

# Product datasheet

Specifications



variable speed drive, Altivar Process  
ATV600, ATV630, 220kW, 350hp,  
380 to 480V, IP00

ATV630C22N4

## Main

|                                    |  |
|------------------------------------|--|
| Range Of Product                   | Altivar Process ATV600   |
| Product Or Component Type          | Variable speed drive   |
| Product Specific Application       | Process and utilities  |
| Device Short Name                  | ATV630   |
| Variant                            | Standard version   |
| Product Destination                | Asynchronous motors<br>Synchronous motors  |
| Emc Filter                         | Integrated with 50 m conforming to EN/IEC 61800-3 category C3  |
| Ip Degree Of Protection            | IP00 conforming to IEC 61800-5-1<br>IP00 conforming to IEC 60529<br>IP21 (with kit VW3A9112) conforming to IEC 61800-5-1<br>IP21 (with kit VW3A9112) conforming to IEC 60529 |
| [Us] Rated Supply Voltage          | 380...480 V  |
| Type Of Cooling                    | Forced convection  |
| Supply Frequency                   | 50...60 Hz - 5...5 %   |
| [Us] Rated Supply Voltage          | 380...480 V - 15...10 %  |
| Motor Power Kw                     | 160 kW (heavy duty)<br>220 kW (normal duty)  |
| Motor Power Hp                     | 350 hp normal duty<br>250 hp heavy duty  |
| Line Current                       | 397 A at 380 V (normal duty)<br>324 A at 480 V (normal duty)<br>296 A at 380 V (heavy duty)<br>246 A at 480 V (heavy duty)   |
| Prospective Line Isc               | 50 kA  |
| Apparent Power                     | 247 kVA at 480 V (normal duty)<br>187 kVA at 480 V (heavy duty)  |
| Continuous Output Current          | 302 A at 2.5 kHz for heavy duty<br>427 A at 2.5 kHz for normal 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...500 Hz   |
| Nominal Switching Frequency        | 2.5 kHz  |
| Switching Frequency                | 2.5...8 kHz with derating factor<br>2...8 kHz adjustable   |

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

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

## Complementary

|                                     |  |
|-------------------------------------|--|
| Mounting Mode                       | Wall mount   |
| Maximum Transient Current           | 453 A during 60 s (heavy duty)<br>470 A during 60 s (normal duty)  |
| Network Number Of Phases            | 3 phases   |
| Discrete Output Number              | 0  |
| Discrete Output Type                | Relay outputs R1A, R1B, R1C 250 V AC 3000 mA<br>Relay outputs R1A, R1B, R1C 30 V DC 3000 mA<br>Relay outputs R2A, R2C 250 V AC 5000 mA<br>Relay outputs R2A, R2C 30 V DC 5000 mA<br>Relay outputs R3A, R3C 250 V AC 5000 mA<br>Relay outputs R3A, R3C 30 V DC 5000 mA  |
| Output Voltage                      | <= power supply voltage  |
| Permissible Temporary Current Boost | 1.1 x I <sub>n</sub> during 60 s (normal duty)<br>1.5 x I <sub>n</sub> during 60 s (heavy duty)  |
| Motor Slip Compensation             | Adjustable<br>Automatic whatever the load<br>Not available in permanent magnet motor law<br>Can be suppressed  |
| Acceleration And Deceleration Ramps | Linear adjustable separately from 0.01...9999 s  |
| Physical Interface                  | Ethernet<br>2-wire RS 485  |
| Braking To Standstill               | By DC injection  |
| Protection Type                     | Thermal protection: motor<br>Safe torque off: motor<br>Motor phase break: motor<br>Thermal protection: drive<br>Safe torque off: drive<br>Overheating: drive<br>Overcurrent between output phases and earth: drive<br>Overload of output voltage: drive<br>Short-circuit protection: drive<br>Motor phase break: drive<br>Overvoltages on the DC bus: drive<br>Line supply overvoltage: drive<br>Line supply undervoltage: drive<br>Line supply phase loss: drive<br>Overspeed: drive<br>Break on the control circuit: drive |
| Transmission Rate                   | 10, 100 Mbits<br>4800 bps, 9600 bps, 19200 bps, 38.4 Kbps  |
| Frequency Resolution                | Display unit: 0.1 Hz<br>Analog input: 0.012/50 Hz  |

