Product datasheet

Specifications





variable speed drive, Altivar Process ATV600, ATV630, cabinet Integration, IP20, 22kW, 380 to 480V

ATV630D22N4Z

Main

Iviaiii						
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 Synchronous motors					
EMC filter	Integrated with 10 m conforming to IEC 61800-3 category C2 Integrated with 50 m conforming to IEC 61800-3 category C3 With EMC plate option					
IP degree of protection	IP20 conforming to IEC 61800-5-1 IP20 conforming to IEC 60529					
[Us] rated supply voltage	380480 V					
Type of cooling	Forced convection					
Supply frequency	5060 Hz - 55 %					
[Us] rated supply voltage	380480 V - 1510 %					
Motor power kW	22 kW (normal duty) 18.5 kW (heavy duty)					
Motor power hp	30 hp normal duty 25 hp heavy duty					
Line current	39.6 A at 380 V (normal duty) 34.4 A at 480 V (normal duty) 34.1 A at 380 V (heavy duty) 29.9 A at 480 V (heavy duty)					
Prospective line Isc	50 kA					
Apparent power	28.6 kVA at 480 V (normal duty) 24.9 kVA at 480 V (heavy duty)					
Continuous output current	46.3 A at 4 kHz for normal duty 39.2 A at 4 kHz for heavy duty					
Asynchronous motor control profile	Optimized torque mode Constant torque standard Variable torque standard					
Synchronous motor control profile	Permanent magnet motor Synchronous reluctance motor					
Speed drive output frequency	0.1500 Hz					
Nominal switching frequency	4 kHz					
Switching frequency	212 kHz adjustable 412 kHz with derating factor					

Safety function	STO (safe torque off) SIL 3					
Discrete input logic	16 preset speeds					
Communication port protocol	Modbus TCP Ethernet Modbus serial					
Option card	Slot A: communication module, Profibus DP V1 Slot A: communication module, PROFINET Slot A: communication module, DeviceNet Slot A: communication module, Modbus TCP/EtherNet/IP 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: digital and analog I/O extension module Slot A: slot B: output relay extension module Slot A: communication module, Ethernet IP/Modbus TCP/MD-Link Communication module, BACnet MS/TP Communication module, Ethernet Powerlink					

Complementary

Complementary					
mounting mode	Cabinet mount				
Maximum transient current	50.9 A during 60 s (normal duty)				
	58.8 A during 60 s (heavy duty)				
Network number of phases	3 phases				
Discrete output number	0				
Discrete output type	Relay outputs R1A, R1B, R1C 250 V AC 3000 mA				
	Relay outputs R1A, R1B, R1C 30 V DC 3000 mA				
	Relay outputs R2A, R2C 250 V AC 5000 mA				
	Relay outputs R2A, R2C 30 V DC 5000 mA				
	Relay outputs R3A, R3C 250 V AC 5000 mA				
	Relay outputs R3A, R3C 30 V DC 5000 mA				
Output voltage	<= power supply voltage				
Permissible temporary current	1.1 x In during 60 s (normal duty)				
boost	1.5 x In during 60 s (heavy duty)				
Motor slip compensation	Adjustable				
	Not available in permanent magnet motor law				
	Automatic whatever the load				
	Can be suppressed				
Acceleration and deceleration ramps	Linear adjustable separately from 0.019999 s				
Physical interface	Ethernet				
	2-wire RS 485				
Braking to standstill	By DC injection				
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				
Transmission rate	10, 100 Mbits				
	4800 bps, 9600 bps, 19200 bps, 38.4 Kbps				
Frequency resolution	Display unit: 0.1 Hz				
· •	Analog input: 0.012/50 Hz				
	· · · · · · · · · · · · · · · · · · ·				

