

# Product data sheet

Specifications



## variable speed drive, Altivar Process ATV900, ATV930, 45kW, 200 to 240V, with braking unit, IP21

ATV930D45M3

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

### Main

<b>Range of Product</b>	Altivar Process ATV900
<b>Product Specific Application</b>	Process for industrial
<b>Product or Component Type</b>	Variable speed drive
<b>Variant</b>	Standard version With braking chopper
<b>Device Application</b>	Industrial Application
<b>Product destination</b>	Asynchronous motors Synchronous motors
<b>Phase</b>	3 phase
<b>Mounting Mode</b>	Wall mount
<b>Continuous output current</b>	176 A 2.5 kHz normal duty 149 A 2.5 kHz heavy duty
<b>Communication Port Protocol</b>	Modbus TCP EtherNet/IP Modbus serial
<b>option module</b>	Slot A communication module Profibus DP V1 Slot A communication module PROFINET Slot A communication module DeviceNet Slot A communication module EtherCAT Slot A communication module CANopen daisy chain RJ45 Slot A communication module CANopen SUB-D 9 Slot A communication module CANopen screw terminals Slot A/slot B/slot C digital and analog I/O extension module Slot A/slot B/slot C output relay extension module Slot B 5/12 V digital encoder interface module Slot B analog encoder interface module Slot B resolver encoder interface module communication module Ethernet Powerlink
<b>[Us] rated supply voltage</b>	200...240 V - 15...10 %
<b>[Us] rated supply voltage</b>	200...240 V
<b>Relative symmetric mains voltage tolerance</b>	10 %
<b>Relative symmetric network frequency tolerance</b>	5 %
<b>nominal output current</b>	176.0 A
<b>Motor power kW</b>	45.0 kW normal duty 37.0 kW heavy duty
<b>EMC filter</b>	Integrated With EMC plate option
<b>IP degree of protection</b>	IP21
<b>Degree of protection</b>	UL type 1

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

# Complementary

<b>Electrical connection</b>	Control screw terminal 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16 Line side screw terminal 120 mm <sup>2</sup> AWG 4/0...250 kcmil Motor screw terminal 120 mm <sup>2</sup> 250 kcmil DC bus screw terminal 120 mm <sup>2</sup> AWG 4/0...250 kcmil
<b>Transmission Rate</b>	10/100 Mbit/s Ethernet IP/Modbus TCP 4.8, 9.6, 19.2, 38.4 kbit/s Modbus serial
<b>Exchange mode</b>	Half duplex, full duplex, autonegotiation Ethernet IP/Modbus TCP
<b>Data format</b>	8 bits, configurable odd, even or no parity Modbus serial
<b>Type of polarization</b>	No impedance Modbus serial
<b>Number of addresses</b>	1...247 Modbus serial
<b>Supply</b>	External supply for digital inputs 24 V DC 19...30 V), <1.25 mA overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, <10 mA overload and short-circuit protection Internal supply for digital inputs and STO 24 V DC 21...27 V), <200 mA overload and short-circuit protection
<b>Local signalling</b>	Local diagnostic: 3 LED (mono/dual colour) Embedded communication status: 5 LED (dual colour) Communication module status: 2 LED (dual colour) Presence of voltage: 1 LED (red)
<b>Input compatibility</b>	DI1...DI8 discrete input level 1 PLC IEC 61131-2 DI7, DI8 pulse input level 1 PLC IEC 65A-68 STOA, STOB discrete input level 1 PLC IEC 61131-2
<b>Discrete input logic</b>	Positive logic (source) DI1...DI8), < 5 V, > 11 V Negative logic (sink) DI1...DI8), > 16 V, < 10 V Positive logic (source) DI7, DI8), < 0.6 V, > 2.5 V Positive logic (source) STOA, STOB), < 5 V, > 11 V
<b>Sampling duration</b>	2 ms +/- 0.5 ms DI1...DI8) - discrete input 5 ms +/- 1 ms DI7, DI8) - pulse input 1 ms +/- 1 ms AI1, AI2, AI3) - analog input 5 ms +/- 1 ms AQ1, AQ2) - analog output
<b>Accuracy</b>	+/- 0.6 % AI1, AI2, AI3 for a temperature variation 60 °C analog input +/- 1 % AQ1, AQ2 for a temperature variation 60 °C analog output
<b>Linearity error</b>	AI1, AI2, AI3 +/- 0.15 % of maximum value analog input AQ1, AQ2 +/- 0.2 % analog output
<b>Refresh time</b>	Relay output R1, R2, R3)5 ms +/- 0.5 ms)
<b>Isolation</b>	Between power and control terminals
<b>Discrete input number</b>	10
<b>Discrete input type</b>	DI1...DI8 programmable, 24 V DC <= 30 V)3.5 kOhm DI7, DI8 programmable as pulse input 0...30 kHz, 24 V DC <= 30 V) STOA, STOB safe torque off, 24 V DC <= 30 V)> 2.2 kOhm
<b>Discrete input logic</b>	16 preset speeds
<b>Discrete output number</b>	2
<b>Discrete output type</b>	Logic output DQ+ 0...1 kHz <= 30 V DC 100 mA Programmable as pulse output DQ+ 0...30 kHz <= 30 V DC 20 mA Logic output DQ- 0...1 kHz <= 30 V DC 100 mA
<b>Analogue input number</b>	3
<b>Analogue input type</b>	AI1, AI2, AI3 software-configurable voltage 0...10 V DC 30 kOhm 12 bits AI1, AI2, AI3 software-configurable current 0...20 mA/4...20 mA 250 Ohm 12 bits
<b>Analogue output number</b>	2
<b>Analogue output type</b>	Software-configurable voltage AQ1, AQ2 0...10 V DC 470 Ohm 10 bits Software-configurable current AQ1, AQ2 0...20 mA 500 Ohm 10 bits
<b>Relay output number</b>	3

