming to IEC 60529                                         |
| Degree of protection         | UL type 1 UL 508C                                                                                        |
| Type of cooling              | Forced convection                                                                                        |
| Supply frequency             | 50...60 Hz - 5...5 %                                                                                     |
| Network number of phases     | 3 phases                                                                                                 |
| [Us] rated supply voltage    | 380...480 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                 | 79.8 A 380 V normal duty<br>69.1 A 480 V normal duty<br>67.1 A 380 V heavy duty<br>59 A 480 V heavy duty |
| Prospective line Isc         | 50 kA                                                                                                    |
| Apparent power               | 57.4 kVA 480 V normal duty<br>49.1 kVA 480 V heavy duty                                                  |
| Continuous output current    | 88 A 4 kHz normal duty                                                                                   |

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

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | 74.5 A 4 kHz heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Maximum transient current          | 96.8 A 60 s normal duty<br>111.8 A 60 s heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Asynchronous motor control profile | Constant torque standard<br>Variable torque standard<br>Optimized torque mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Synchronous motor control profile  | Permanent magnet motor<br>Synchronous reluctance motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Speed drive output frequency       | 0.1...599 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Output frequency                   | 0.0001...0.5 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Nominal switching frequency        | 4 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Switching frequency                | 2...12 kHz adjustable<br>4...12 kHz with derating factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Safety function                    | STO (safe torque off) SIL 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Discrete input logic               | 16 preset speeds                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Communication port protocol        | Ethernet<br>Modbus serial<br>Modbus TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Option card                        | Communication module Profibus DP V1 slot A<br>Communication module Profinet slot A<br>Communication module DeviceNet slot A<br>Communication module Modbus TCP/EtherNet/IP slot A<br>Communication module CANopen daisy chain RJ45 slot A<br>Communication module CANopen SUB-D 9 slot A<br>Communication module CANopen screw terminals slot A<br>Digital and analog I/O extension module slot A/slot B<br>Output relay extension module slot A/slot B<br>Communication module Ethernet IP/Modbus TCP/MD-Link slot A<br>Communication module BACnet MS/TP<br>Communication module Ethernet Powerlink |

