



variable speed drive ATV61 - 4kW / 690V - IP20

ATV61HU40Y

- Discontinued on: 21 Jun 2022
- ! To be end-of-service on: 1 Mar 2028

① Discontinued

Main

range of product	Altivar 61
product or component type	Variable speed drive
Product specific application	Pumping and ventilation machine
Component name	ATV61
Motor power kW	3 kW, 3 phases at 500 V 4 kW, 3 phases at 690 V
power supply voltage	500690 V - 1510 %
supply number of phases	3 phases
Line current	6.6 A for 690 V 3 phases 4 kW 6.8 A for 500 V 3 phases 3 kW
EMC filter	Level 3 EMC filter
Assembly style	With heat sink
maximum prospective line Isc	22 kA for 3 phases
Maximum transient current	6.96 A for 60 s, 3 phases
Nominal switching frequency	4 kHz
Switching frequency	2.56 kHz adjustable 46 kHz with derating factor
asynchronous motor control	Voltage/frequency ratio, 2 points Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, 5 points Flux vector control without sensor, standard
Synchronous motor control profile	Vector control without sensor, standard
Communication port protocol	CANopen Modbus
Type of polarization	No impedance for Modbus

Option card	Communication card for APOGEE FLN	
	Communication card for BACnet	
	Communication card for CC-Link	
	Controller inside programmable card	
	Communication card for DeviceNet	
	Communication card for EtherNet/IP	
	Communication card for Fipio	
	I/O extension card	
	Communication card for Interbus-S	
	Communication card for LonWorks	
	Communication card for METASYS N2	
	Communication card for Modbus Plus	
	Communication card for Modbus TCP	
	Communication card for Modbus/Uni-Telway	
	Multi-pump card	
	Communication card for Profibus DP	
	Communication card for Profibus DP V1	

Complementary

Complementary	
product destination	Synchronous motors Asynchronous motors
power supply voltage limits	425759 V
power supply frequency	5060 Hz - 55 %
power supply frequency limits	47.563 Hz
Continuous output current	5.8 A at 4 kHz, 500 V - 3 phases 5.5 A at 4 kHz, 690 V - 3 phases
Output frequency	0.1500 Hz
Speed range	1100 in open-loop mode, without speed feedback
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn without speed feedback
Torque accuracy	+/- 15 % in open-loop mode, without speed feedback
Transient overtorque	130 % of nominal motor torque +/- 10 % for 60 s
Braking torque	<= 125 % with braking resistor 30 % without braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Not available in voltage/frequency ratio (2 or 5 points) Can be suppressed Automatic whatever the load Adjustable
diagnostic	1 LED (red) for drive voltage
Output voltage	<= power supply voltage
electrical isolation	Between power and control terminals
type of cable for mounting in an enclosure	With an IP21 or an IP31 kit: 3 wire(s)IEC cable at 40 °C, copper 70 °C / PVC With UL Type 1 kit: 3 wire(s)ILC 508 cable at 40 °C, copper 75 °C / PVC Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 70 °C / PVC Without mounting kit: 1 wire(s)IEC cable at 45 °C, copper 90 °C / XLPE/EPR
Electrical connection	Terminal 2.5 mm² / AWG 14 (Al1-/Al1+, Al2, AO1, R1A, R1B, R1C, R2A, R2B, L11Ll6, PWR) Terminal 50 mm² / AWG 1/0 (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
Tightening torque	0.6 N.m (Al1-/Al1+, Al2, AO1, R1A, R1B, R1C, R2A, R2B, Ll1Ll6, PWR) 12 N.m, 102.2 lb.in (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
Supply	Internal supply for reference potentiometer (1 to 10 kOhm): 10.5 V DC, +/- 5 %, <10 mA with overload and short-circuit protection Internal supply: 24 V DC (2127 V), <200 mA with overload and short-circuit protection External supply: 24 V DC (1930 V)
Analogue input number	2