<b>Relay output type</b>	Configurable relay logic R1 fault relay NO/NC 100000 cycles Configurable relay logic R2 sequence relay NO 1000000 cycles Configurable relay logic R3 sequence relay NO 1000000 cycles
<b>Maximum switching current</b>	Relay output R1 resistive, cos phi = 1 3 A 250 V AC Relay output R1 resistive, cos phi = 1 3 A 30 V DC Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R1 inductive, cos phi = 0.4 7 ms 2 A 30 V DC Relay output R2, R3 resistive, cos phi = 1 5 A 250 V AC Relay output R2, R3 resistive, cos phi = 1 5 A 30 V DC Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 250 V AC Relay output R2, R3 inductive, cos phi = 0.4 7 ms 2 A 30 V DC
<b>Minimum switching current</b>	Relay output R1, R2, R3 5 mA 24 V DC
<b>Physical interface</b>	Ethernet 2-wire RS 485
<b>Connector Type</b>	2 RJ45 1 RJ45
<b>Method of access</b>	Slave Modbus TCP
<b>Transmission Rate</b>	10, 100 Mbits 4.8 kbps 9600 bit/s 19200 bit/s
<b>Transmission frame</b>	RTU
<b>Number of addresses</b>	1...247
<b>Data format</b>	8 bits, configurable odd, even or no parity
<b>Type of polarization</b>	No impedance
<b>4 quadrant operation possible</b>	True
<b>Asynchronous motor control profile</b>	Variable torque standard Optimized torque mode Constant torque standard
<b>Synchronous motor control profile</b>	Permanent magnet motor Synchronous reluctance motor
<b>Maximum output frequency</b>	599 Hz
<b>Acceleration and deceleration ramps</b>	Linear adjustable separately from 0.01...9999 s
<b>Motor slip compensation</b>	Can be suppressed Not available in permanent magnet motor law Automatic whatever the load Adjustable
<b>Switching frequency</b>	1...8 kHz adjustable 2.5...8 kHz with derating factor
<b>Nominal switching frequency</b>	2.5 kHz
<b>Braking to standstill</b>	By DC injection
<b>Brake chopper integrated</b>	True
<b>Line current</b>	155.1 A 200 V normal duty) 128.5 A 200 V heavy duty) 130.4 A 240 V normal duty) 108.5 A 240 V heavy duty)
<b>Maximum Input Current per Phase</b>	155.1 A
<b>Maximum output voltage</b>	240.0 V
<b>Apparent power</b>	54.2 kVA 240 V normal duty) 45.1 kVA 240 V heavy duty)
<b>Maximum transient current</b>	211.2 A 60 s normal duty) 223.5 A 60 s heavy duty)
<b>Network Frequency</b>	50-60 Hz