## Complementary

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output voltage                      | $\leq$ power supply voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Permissible temporary current boost | 1.1 x I <sub>n</sub> 60 s normal duty<br>1.5 x I <sub>n</sub> 60 s heavy duty                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Motor slip compensation             | Adjustable<br>Automatic whatever the load<br>Can be suppressed<br>Not available in permanent magnet motor law                                                                                                                                                                                                                                                                                                                                                                                                |
| Acceleration and deceleration ramps | Linear adjustable separately from 0.01...9999 s                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Braking to standstill               | By DC injection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection type                     | Safe torque off motor<br>Motor phase break motor<br>Safe torque off drive<br>Overheating drive<br>Short-circuit protection drive<br>Motor phase break drive<br>Overspeed drive<br>Break on the control circuit drive<br>Overvoltages on the DC bus drive<br>Overload of output voltage drive<br>Line supply overvoltage drive<br>Line supply phase loss drive<br>Line supply undervoltage drive<br>Overcurrent between output phases and earth drive<br>Thermal protection motor<br>Thermal protection drive |
| Frequency resolution                | Display unit<br>Analog input                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electrical connection               | Removable screw terminals 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16 control<br>Screw terminal 35...50 mm <sup>2</sup> AWG 2...AWG 1 line side<br>Screw terminal 50 mm <sup>2</sup> AWG 1 motor                                                                                                                                                                                                                                                                                                               |
| Connector type                      | RJ45 Ethernet/Modbus TCP on the remote graphic terminal<br>RJ45 Modbus serial on the remote graphic terminal                                                                                                                                                                                                                                                                                                                                                                                                 |
| Physical interface                  | 2-wire RS 485 Modbus serial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                           |                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmission frame        | RTU Modbus serial                                                                                                                                                                                                                                                                                                                                    |
| Transmission rate         | 10/100 Mbit/s Ethernet IP/Modbus TCP<br>4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial                                                                                                                                                                                                                                                                    |
| Exchange mode             | Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP                                                                                                                                                                                                                                                                                        |
| Data format               | 8 bits, configurable odd, even or no parity Modbus serial                                                                                                                                                                                                                                                                                            |
| Type of polarization      | No impedance Modbus serial                                                                                                                                                                                                                                                                                                                           |
| Number of addresses       | 1...247 Modbus serial                                                                                                                                                                                                                                                                                                                                |
| Method of access          | Slave Modbus TCP                                                                                                                                                                                                                                                                                                                                     |
| Supply                    | Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 % <= 10 mA overload and short-circuit protection<br>External supply for digital inputs 24 V DC 19...30 V <= 1.25 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          | 3 LEDs local diagnostic<br>3 LEDs dual colour embedded communication status<br>4 LEDs dual colour communication module status<br>1 LED red presence of voltage                                                                                                                                                                                       |
| Width                     | 8.9 in (226 mm)                                                                                                                                                                                                                                                                                                                                      |
| Height                    | 26.5 in (673 mm)                                                                                                                                                                                                                                                                                                                                     |
| Depth                     | 10.67 in (271 mm)                                                                                                                                                                                                                                                                                                                                    |
| Product weight            | 63.27 lb(US) (28.7 kg)                                                                                                                                                                                                                                                                                                                               |
| Analogue input number     | 3                                                                                                                                                                                                                                                                                                                                                    |
| Analogue input type       | Software-configurable voltage AI1, AI2, AI3 0...10 V DC 30 kOhm 12 bits<br>Software-configurable current AI1, AI2, AI3 0...20 mA/4...20 mA 250 Ohm 12 bits                                                                                                                                                                                           |
| Discrete input number     | 8                                                                                                                                                                                                                                                                                                                                                    |
| Discrete input type       | Programmable DI1...DI6 24 V DC 3.5 kOhm<br>Programmable as pulse input DI5, DI6 0...30 kHz 24 V DC<br>Safe torque off STOA, STOB 24 V DC > 2.2 kOhm                                                                                                                                                                                                  |
| Input compatibility       | Level 1 PLC EN/IEC 61131-2 DI1...DI6 discrete input<br>Level 1 PLC IEC 65A-68 DI5, DI6 discrete input<br>Level 1 PLC EN/IEC 61131-2 STOA, STOB discrete input                                                                                                                                                                                        |
| Discrete input logic      | Positive logic (source) DI1...DI6 < 5 V > 11 V<br>Negative logic (sink) DI1...DI6 > 16 V < 10 V<br>Positive logic (source) DI5, DI6 < 0.6 V > 2.5 V<br>Positive logic (source) STOA, STOB < 5 V > 11 V                                                                                                                                               |
| Analogue output number    | 2                                                                                                                                                                                                                                                                                                                                                    |
| Analogue output type      | Software-configurable voltage AO1, AO2 0...10 V DC 470 Ohm 10 bits<br>Software-configurable current AO1, AO2 0...20 mA 10 bits                                                                                                                                                                                                                       |
| 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           | +/- 0.15 % of maximum value analog input AI1, AI2, AI3<br>+/- 0.2 % analog output AO1, AO2                                                                                                                                                                                                                                                           |
| 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              | 5 ms +/- 0.5 ms R1, R2, R3 relay output                                                                                                                                                                                                                                                                                                              |
| Minimum switching current | 5 mA 24 V DC R1, R2, R3 relay output                                                                                                                                                                                                                                                                                                                 |
| Maximum switching current | 3 A 250 V AC resistive 1 R1, R2, R3 relay output<br>3 A 30 V DC resistive 1 R1, R2, R3 relay output<br>2 A 250 V AC inductive 0.4 7 ms R1, R2, R3 relay output<br>2 A 30 V DC inductive 0.4 7 ms R1, R2, R3 relay output                                                                                                                             |
| Isolation                 | Between power and control terminals                                                                                                                                                                                                                                                                                                                  |
| Functionality             | Full                                                                                                                                                                                                                                                                                                                                                 |
| Specific application      | Utility                                                                                                                                                                                                                                                                                                                                              |
| IP degree of protection   | IP21                                                                                                                                                                                                                                                                                                                                                 |