|                        |  |
|------------------------|--|
| Transmission Frame     | RTU  |
| Electrical Connection  | Control: removable screw terminals 0.5...1.5 mm²/AWG 20...AWG 16<br>Line side: screw terminal 2 x 150 mm²/2 x 350 kcmil<br>Motor: screw terminal 2 x 150 mm²/2 x 350 kcmil   |
| Connector Type         | RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP<br>RJ45 (on the remote graphic terminal) for Modbus serial   |
| Data Format            | 8 bits, configurable odd, even or no parity  |
| Type Of Polarization   | No impedance   |
| Exchange Mode          | Half duplex, full duplex, autonegotiation Ethernet/Modbus TCP  |
| Number Of Addresses    | 1...247 for Modbus serial  |
| Method Of Access       | Slave Modbus TCP   |
| Supply                 | External supply for digital inputs: 24 V DC (19...30 V), <1.25 mA, protection type: overload and short-circuit protection<br>Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection<br>Internal supply for digital inputs and STO: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection |
| Local Signalling       | 3 LEDs for local diagnostic<br>3 LEDs (dual colour) for embedded communication status<br>4 LEDs (dual colour) for communication module status<br>1 LED (red) for presence of voltage   |
| Width                  | 440 mm   |
| Height                 | 1195 mm  |
| Depth                  | 380 mm   |
| Net Weight             | 172 kg   |
| Analogue Input Number  | 3  |
| Analogue Input Type    | AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 31.5 kOhm, resolution 12 bits<br>AI1, AI2, AI3 software-configurable current: 0...20 mA, impedance: 250 Ohm, resolution 12 bits<br>AI2 voltage analog input: - 10...10 V DC, impedance: 31.5 kOhm, resolution 12 bits   |
| Discrete Input Number  | 8  |
| Discrete Input Type    | DI7, DI8 programmable as pulse input: 0...30 kHz, 24 V DC (<= 30 V)  |
| Input Compatibility    | DI1...DI6: discrete input level 1 PLC conforming to EN/IEC 61131-2<br>DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68<br>STOA, STOB: discrete input level 1 PLC conforming to EN/IEC 61131-2   |
| Discrete Input Logic   | Positive logic (source) (DI1...DI8), < 5 V (state 0), > 11 V (state 1)<br>Negative logic (sink) (DI1...DI8), > 16 V (state 0), < 10 V (state 1)  |
| Analogue Output Number | 2  |
| Analogue Output Type   | Software-configurable voltage AQ1, AQ2: 0...10 V DC impedance 470 Ohm, resolution 10 bits<br>Software-configurable current AQ1, AQ2: 0...20 mA, resolution 10 bits<br>Software-configurable current DQ-, DQ+: 30 V DC<br>Software-configurable current DQ-, DQ+: 100 mA  |
| Sampling Duration      | 2 ms +/- 0.5 ms (DI1...DI4) - discrete input<br>5 ms +/- 1 ms (DI5, DI6) - discrete input<br>5 ms +/- 0.1 ms (AI1, AI2, AI3) - analog input<br>10 ms +/- 1 ms (AO1) - analog output  |
| Accuracy               | +/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input<br>+/- 1 % AO1, AO2 for a temperature variation 60 °C analog output   |
| Linearity Error        | AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input<br>AO1, AO2: +/- 0.2 % for analog output   |
| Relay Output Number    | 3  |

