

# ATV630D55N4

variable speed drive ATV630, 55kW/75HP,  
380...480V, IP21/UL type 1

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



## 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 Synchronous motors
EMC filter	Integrated 492.13 ft (150 m) EN/IEC 61800-3 category C3
IP degree of protection	IP21IEC 61800-5-1 IP21IEC 60529
Degree of protection	UL type 1 UL 508C
Type of cooling	Forced convection
Supply frequency	50...60 Hz - 5...5 %
Phase	3 phase
[Us] rated supply voltage	380...480 V - 15...10 %
Motor power kW	55 kW normal duty) 45 kW heavy duty)
Maximum Horse Power Rating	75 hp normal duty 60 hp heavy duty
Line current	97.2 A 380 V normal duty) 84.2 A 480 V normal duty) 81.4 A 380 V heavy duty) 71.8 A 480 V heavy duty)
Prospective line I <sub>sc</sub>	50 kA
Apparent power	70 kVA 480 V normal duty) 59.7 kVA 480 V heavy duty)
Continuous output current	106 A 2.5 kHz normal duty 88 A 2.5 kHz heavy duty

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

Maximum transient current	116.6 A 60 s normal duty) 132 A 60 s heavy duty)
Asynchronous motor control profile	Constant torque standard Variable torque standard Optimized torque mode
Synchronous motor control profile	Permanent magnet motor Synchronous reluctance motor
Output frequency	0.0001...0.5 kHz
Speed drive output frequency	0.1...599 Hz
Nominal switching frequency	2.5 kHz
Switching frequency	2.5...8 kHz with derating factor 2...8 kHz adjustable
Safety function	STO (safe torque off) SIL 3
Discrete input logic	16 preset speeds
Communication port protocol	Ethernet Modbus serial Modbus TCP
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

Output voltage	<= power supply voltage
Permissible temporary current boost	1.1 x I <sub>n</sub> during 60 s (normal duty) 1.5 x I <sub>n</sub> 60 s heavy duty)
Motor slip compensation	Not available in permanent magnet motor law Can be suppressed Automatic whatever the load Adjustable
Acceleration and deceleration ramps	Linear adjustable separately from 0.01...9999 s
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
Frequency resolution	Display unit 0.1 Hz Analog input 0.012/50 Hz
Electrical connection	Control removable screw terminals 0.5...1.5 mm <sup>2</sup> AWG 20...AWG 16 Line side screw terminal 70...120 mm <sup>2</sup> AWG 1/0...250 kcmil Motor screw terminal 70...120 mm <sup>2</sup> AWG 1/0...250 kcmil
Connector type	RJ45 (on the remote graphic terminal) for Ethernet/Modbus TCP RJ45 (on the remote graphic terminal) for Modbus serial
Physical interface	2-wire RS 485 Modbus serial
Transmission frame	RTU Modbus serial

Transmission rate	10/100 Mbit/s Ethernet IP/Modbus TCP 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	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
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	11.42 in (290 mm)
Height	36.30 in (922 mm)
Depth	12.72 in (323 mm)
Net Weight	124.56 lb(US) (56.5 kg)
Analogue input number	3
Analogue input type	AI1, AI2, AI3 software-configurable voltage: 0...10 V DC, impedance: 30 kOhm, resolution 12 bits AI1, AI2, AI3 software-configurable current 0...20 mA/4...20 mA 250 Ohm 12 bits
Discrete input number	8
Discrete input type	DI1...DI6 programmable, 24 V DC (<= 30 V), impedance: 3.5 kOhm DI5, DI6 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
Input compatibility	DI1...DI6: discrete input level 1 PLC conforming to EN/IEC 61131-2 DI5, DI6: discrete input level 1 PLC conforming to IEC 65A-68 STOA, STOB discrete input level 1 PLC EN/IEC 61131-2
Discrete input logic	Positive logic (source) (DI1...DI6), < 5 V (state 0), > 11 V (state 1) Negative logic (sink) (DI1...DI6), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (DI5, DI6), < 0.6 V (state 0), > 2.5 V (state 1) Positive logic (source) (STOA, STOB), < 5 V (state 0), > 11 V (state 1)
Analogue output number	2
Analogue output type	Software-configurable voltage AO1, AO2: 0...10 V DC impedance 470 Ohm, resolution 10 bits Software-configurable current AO1, AO2: 0...20 mA, resolution 10 bits
Sampling duration	2 ms +/- 0.5 ms (DI1...DI4) - 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 % AI1, AI2, AI3 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 analog input AO1, AO2: +/- 0.2 % for analog output
Relay output number	3
Relay output type	Configurable relay logic R1 fault relay NO/NC 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 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
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 Compressor for refinery  
 Water and waste water Centrifuge pump  
 Water and waste water Positive displacement pump  
 Water and waste water Electro submersible pump (ESP)  
 Water and waste water Screw pump  
 Water and waste water Lobe compressor  
 Water and waste water Screw compressor  
 Water and waste water Compressor centrifugal  
 Water and waste water Fan  
 Water and waste water Conveyor  
 Water and waste water Mixer