Prospective line I <sub>sc</sub>	50 kA
Base load current at high overload	149.0 A
Base load current at low overload	176.0 A
Power dissipation in W	Natural convection 175 W 200 V 2.5 kHz Forced convection 1367 W 200 V 2.5 kHz
With safety function Safely Limited Speed (SLS)	True
With safety function Safe brake management (SBC/SBT)	True
With safety function Safe Operating Stop (SOS)	False
With safety function Safe Position (SP)	False
With safety function Safe programmable logic	False
With safety function Safe Speed Monitor (SSM)	False
With safety function Safe Stop 1 (SS1)	True
With sft fct Safe Stop 2 (SS2)	False
With safety function Safe torque off (STO)	True
With safety function Safely Limited Position (SLP)	False
With safety function Safe Direction (SDI)	False
Protection type	Thermal protection motor Safe torque off motor Motor phase break motor Thermal protection drive Safe torque off drive Overheating drive Overcurrent between output phases and earth drive Overload of output voltage drive Short-circuit protection drive Motor phase break drive Overvoltages on the DC bus drive Line supply overvoltage drive Line supply undervoltage drive Line supply phase loss drive Overspeed drive Break on the control circuit drive
Quantity per Set	1
Width	11.4 in (290 mm)
Height	36.3 in (922 mm)
Depth	12.8 in (325.5 mm)
Net Weight	127.0 lb(US) (57.6 kg)

## Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	68.3 dB 86/188/EEC
Vibration resistance	1.5 mm peak to peak (f= 2...13 Hz) conforming to IEC 60068-2-6 1 gn (f= 13...200 Hz) conforming to IEC 60068-2-6
Shock resistance	15 gn 11 ms IEC 60068-2-27
Environmental characteristic	Chemical pollution resistance class 3C3 IEC 60721-3-3 Dust pollution resistance class 3S3 IEC 60721-3-3
Relative humidity	5...95 % without condensation IEC 60068-2-3
Ambient air temperature for operation	5...122 °F (-15...50 °C) (without derating) 122...140 °F (50...60 °C) (with derating factor)

<b>Operating altitude</b>	<= 3280.84 ft (1000 m) without derating 1000...4800 m with current derating 1 % per 100 m
<b>Operating position</b>	Vertical +/- 10 degree
<b>Product Certifications</b>	UL TÜV CSA
<b>Marking</b>	CE
<b>Standards</b>	UL 508C IEC 61800-3 IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
<b>Maximum THDI</b>	<48 % from 80...100 % of load IEC 61000-3-12
<b>Assembly style</b>	Enclosed
<b>Electromagnetic compatibility</b>	Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 61000-4-5 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6
<b>Environmental class (during operation)</b>	Class 3C3 according to IEC 60721-3-3 Class 3S3 according to IEC 60721-3-3
<b>Maximum acceleration under shock impact (during operation)</b>	150 m/s <sup>2</sup> at 11 ms
<b>Maximum acceleration under vibrational stress (during operation)</b>	10 m/s <sup>2</sup> at 13...200 Hz
<b>Maximum deflection under vibratory load (during operation)</b>	1.5 mm at 2...13 Hz
<b>Permitted relative humidity (during operation)</b>	Class 3K5 according to EN 60721-3
<b>Volume of cooling air</b>	77932.2 Gal/hr(US) (295 m3/h)
<b>Overvoltage category</b>	III
<b>Regulation loop</b>	Adjustable PID regulator
<b>Noise level</b>	68.3 dB
<b>Pollution degree</b>	2
<b>Ambient air transport temperature</b>	-40...158 °F (-40...70 °C)
<b>Ambient Air Temperature for Storage</b>	-40...158 °F (-40...70 °C)