|  |  |
|--|--|
| Relay Output Type                          | Configurable relay logic R1: fault relay NO/NC electrical durability 100000 cycles<br>Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles<br>Configurable relay logic R3: sequence relay NO electrical durability 100000 cycles   |
| Refresh Time                               | Relay output (R1, R2, R3): 5 ms (+/- 0.5 ms)   |
| Minimum Switching Current                  | Relay output R1, R2, R3: 5 mA at 24 V DC   |
| Maximum Switching Current                  | Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 250 V AC<br>Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC<br>Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC<br>Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 30 V DC   |
| Isolation                                  | Between power and control terminals  |
| Maximum Output Frequency                   | 500 kHz  |
| Maximum Input Current                      | 397.0 A  |
| Variable Speed Drive Application Selection | Building - HVAC compressor centrifugal<br>Food and beverage processing other application<br>Mining mineral and metal fan<br>Mining mineral and metal pump<br>Oil and gas fan<br>Water and waste water other application<br>Building - HVAC screw compressor<br>Food and beverage processing pump<br>Food and beverage processing fan<br>Food and beverage processing atomization<br>Oil and gas electro submersible pump (ESP)<br>Oil and gas water injection pump<br>Oil and gas jet fuel pump<br>Oil and gas compressor for refinery<br>Water and waste water centrifuge pump<br>Water and waste water positive displacement pump<br>Water and waste water electro submersible pump (ESP)<br>Water and waste water screw pump<br>Water and waste water lobe compressor<br>Water and waste water screw compressor<br>Water and waste water compressor centrifugal<br>Water and waste water fan<br>Water and waste water conveyor<br>Water and waste water mixer |
| Motor Power Range Ac-3                     | 110...220 kW at 380...440 V 3 phases<br>110...220 kW at 480...500 V 3 phases   |
| Quantity Per Set                           | 1  |
| Enclosure Mounting                         | Wall mounted   |

## Environment

|                               |  |
|-------------------------------|--|
| Insulation Resistance         | > 1 MOhm 500 V DC for 1 minute to earth  |
| Noise Level                   | 66 dB conforming to 86/188/EEC   |
| Power Dissipation In W        | Forced convection: 5030 W<br>Natural convection: 451 W at 380 V, switching frequency 2.5 kHz   |
| Volume Of Cooling Air         | 860 m3/h   |
| Operating Position            | Vertical +/- 10 degree   |
| Maximum Thdi                  | <48 % full load conforming to IEC 61000-3-12   |
| Electromagnetic Compatibility | Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3<br>Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4<br>1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5<br>Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 |
| Pollution Degree              | 2 conforming to EN/IEC 61800-5-1   |
| Vibration Resistance          | 1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6<br>1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6  |

|                                       |  |
|---------------------------------------|--|
| Shock Resistance                      | 15 gn for 11 ms conforming to IEC 60068-2-27   |
| Relative Humidity                     | 5...95 % without condensation conforming to IEC 60068-2-3  |
| Ambient Air Temperature For Operation | -10...40 °C (without derating)<br>40...60 °C (with derating factor)  |
| Ambient Air Temperature For Storage   | -25...70 °C  |
| Operating Altitude                    | <= 1000 m without derating<br>1000...3000 m with current derating 1 % per 100 m  |
| Product Certifications                | TÜV<br>CSA<br>UL   |
| Marking                               | CE   |
| Standards                             | UL 508C<br>EN/IEC 61800-3<br>EN/IEC 61800-3 environment 1 category C2<br>EN/IEC 61800-3 environment 2 category C3<br>EN/IEC 61800-5-1<br>IEC 61000-3-12<br>IEC 60721-3<br>IEC 61508<br>IEC 13849-1 |
| Overvoltage Category                  | III  |
| Regulation Loop                       | Adjustable PID regulator   |
| Noise Level                           | 73 dB  |
| Pollution Degree                      | 2  |

## Packing Units

|                              |          |
|------------------------------|----------|
| Unit Type Of Package 1       | PCE      |
| Number Of Units In Package 1 | 1        |
| Package 1 Height             | 68.0 cm  |
| Package 1 Width              | 60.0 cm  |
| Package 1 Length             | 140.0 cm |
| Package 1 Weight             | 180.0 kg |

## Sustainability


**Green Premium™ label** is Schneider Electric’s commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.


[Learn more about Green Premium >](#)


[Guide to assess a product’s sustainability >](#)

## Resource performance

 Upgraded Components Available

## Well-being performance

 Mercury Free

 Rohs Exemption Information [Yes](#)

Reach Regulation [REACH Declaration](#)

Eu Rohs Directive Pro-active compliance (Product out of EU RoHS legal scope)

China Rohs Regulation [China RoHS declaration](#)