Motor power range AC-3	55...100 kW 380...440 V 3 phase 55...100 kW 480...500 V 3 phase
Mounting mode	Wall mount

## Environment

Insulation resistance	> 1 MOhm 500 V DC for 1 minute to earth
Noise level	62.4 dB 86/188/EEC
Power dissipation in W	Natural convection 131 W 380 V 2.5 kHz Forced convection 917 W 380 V 2.5 kHz
Volume of cooling air	77932.15 Gal/hr(US) (295 m <sup>3</sup> /h)
Operating position	Vertical +/- 10 degree
Maximum THDI	<48 % from 80...100 % of load IEC 61000-3-12
Electromagnetic compatibility	Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 1.2/50 µs - 8/20 µs surge immunity test level 3 IEC 61000-4-5 Conducted radio-frequency immunity test level 3 IEC 61000-4-6
Pollution degree	2 EN/IEC 61800-5-1
Vibration resistance	1.5 mm peak to peak 2...13 Hz)IEC 60068-2-6 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) 122...140 °F (50...60 °C) with derating factor)
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
Operating altitude	<= 3280.84 ft (1000 m) without derating 1000...4800 m with current derating 1 % per 100 m
Environmental characteristic	Chemical pollution resistance class 3C3 EN/IEC 60721-3-3 Dust pollution resistance class 3S3 EN/IEC 60721-3-3
Standards	UL 508C EN/IEC 61800-3 Environment 1 category C2 EN/IEC 61800-3 Environment 2 category C3 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 61000-3-12 IEC 60721-3 IEC 61508 IEC 13849-1
Product certifications	CSA UL DNV-GL ATEX INERIS REACH ATEX zone 2/22 TÜV
Marking	CE


## Ordering and shipping details

Category	22207 - ATV630 FRAMES 5 & 6
Discount Schedule	CP4E
GTIN	00785901976400
Nbr. of units in pkg.	1
Package weight(Lbs)	157 lb(US) (71.21 kg)
Returnability	Yes
Country of origin	IN

## Packing Units

Unit Type of Package 1	PCE
Package 1 Height	18.50 in (47 cm)
Package 1 width	16.93 in (43 cm)
Package 1 Length	43.31 in (110 cm)
Package 2 Weight	155.43 lb(US) (70.5 kg)