## Ordering and shipping details

<b>Category</b>	US1CP4E22277
<b>Discount Schedule</b>	CP4E
<b>GTIN</b>	3606480883675
<b>Returnability</b>	Yes
<b>Country of origin</b>	IN

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Nbr. of units in pkg.</b>	1
<b>Package 1 Height</b>	18.110 in (46.000 cm)

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<b>Package 1 Width</b>	16.535 in (42.000 cm)
<b>Package 1 Length</b>	42.913 in (109.000 cm)
<b>Package weight(Lbs)</b>	154.324 lb(US) (70.000 kg)

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## Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

[Environmental Data explained >](#)

[How we assess product sustainability >](#)

### Environmental footprint

Carbon footprint (kg CO2 eq, Total Life cycle) **57158**

Environmental Disclosure [Product Environmental Profile](#)

## Use Better

### Materials and Substances

Packaging made with recycled cardboard **Yes**

Packaging without single use plastic **No**

[EU RoHS Directive](#) **Pro-active compliance (Product out of EU RoHS legal scope)**

SCIP Number **B8d5fdde-166b-4332-b5d0-afde1be95439**

REACH Regulation [REACH Declaration](#)

California proposition 65 **WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

### Energy efficiency

Product contributes to saved and avoided emissions **Yes**

## Use Again

### Repack and remanufacture

Circularity Profile [End of Life Information](#)

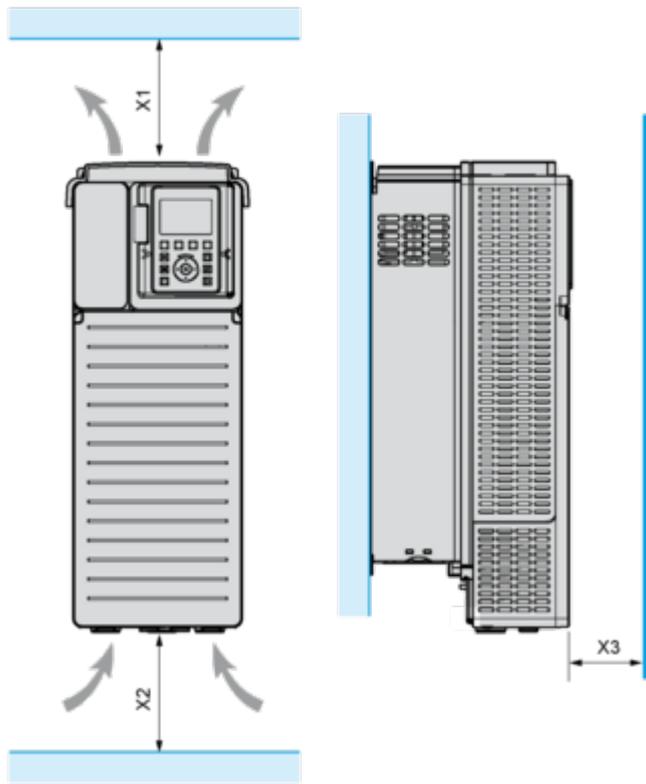
Take-back **No**

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



Mounting and Clearance

Clearances



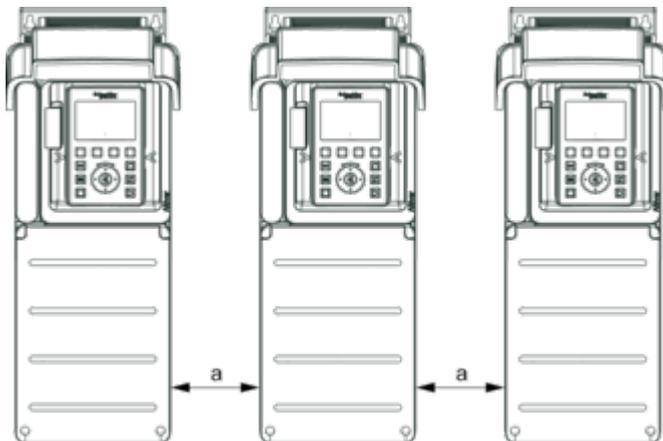
X1	X2	X3
≥ 100 mm (3.94 in.)	≥ 100 mm (3.94 in.)	≥ 10 mm (0.39 in.)