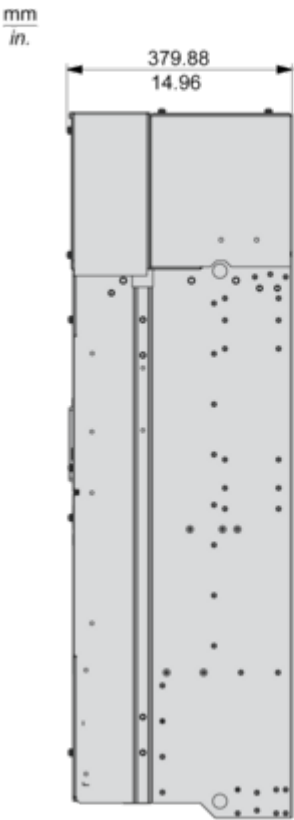
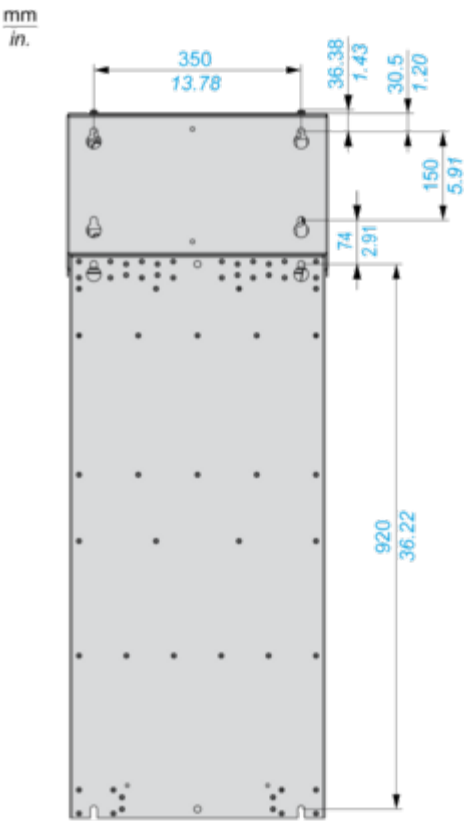
Weee The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