Transmission frame	RTU					
Electrical connection	Control: removable screw terminals 0.51.5 mm²/AWG 20AWG 16 Motor: screw terminal 16 mm²/AWG 6 Line side: screw terminal 1016 mm²/AWG 8AWG 6					
Connector type	RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP 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	1247 for Modbus serial					
Method of access	Slave Modbus TCP					
Supply	External supply for digital inputs: 24 V DC (1930 V), <1.25 mA, protection type: overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC +/- 5 %, <10 mA, protection type: overload and short-circuit protection Internal supply for digital inputs and STO: 24 V DC (2127 V), <200 mA, protection type: overload and short-circuit protection					
Local signalling	3 LEDs for local diagnostic 3 LEDs (dual colour) for embedded communication status 4 LEDs (dual colour) for communication module status 1 LED (red) for presence of voltage					
Width	195 mm					
Height	480 mm					
Depth	225.5 mm					
Net weight	13.7 kg					
Analogue input number	3					
Analogue input type	Al1, Al2, Al3 software-configurable voltage: 010 V DC, impedance: 31.5 kOhm, resolution 12 bits Al1, Al2, Al3 software-configurable current: 020 mA, impedance: 250 Ohm, resolution 12 bits Al2 voltage analog input: - 1010 V DC, impedance: 31.5 kOhm, resolution 12 bits					
Discrete input number	8					
Discrete input type	DI7, DI8 programmable as pulse input: 030 kHz, 24 V DC (<= 30 V)					
Input compatibility	DI1DI6: discrete input level 1 PLC conforming to IEC 61131-2 DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB: discrete input level 1 PLC conforming to IEC 61131-2					
Discrete input logic	Positive logic (source) (DI1DI8), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1DI8), > 16 V (state 0), < 10 V (state 1)					
Analogue output number	2					
Analogue output type	Software-configurable voltage AQ1, AQ2: 010 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AQ1, AQ2: 020 mA, resolution 10 bits Software-configurable current DQ-, DQ+: 30 V DC Software-configurable current DQ-, DQ+: 100 mA					
Sampling duration	2 ms +/- 0.5 ms (DI1DI4) - discrete input 5 ms +/- 1 ms (DI5, DI6) - discrete input 5 ms +/- 0.1 ms (AI1, AI2, AI3) - analog input 10 ms +/- 1 ms (AO1) - analog output					
Accuracy	+/- 0.6 % Al1, Al2, Al3 for a temperature variation 60 °C analog input +/- 1 % AO1, AO2 for a temperature variation 60 °C analog output					
Linearity error	AI1, AI2, AI3: +/- 0.15 % of maximum value for analog input 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 Configurable relay logic R2: sequence relay NO electrical durability 100000 cycles 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 Relay output R1, R2, R3 on resistive load, cos phi = 1: 3 A at 30 V DC Relay output R1, R2, R3 on inductive load, cos phi = 0.4 and L/R = 7 ms: 2 A at 250 V AC 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	39.6 A				
Variable speed drive application selection	Building - HVAC compressor centrifugal Food and beverage processing other application Mining mineral and metal fan Mining mineral and metal pump Oil and gas fan Water and waste water other application Building - HVAC screw compressor Food and beverage processing pump Food and beverage processing fan Food and beverage processing atomization Oil and gas electro submersible pump (ESP) Oil and gas water injection pump Oil and gas jet fuel pump Oil and gas jet fuel pump Water and waste water centrifuge pump Water and waste water positive displacement pump Water and waste water screw compressor Water and waste water screw compressor Water and waste water fan Water and waste water fan Water and waste water mixer				
Motor power range AC-3	1525 kW at 380440 V 3 phases 1525 kW at 480500 V 3 phases				
Quantity per set	1				
enclosure mounting	With heat sink				