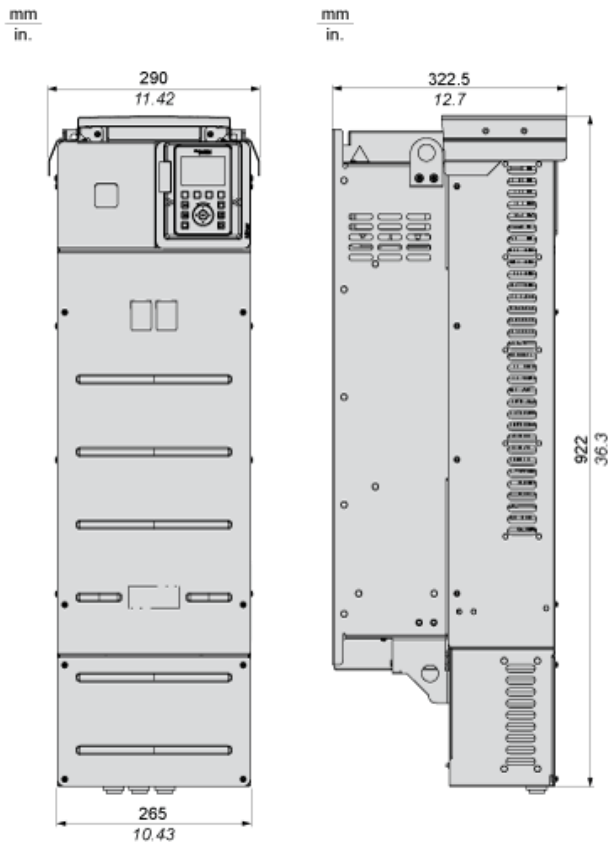
## Offer Sustainability

Sustainable offer status	Green Premium product
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 <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
RoHS exemption information	<a href="#">Yes</a>
China RoHS Regulation	<a href="#">China RoHS declaration</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
Upgradeability	<a href="#">Upgraded components available</a> 

Dimensions

Drives with IP21 Top Cover

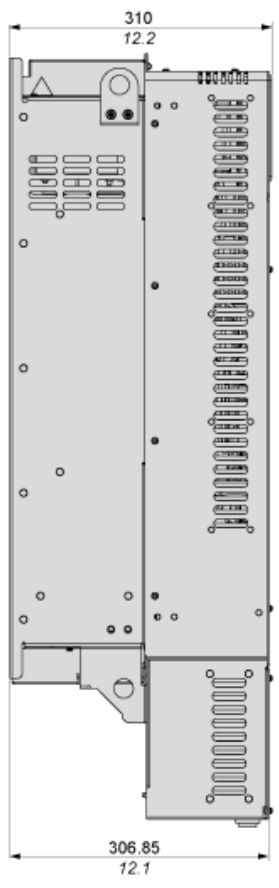
Front and Left Views



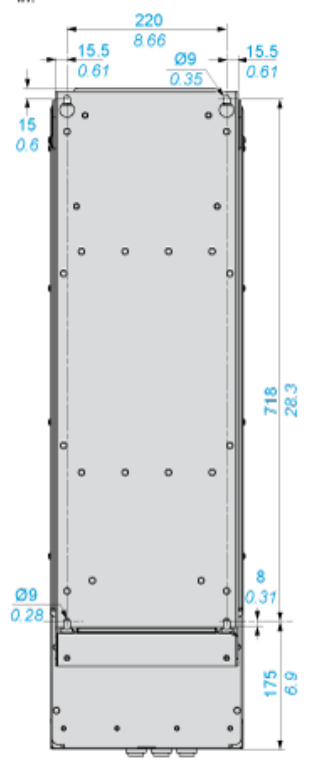
Drives Without IP21 Top Cover

Left and Rear Views

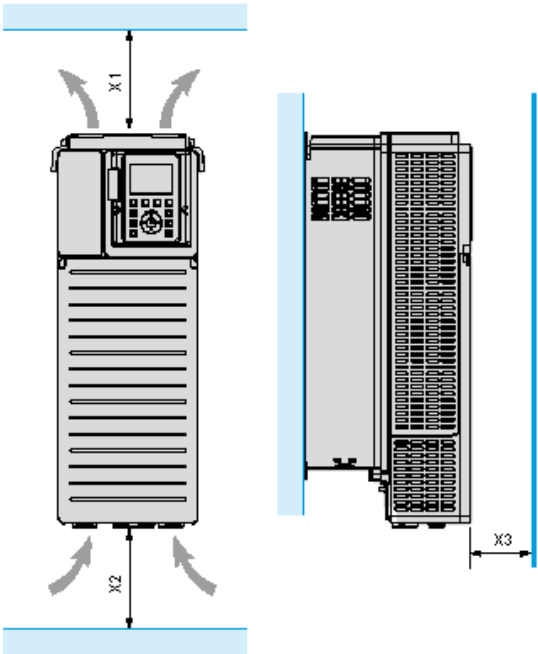
mm  
in.



mm  
in.