Dimensions Drawings

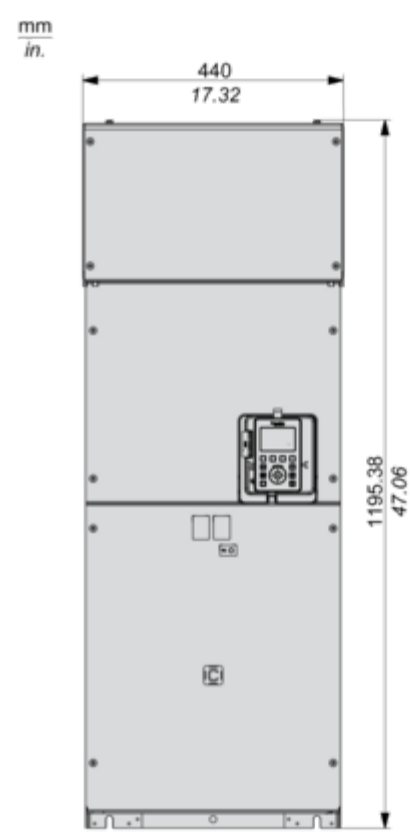
Dimensions

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Rear, Right and Front Views

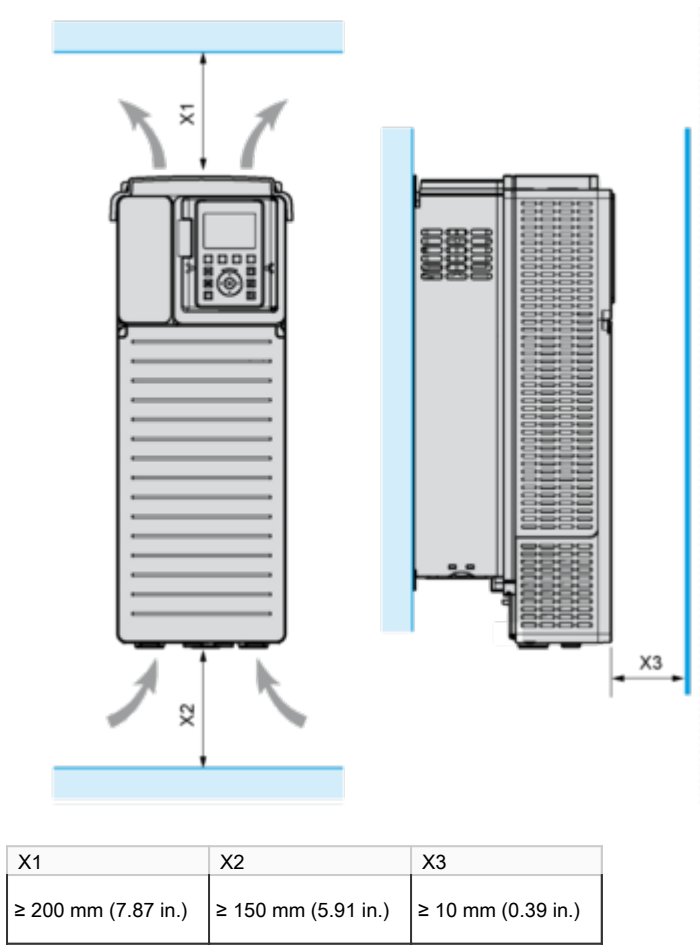






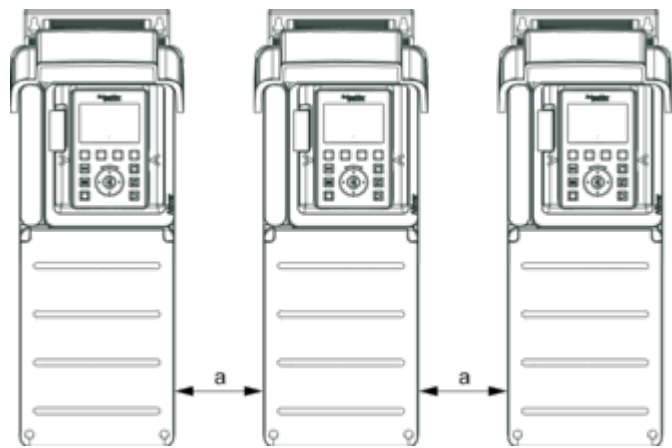
Mounting and Clearance

Clearances



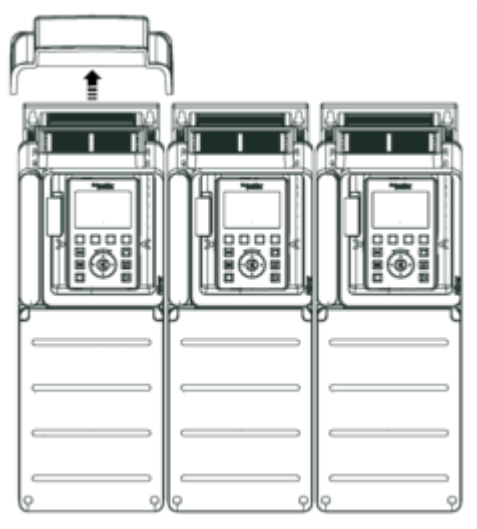
Mounting Types

Mounting Type A: Individual IP21

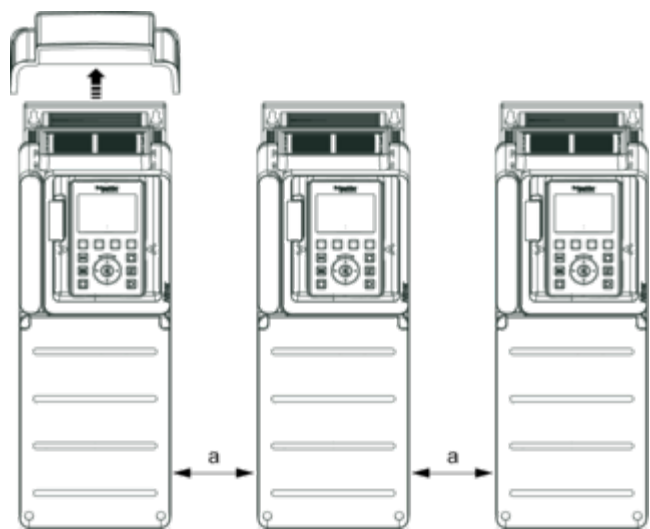


$a \geq 0$

Mounting Type B: Side by Side IP20



Mounting Type C: Individual IP20

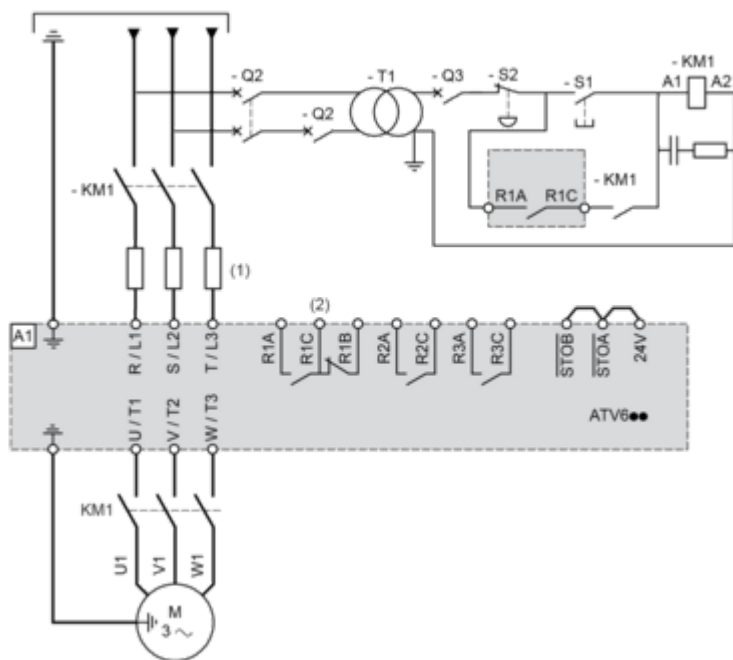


$a \geq 0$

## Connections and Schema

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

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