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                     | 30...50 kW 380...440 V 3 phases<br>30...50 kW 480...500 V 3 phases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Motor starter type                         | Variable speed drive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation resistance                 | > 1 MOhm 500 V DC for 1 minute to earth                                                                                                                                                                                                                                                                                                                    |
| Noise level                           | 63.5 dB 86/188/EEC                                                                                                                                                                                                                                                                                                                                         |
| Power dissipation in W                | 121 W natural convection 380 V 4 kHz<br>943 W forced convection 380 V 4 kHz                                                                                                                                                                                                                                                                                |
| Volume of cooling air                 | 63402.43 Gal/hr(US) (240 m3/h)                                                                                                                                                                                                                                                                                                                             |
| Operating position                    | Vertical +/- 10 degree                                                                                                                                                                                                                                                                                                                                     |
| THDI                                  | <= 48 % from 80...100 % of load IEC 61000-3-12                                                                                                                                                                                                                                                                                                             |
| Electromagnetic compatibility         | Conducted radio-frequency immunity test level 3 IEC 61000-4-6<br>1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5<br>Electrical fast transient/burst immunity test level 4 IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 |
| 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                    | 1000...4800 m with current derating 1 % per 100 m<br><= 3280.84 ft (1000 m) without derating                                                                                                                                                                                                                                                               |
| 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 61800-3<br>EN/IEC 61800-3 environment 1 category C2<br>EN/IEC 61800-3 environment 2 category C3<br>UL 508C<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1                                                                                                                                                         |
| Product certifications                | ATEX INERIS<br>ATEX zone 2/22<br>CSA<br>TÜV                                                                                                                                                                                                                                                                                                                |

UL  
REACH  
DNV-GL

|         |    |
|---------|----|
| Marking | CE |
|---------|----|

### Ordering and shipping details

|                       |                             |
|-----------------------|-----------------------------|
| Category              | 22206 - ATV630 FRAMES 3 & 4 |
| Discount Schedule     | CP4E                        |
| GTIN                  | 00785901949589              |
| Nbr. of units in pkg. | 1                           |
| Package weight(Lbs)   | 78                          |
| Returnability         | Y                           |
| Country of origin     | IN                          |

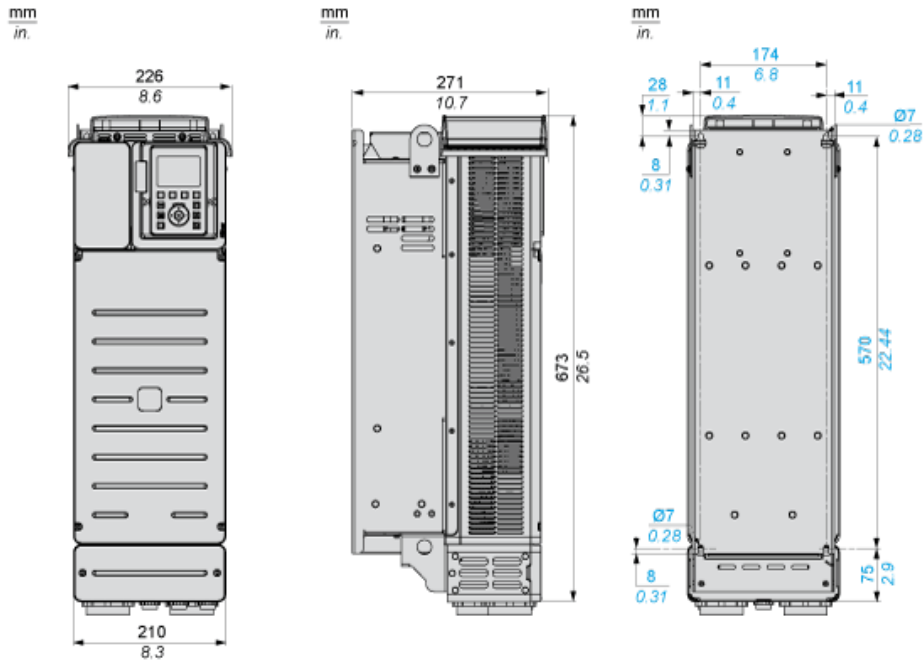
### Offer Sustainability

|                                  |                                                                                                                                       |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 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 not containing SVHC above the threshold<br><a href="#">Reference not containing SVHC above the threshold</a>                |
| Product environmental profile    | Available<br><a href="#">Product Environmental Profile</a>                                                                            |
| Product end of life instructions | Available<br><a href="#">End of Life Information</a>                                                                                  |
| California proposition 65        | WARNING: This product can expose you to chemicals including:                                                                          |
| ----- Substance 1                | Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm.      |
| ----- Substance 2                | Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm.                       |
| ----- More information           | For more information go to <a href="http://www.p65warnings.ca.gov">www.p65warnings.ca.gov</a>                                         |