- 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**

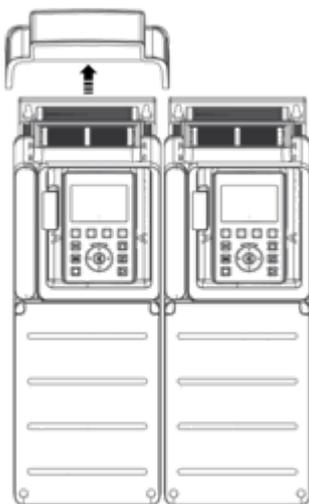
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**Mounting Type A: Individual IP21**

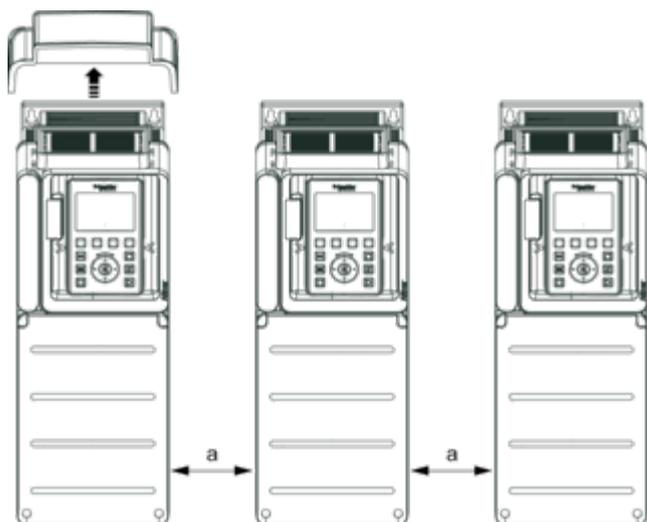


$a \geq 110 \text{ mm (4.33 in.)}$

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



**Mounting Type C: Individual IP20**

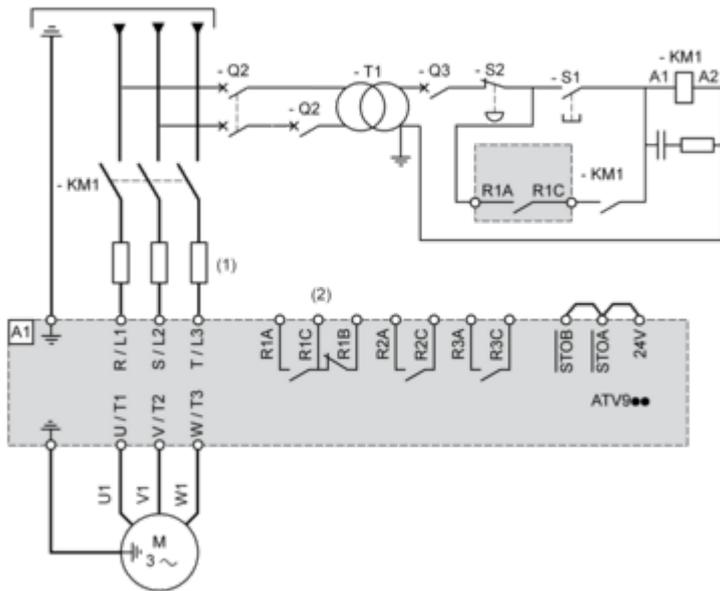


$a \geq 110 \text{ mm (4.33 in.)}$

Connections and Schema

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

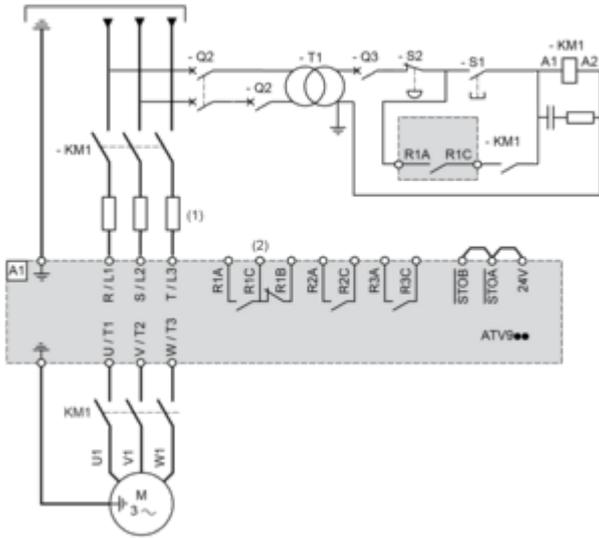
Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



- (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