Analogue input type	Al1-/Al1+ bipolar differential voltage: +/- 10 V DC 24 V max, resolution 11 bits + sign Al2 software-configurable current: 020 mA, impedance: 242 Ohm, resolution 11 bits
	Al2 software-configurable voltage: 010 V DC 24 V max, impedance: 30000 Ohm, resolution 11 bits
sampling time	2 ms +/- 0.5 ms (Al1-/Al1+) - analog input
	2 ms +/- 0.5 ms (Al2) - analog input 2 ms +/- 0.5 ms (AO1) - analog output
	2 ms +/- 0.5 ms (LI1LI5) - discrete input
	2 ms +/- 0.5 ms (LI6)if configured as logic input - discrete input
absolute accuracy precision	+/- 0.6 % (Al1-/Al1+) for a temperature variation 60 °C
	+/- 0.6 % (Al2) for a temperature variation 60 °C +/- 1 % (AO1) for a temperature variation 60 °C
inearity error	+/- 0.15 % of maximum value (AI1-/AI1+)
•	+/- 0.15 % of maximum value (AI2) +/- 0.2 % (AO1)
Analogue output number	1
Analogue output type	AO1 software-configurable current, analogue output range 020 mA, impedance:
	500 Ohm, resolution 10 bits
	AO1 software-configurable voltage, analogue output range 010 V DC, impedance: 470 Ohm, resolution 10 bits
	AO1 software-configurable logic output 10 V, 20 mA
Discrete output number	2
Discrete output type	Configurable relay logic: (R1A, R1B, R1C) NO/NC - 100000 cycles
	Configurable relay logic: (R2A, R2B) NO - 100000 cycles
naximum response time	<= 100 ms in STO (Safe Torque Off)
	R1A, R1B, R1C <= 7 ms, tolerance +/- 0.5 ms
	R2A, R2B <= 7 ms, tolerance +/- 0.5 ms
Minimum switching current	3 mA at 24 V DC for configurable relay logic
Maximum switching current	R1, R2: 2 A at 250 V AC inductive load, cos phi = 0.4 and L/R = 7 ms
	R1, R2: 2 A at 30 V DC inductive load, cos phi = 0.4 and L/R = 7 ms
	R1, R2: 5 A at 250 V AC resistive load, cos phi = 1 and L/R = 0 ms R1, R2: 5 A at 30 V DC resistive load, cos phi = 1 and L/R = 0 ms
Discrete input number	7
Discrete input type	Programmable (LI1LI5)24 V DC (<= 30 V), with level 1 PLC - 3500 Ohm
	Switch-configurable (LI6)24 V DC (<= 30 V), with level 1 PLC - 3500 Ohm
	Switch-configurable PTC probe (LI6)06 probes - 1500 Ohm Safety input (PWR)24 V DC (<= 30 V) - 1500 Ohm
Discrete input logic	Negative logic (sink) (LI1LI5), > 16 V (state 0), < 10 V (state 1)
	Positive logic (source) (LI1LI5), < 5 V (state 0), > 11 V (state 1)
	Negative logic (sink) (LI6)if configured as logic input, > 16 V (state 0), < 10 V (state 1)
	Positive logic (source) (LI6)if configured as logic input, < 5 V (state 0), > 11 V (state 1)
Acceleration and deceleration	Automatic adaptation of ramp if braking capacity exceeded, by using resistor
ramps	Linear adjustable separately from 0.01 to 9000 s
	S, U or customized
Braking to standstill	By DC injection
Protection type	Against exceeding limit speed: drive
	Against input phase loss: drive Break on the control circuit: drive
	Input phase breaks: drive
	Line supply overvoltage: drive
	Line supply undervoltage: drive
	Overcurrent between output phases and earth: drive Overheating protection: drive
	Overvoltages on the DC bus: drive
	Power removal: drive
	Short-circuit between motor phases: drive
	Thermal protection: drive Motor phase break: motor
	Power removal: motor
	Thermal protection: motor
nsulation resistance	> 1 mOhm 500 V DC for 1 minute to earth

Frequency resolution	Analog input: 0.024/50 Hz Display unit: 0.1 Hz
Connector type	1 RJ45 (on front face) for Modbus 1 RJ45 (on terminal) for Modbus Male SUB-D 9 on RJ45 for CANopen
Physical interface	2-wire RS 485 for Modbus
Transmission frame	RTU for Modbus
Transmission rate	4800 bps, 9600 bps, 19200 bps, 38.4 Kbps for Modbus on terminal 9600 bps, 19200 bps for Modbus on front face 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps for CANopen
Data format	8 bits, 1 stop, even parity for Modbus on front face 8 bits, odd even or no configurable parity for Modbus on terminal
Number of addresses	1127 for CANopen 1247 for Modbus
Method of access	Slave CANopen
marking	CE
Operating position	Vertical +/- 10 degree
net weight	30 kg
Width	240 mm
Height	420 mm
Depth	236 mm