Dimensions

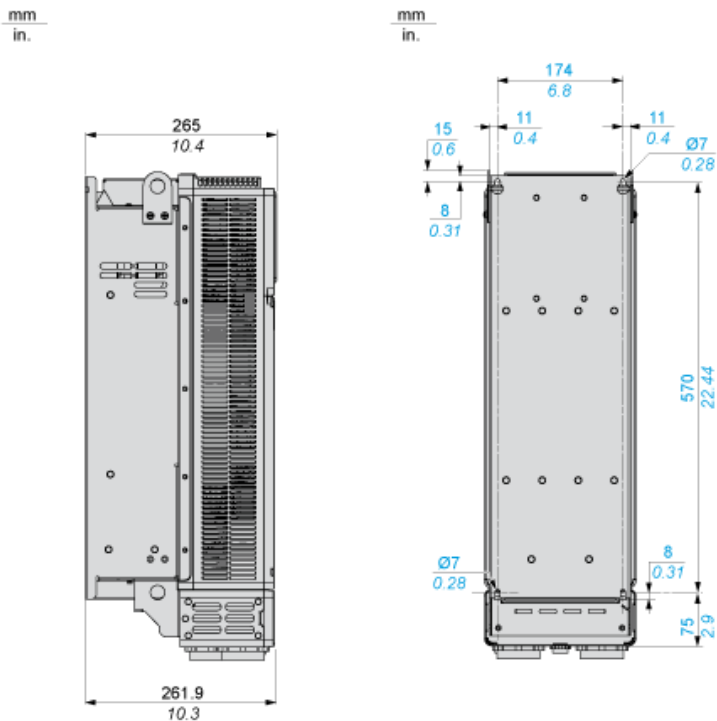
Drives with IP21 Top Cover

Front, Left and Rear Views

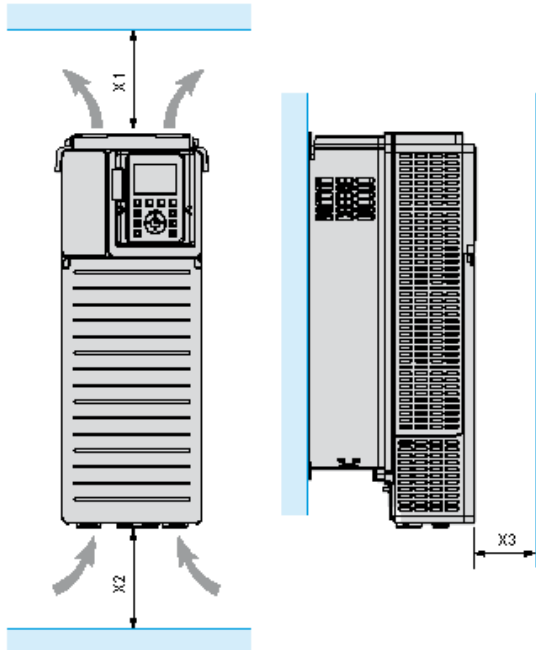


Drives Without IP21 Top Cover

Left and Rear Views



Clearances



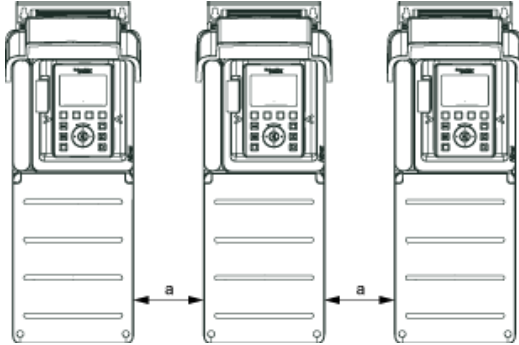
| X1                  | X2                  | X3                 |
|---------------------|---------------------|--------------------|
| ≥ 100 mm (3.94 in.) | ≥ 100 mm (3.94 in.) | ≥ 10 mm (0.39 in.) |