(1) Line choke if used

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

**A1 : Drive**

**KM1** : Line Contactor

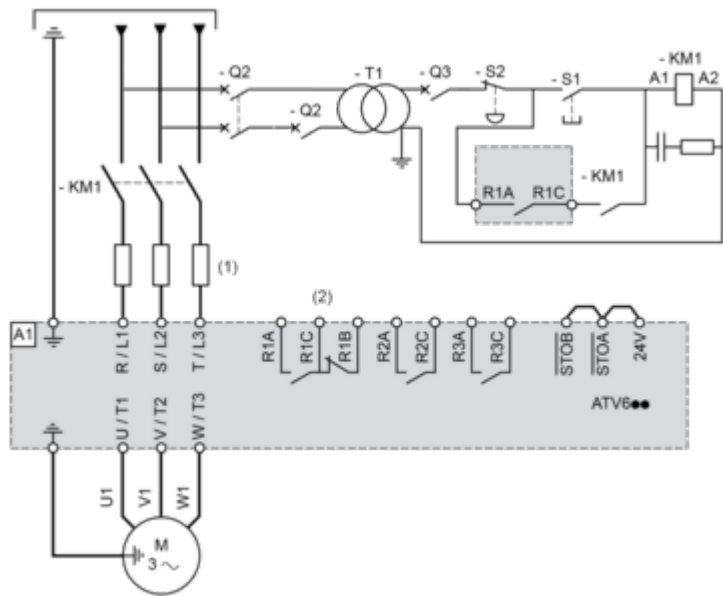
**Q2, Q3 : Circuit breakers**

**S1, S2** : Pushbuttons

**T1** : Transformer for control part

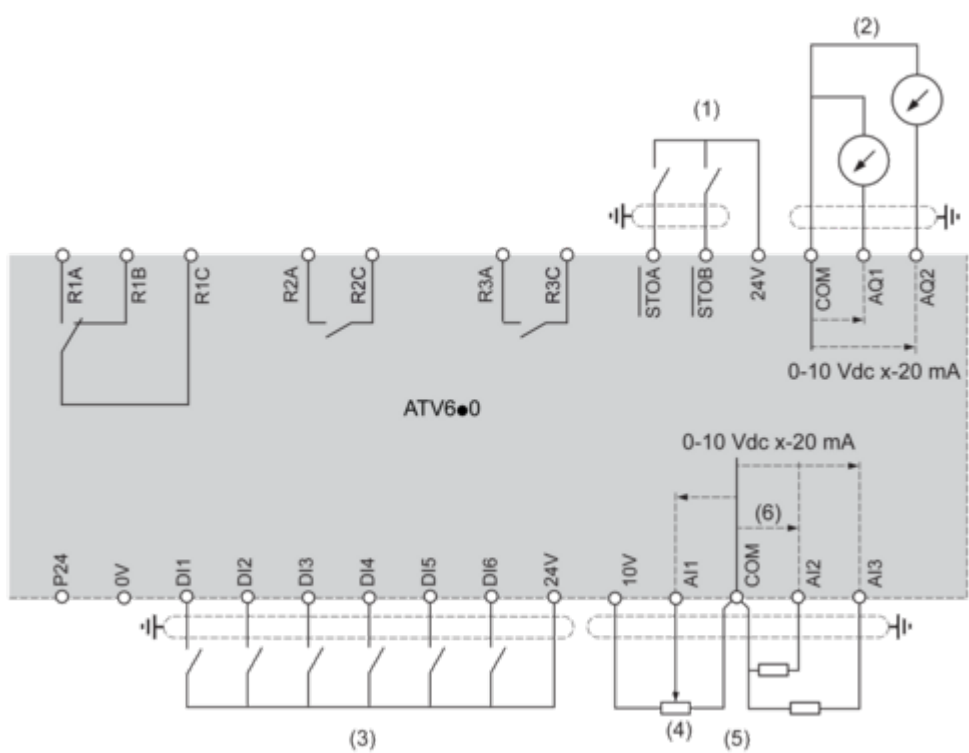
Three-Phase Power Supply with Downstream Breaking via Contactor

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



- (1) Line choke if used
- (2) Use relay R1 set to operating state Fault to switch Off the product once an error is detected.
- A1 : Drive
- KM1 : Contactor

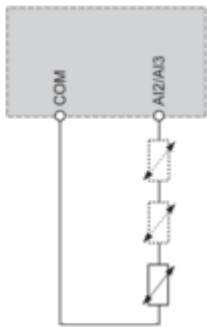
Control Block Wiring Diagram