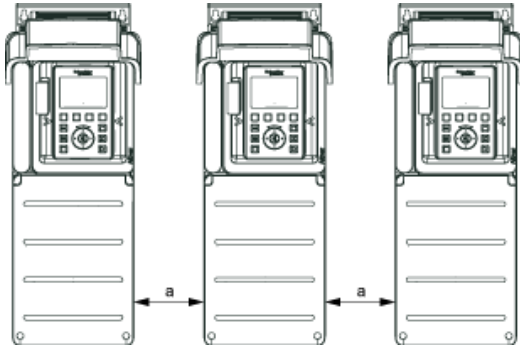
Clearances



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

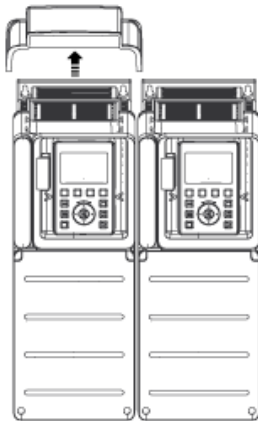
Mounting Types

Mounting Type A: Individual IP21

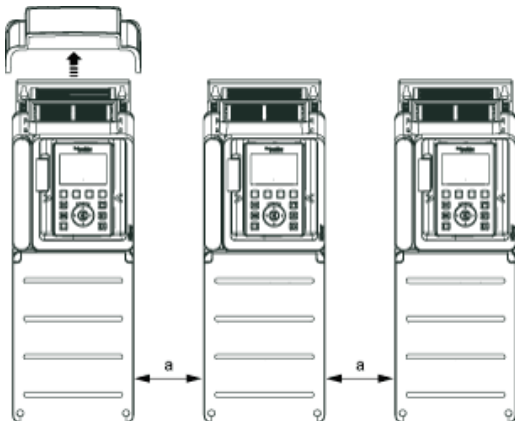


$a \geq 110 \text{ mm (4.33 in.)}$

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



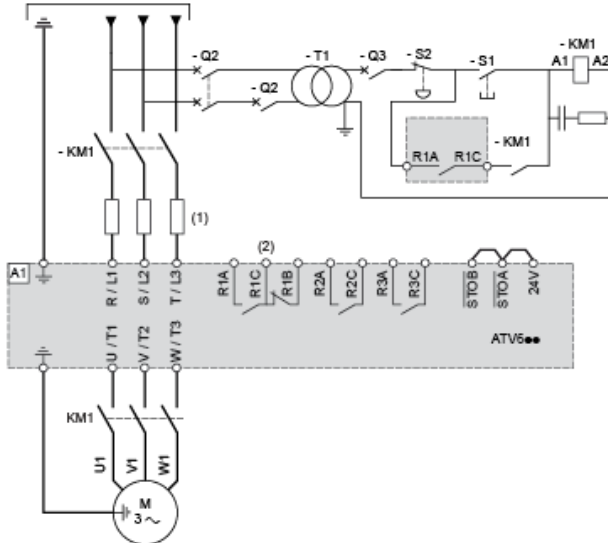
Mounting Type C: Individual IP20



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

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

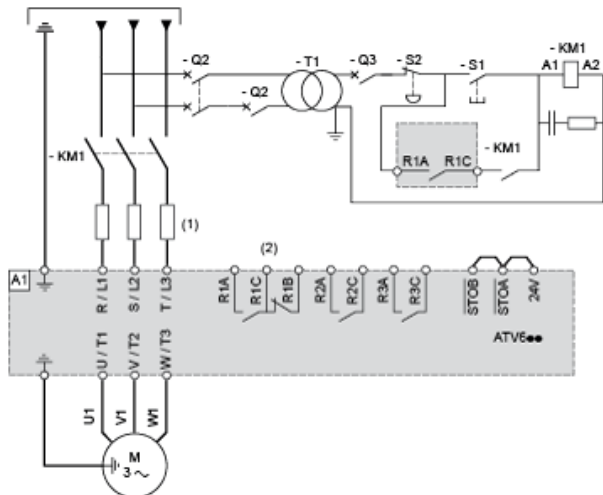
Connection diagrams conforming to standards EN 954-1 category 1 and IEC/EN 61508 capacity SIL1, stopping category 0 in accordance with standard IEC/EN 60204-1