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Mounting Types

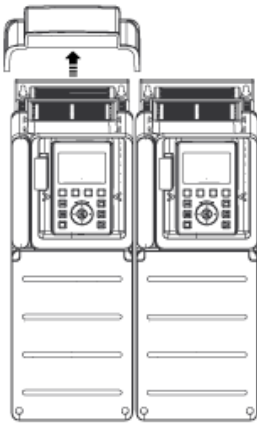
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Mounting Type A: Individual IP21

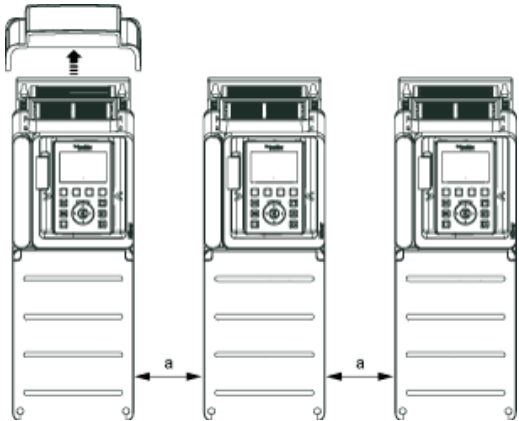


$a \geq 110 \text{ mm (4.33 in.)}$

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



Mounting Type C: Individual IP20

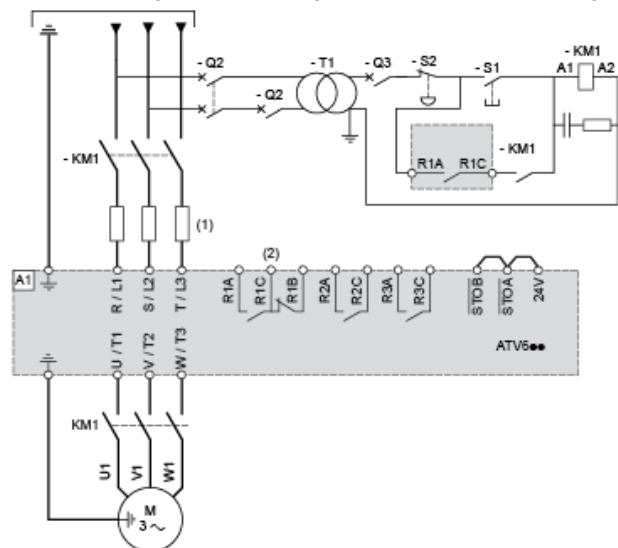


$a \geq 110 \text{ mm (4.33 in.)}$



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

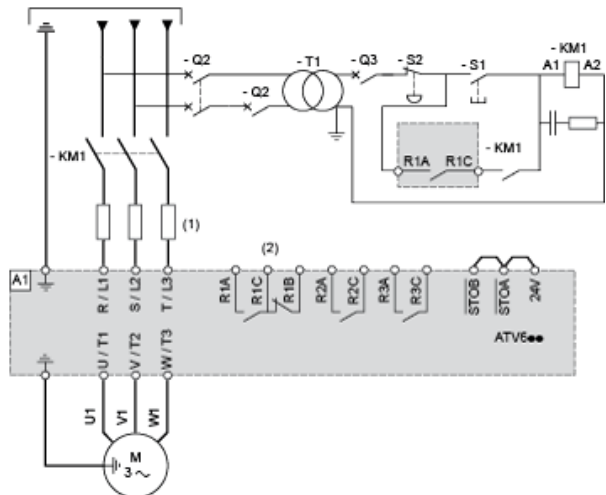
Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