Environment

Radiated radio-frequency electromagnetic field immunity test level 3 c IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 610. 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 610. Conducted radio-frequency immunity test level 3 conforming to IEC 610.						
Power dissipation in W Natural convection: 68 W at 380 V, switching frequency 4 kHz Forced convection: 505 W at 380 V, switching frequency 4 kHz Volume of cooling air 215 m3/h Operating position Vertical +/- 10 degree Maximum THDI 448 % from 80100 % of load conforming to IEC 61000-3-12 Electromagnetic compatibility Electrostatic discharge immunity test level 3 conforming to IEC 61000-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 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity t	Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth				
Forced convection: 505 W at 380 V, switching frequency 4 kHz Volume of cooling air 215 m3/h Operating position Vertical +/- 10 degree 48 % from 80100 % of load conforming to IEC 61000-3-12 Electromagnetic compatibility Electrostatic discharge immunity test level 3 conforming to IEC 61000 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 6100 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted r	Noise level	59.5 dB conforming to 86/188/EEC				
Operating position Vertical +/- 10 degree 48 % from 80100 % of load conforming to IEC 61000-3-12 Electromagnetic compatibility Electrostatic discharge immunity test level 3 conforming to IEC 61000 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 61.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 610 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 61000-5-1	Power dissipation in W					
Maximum THDI <48 % from 80100 % of load conforming to IEC 61000-3-12 Electromagnetic compatibility Electrostatic discharge immunity test level 3 conforming to IEC 61000 Radiated radio-frequency electromagnetic field immunity test level 3 co IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 6100 Logical fast transient/burst immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100	Volume of cooling air	215 m3/h				
Electromagnetic compatibility Electrostatic discharge immunity test level 3 conforming to IEC 61000 Radiated radio-frequency electromagnetic field immunity test level 3 c IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 6100 1.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 6100 Conducted radio-frequency immunity test level 3 conforming to IEC 6100 Pollution degree 2 conforming to IEC 61800-5-1	Operating position	Vertical +/- 10 degree				
Radiated radio-frequency electromagnetic field immunity test level 3 ct IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 conforming to IEC 610.2/50 µs - 8/20 µs surge immunity test level 3 conforming to IEC 610. Conducted radio-frequency immunity test level 3 conforming to IEC 6. Pollution degree 2 conforming to IEC 61800-5-1	Maximum THDI	<48 % from 80100 % of load conforming to IEC 61000-3-12				
<u> </u>	Electromagnetic compatibility	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				
Vibration resistance 1.5 mm peak to peak (f= 213 Hz) conforming to IEC 60068-2-6	Pollution degree	2 conforming to IEC 61800-5-1				
1 gn (f= 13200 Hz) conforming to IEC 60068-2-6	Vibration resistance					

15 gn for 11 ms conforming to IEC 60068-2-27					
595 % without condensation conforming to IEC 60068-2-3					
-1550 °C (without derating) 5060 °C (with derating factor)					
-4070 °C					
<= 1000 m without derating 10004800 m with current derating 1 % per 100 m					
ATEX zone 2/22 CSA TÜV DNV-GL UL ATEX INERIS					
CE					
UL 508C IEC 61800-3 IEC 61800-3 environment 1 category C2 EN/IEC 61800-3 environment 2 category C3 IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1					
With heat sink					
III					
Adjustable PID regulator					
59.5 dB					
2					

Packing Units

•	
Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	29.000 cm
Package 1 Width	24.000 cm
Package 1 Length	65.000 cm
Package 1 Weight	15.549 kg
Unit Type of Package 2	P06
Number of Units in Package 2	2
Package 2 Height	75.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	41.102 kg

Sustainability Green Premium*

Green PremiumTM **label** is Schneider Electric's commitment to delivering products with best-inclass environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO₂ 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 >





Transparency RoHS/REACh

Resource performance



Upgraded Components Available

Well-being performance



Mercury Free



Rohs Exemption Information

Yes

Certifications & Standards

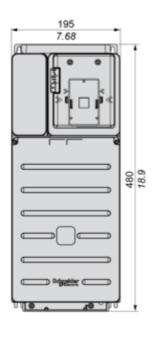
Reach Regulation	REACh Declaration				
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)				
China Rohs Regulation	China RoHS declaration				
Environmental Disclosure	Product Environmental Profile				
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins				
Circularity Profile	End of Life Information				