- (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

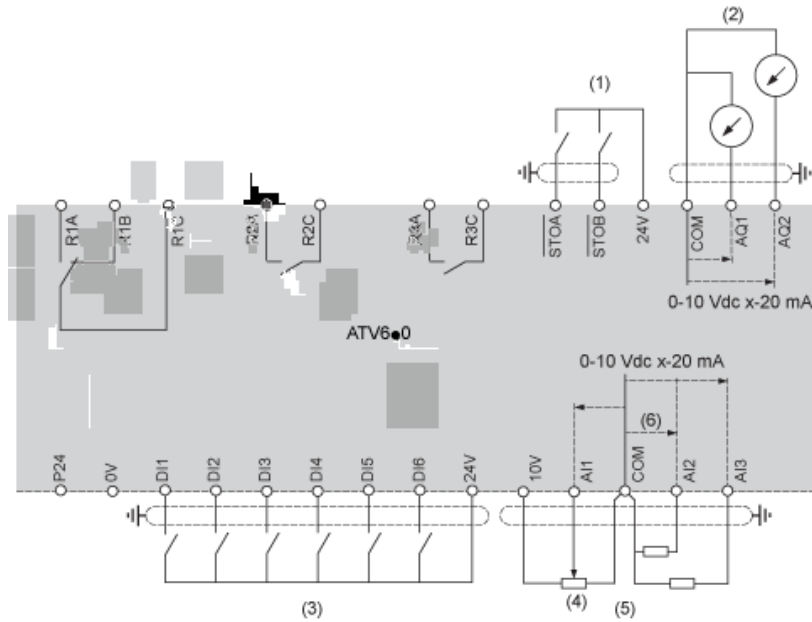
Three-Phase Power Supply with Downstream Breaking via Contactor

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

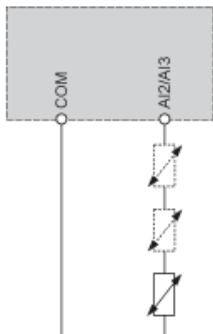
## Control Block Wiring Diagram



- (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.

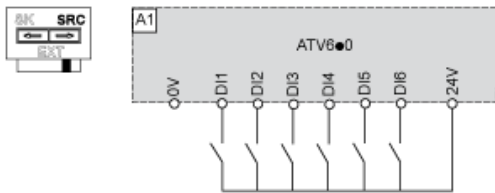


## Sink / Source Switch Configuration

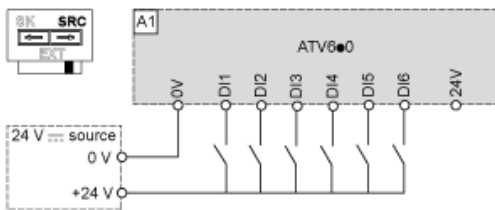
The switch is used to adapt the operation of the logic inputs to the technology of the programmable controller outputs.

- 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.

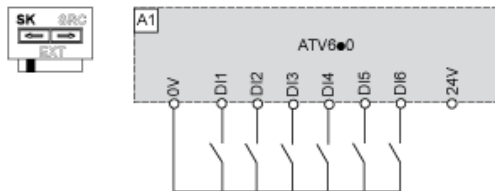
### Switch Set to SRC (Source) Position Using the Output Power Supply for the Digital Inputs



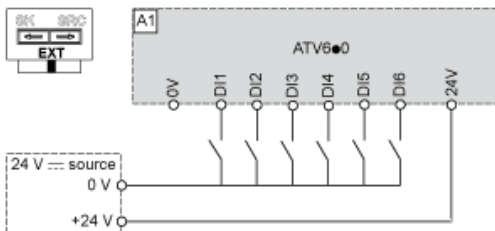
### Switch Set to SRC (Source) Position and Use of an External Power Supply for the DIs



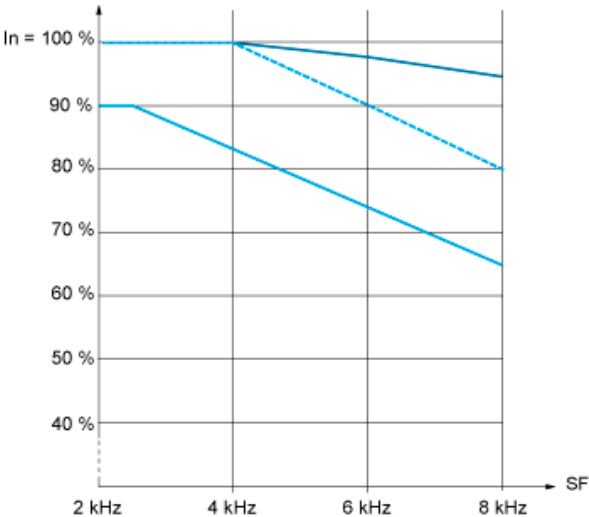
### Switch Set to SK (Sink) Position Using the Output Power Supply for the Digital Inputs



### 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