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

Sensor Connection

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

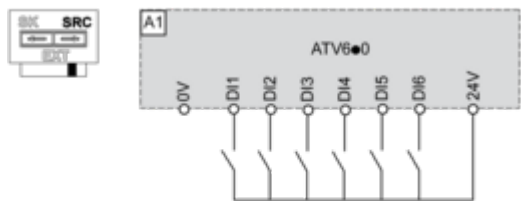


Sink / Source Switch Configuration

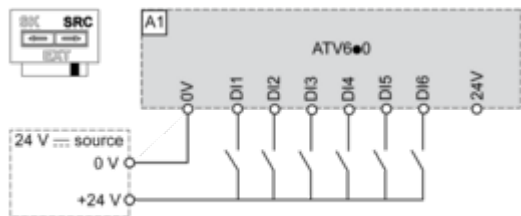
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

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

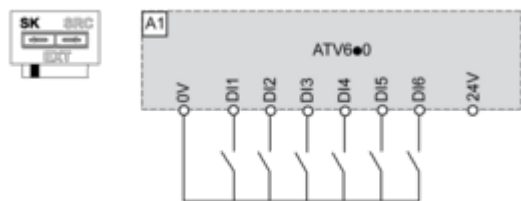
Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



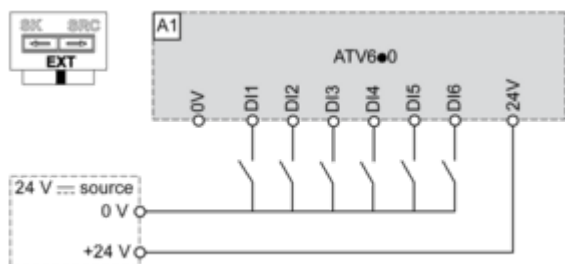
Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



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





Performance Curves

Derating Curves