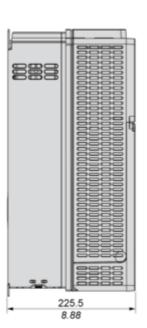
Dimensions Drawings

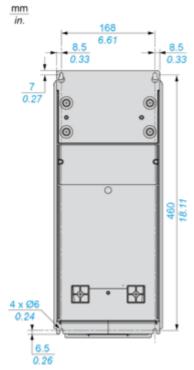
Dimensions

Front, Left and Rear Views





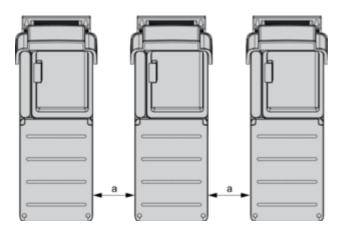




Mounting and Clearance

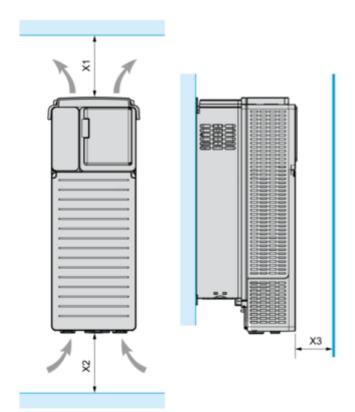
Mounting Types

Mounting Type A: Individual IP21 and IP55



Frame sizes 1, 2, 3, 3S and 5S: a \geq 100 mm (3.9 in.) Frame sizes 4, 5 and 6: a \geq 110 mm (4.33 in.)

Clearance

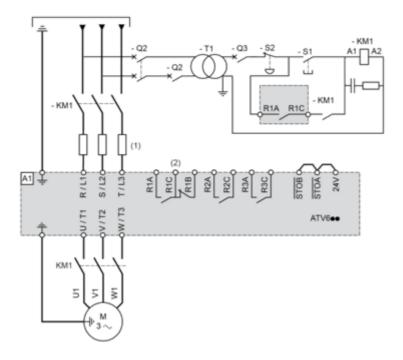


Frame Size	X1		X2		Х3	
	mm	in.	mm	in.	mm	in.
15	≥ 100	≥ 3.94	≥ 100	≥ 3.94	≥ 10	≥ 0.39
6	≥ 250	≥ 10	≥ 250	≥ 10	≥ 100	≥ 3.94

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.

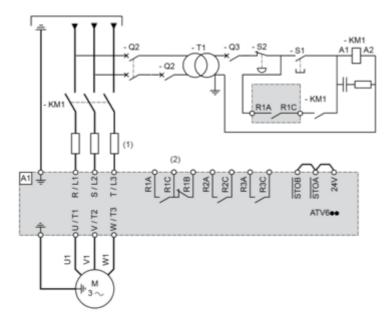
A1 : Drive

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



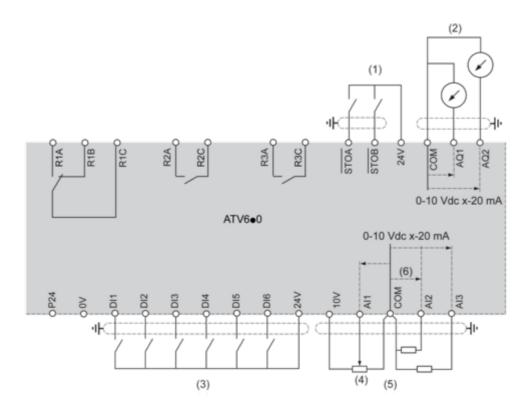
(1) Line choke if used

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

A1 : Drive KM1 : Contactor

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Control Block Wiring Diagram

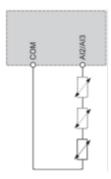


- (1) Safe Torque Off
- (2) Analog Output
- (3) Digital Input
- (4) Reference potentiometer
- (5) Analog Input

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 Al2 or Al3.

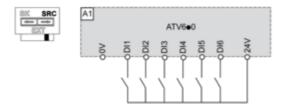


Sink / Source Switch Configuration

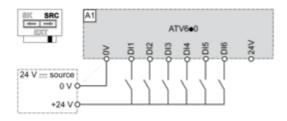
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

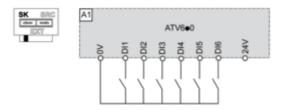
Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



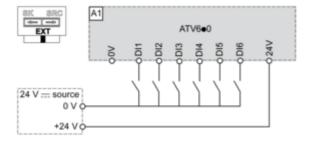
Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



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

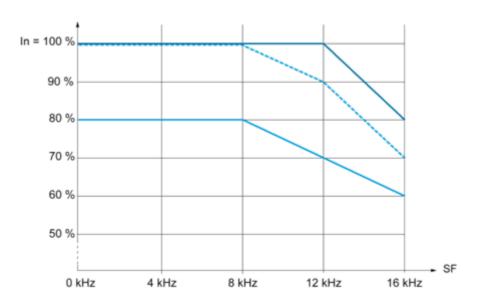


Switch Set to EXT Position Using an External Power Supply for the DIs



Performance Curves

Derating Curves



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