- (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

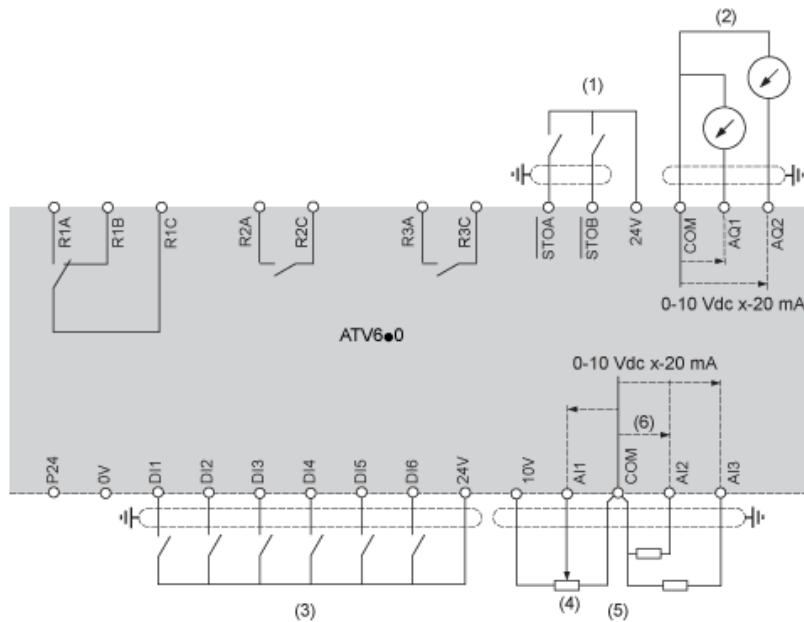
## Three-Phase Power Supply with Downstream Breaking via Contactor

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

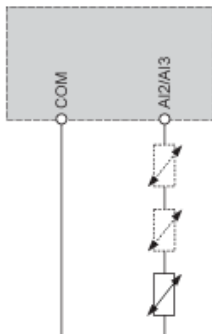
Control Block Wiring Diagram



- (1) Safe Torque Off
  - (2) Analog Output
  - (3) Digital Input
  - (4) Reference potentiometer
  - (5) Analog Input
- R1A, R1B, R1C 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.

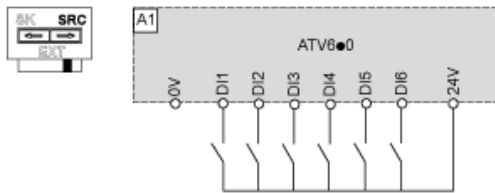


## Sink / Source Switch Configuration

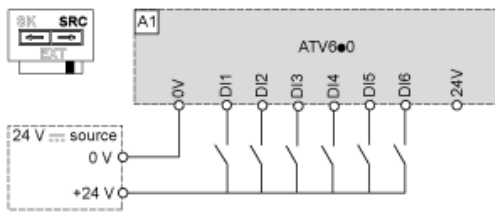
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

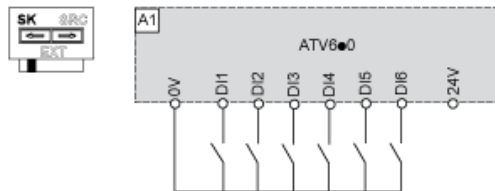
### Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



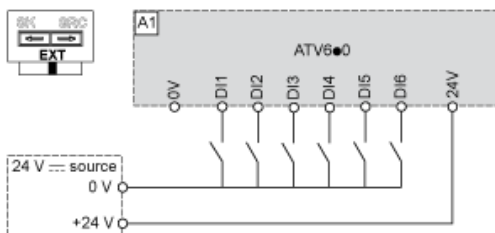
### Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



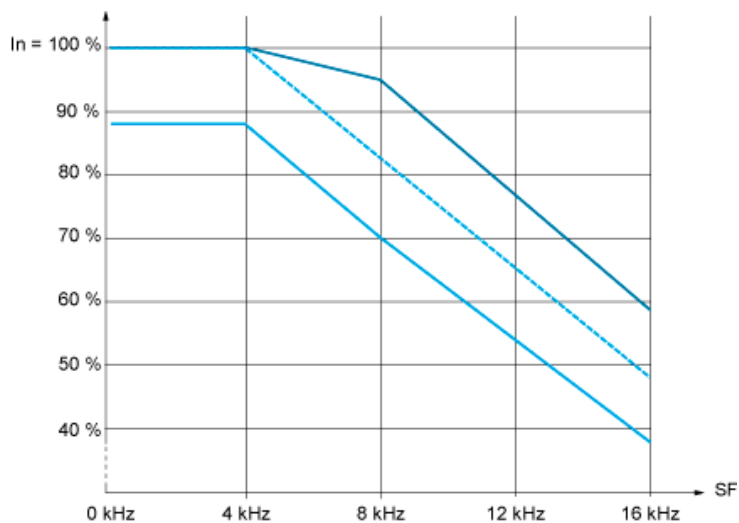
### Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



### 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