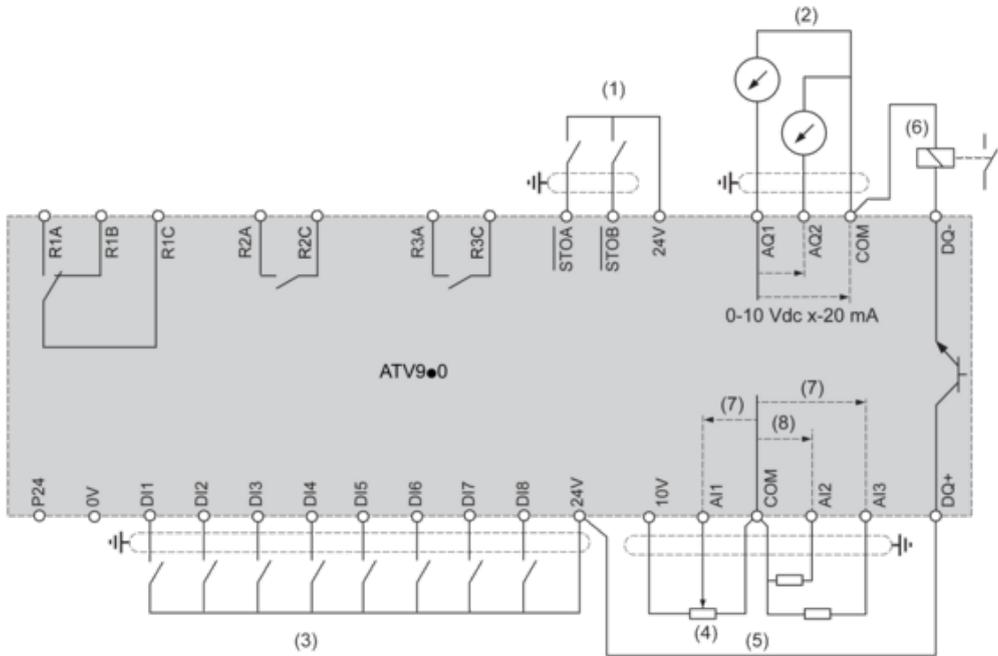
(1) Line choke if used

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

A1 : Drive

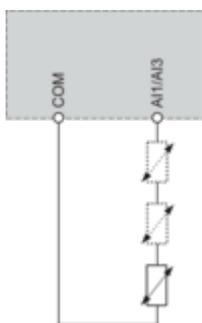
KM1 : Contactor

Control Block Wiring Diagram



- (1) Safe Torque Off
  - (2) Analog Output
  - (3) Digital Input
  - (4) Reference potentiometer
  - (5) Analog Input
  - (6) Digital Output
  - (7) 0-10 Vdc, x-20 mA
  - (8) 0-10 Vdc, -10 Vdc...+10 Vdc
- R1A, R1B, R1C** : Fault relay  
**R2A, R2C** : Sequence relay  
**R3A, R3C** : Sequence relay

Sensor Connection



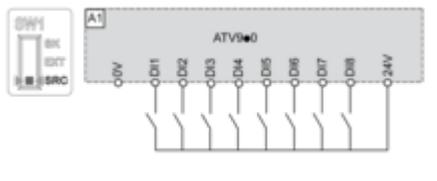
It is possible to connect either 1 or 3 sensors on terminals AI1 or AI3

**Sink / Source Switch Configuration**

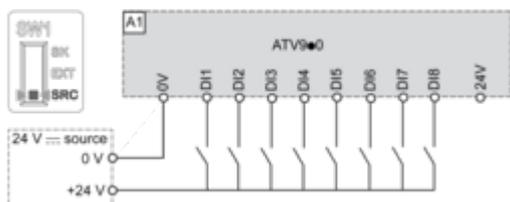
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

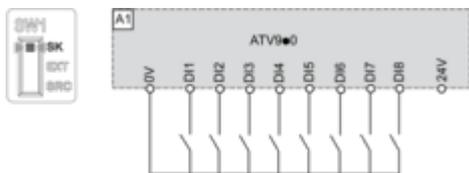
**Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs**



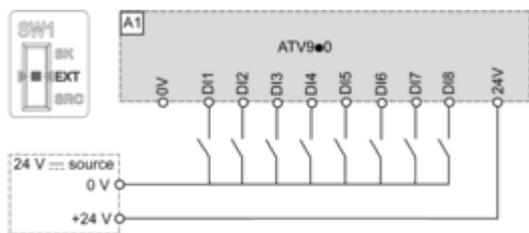
**Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs**



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



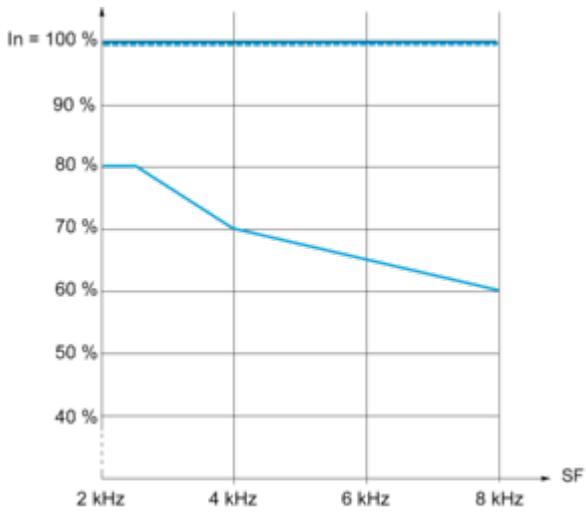
**Switch Set to EXT Position Using an External Power Supply for the DIs**



Performance Curves

Derating Curves

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— 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

Technical Illustration

Dimensions

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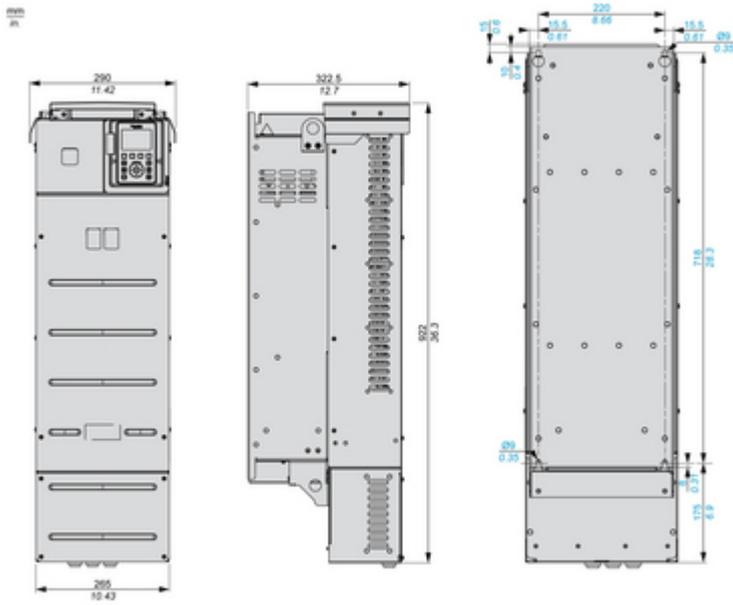


Image of product / Alternate images

Alternative

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