Environment

Noise level	59.9 dB conforming to 86/188/EEC 3110 V DC between earth and power terminals 5345 V DC between control and power terminals Conducted radio-frequency immunity test level 3 conforming to IEC 61000-4-6 Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 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 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11				
Dielectric strength					
Electromagnetic compatibility					
Standards	EN 61800-3 environments 2 category C3 EN/IEC 61800-5-1 EN/IEC 61800-3 IEC 60721-3-3 class 3C2 EN 55011 class A group 2 EN 61800-3 environments 1 category C3 UL Type 1				
product certifications	GOST C-Tick NOM 117 DNV CSA UL				
Pollution degree	3 conforming to EN/IEC 61800-5-1 3 conforming to UL 840				
degree of proctection	IP20 on upper part without blanking plate on cover conforming to EN/IEC 60529 IP20 on upper part without blanking plate on cover conforming to EN/IEC 61800-5-1 IP21 conforming to EN/IEC 60529 IP21 conforming to EN/IEC 61800-5-1 IP41 on upper part conforming to EN/IEC 60529 IP41 on upper part conforming to EN/IEC 61800-5-1 IP54 on lower part conforming to EN/IEC 60529 IP54 on lower part conforming to EN/IEC 61800-5-1				
Vibration resistance	1 gn (f= 13200 Hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f= 313 Hz) conforming to EN/IEC 60068-2-6				

8 Oct 2024

Shock resistance 15 gn for 11 ms conforming to EN/IEC 60068-2-27				
Relative humidity	595 % without condensation conforming to IEC 60068-2-3 595 % without dripping water conforming to IEC 60068-2-3			
Ambient air temperature for operation	-1050 °C (without derating) 5060 °C (with derating factor)			
ambient air temperature for storage	-2570 °C			
Operating altitude	<= 1000 m without derating			

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	40.0 cm
Package 1 Width	40.0 cm
Package 1 Length	60.0 cm
Package 1 Weight	31.5 kg

Contractual warranty

Warranty 18 months



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.

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RoHS/REACh

Well-being performance



Mercury Free



Rohs Exemption Information

Yes

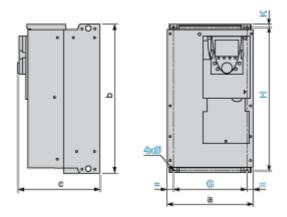
Certifications & Standards

Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)		
	EU RoHS Declaration		
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		
Circularity Profile	End of Life Information		

Dimensions Drawings

UL Type 1/IP 20 Drives

Dimensions without Option Card



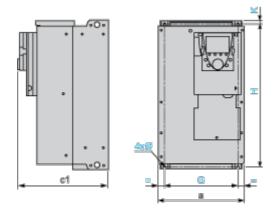
Dimensions in mm

а	b	С	G	Н	K	Ø
240	420	236	206	403	11	6

Dimensions in in.

а	b	С	G	Н	K	Ø
9.44	16.54	9.29	8.11	15.87	0.45	0.23

Dimensions with 1 Option Card (1)



Dimensions in mm

Difficilition in thint							
а	c1	G	Н	K	Ø		
240	259	206	403	11	6		

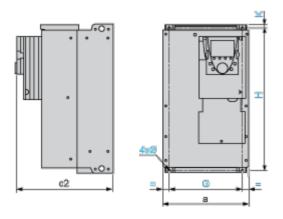
Dimensions in in.

Difficusions in in.							
а	c1	G	Н	K	Ø		
9.44	10.20	8.11	15.87	0.45	0.23		

(1) Option cards: I/O extension cards, communication cards or "Controller Inside" programmable card.

Dimensions with 2 Option Cards (1)

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Dimensions in mm

а	c2	G	Н	K	Ø
240	282	206	403	11	6

Dimensions in in.

а	c2	G	Н	K	Ø
9.44	11.10	8.11	15.87	0.45	0.23

 $(1) \ Option \ cards: I/O \ extension \ cards, \ communication \ cards \ or \ "Controller \ Inside" \ programmable \ card.$

Mounting and Clearance

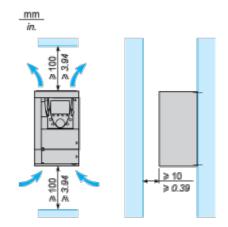
Mounting Recommendations

Depending on the conditions in which the drive is to be used, its installation will require certain precautions and the use of appropriate accessories.

Install the unit vertically:

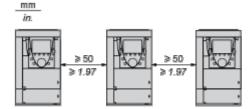
- Avoid placing it close to heating elements
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit.

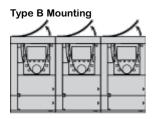
Clearance



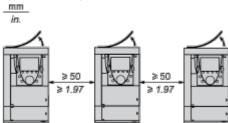
Mounting Types

Type A Mounting





Type C Mounting



By removing the protective blanking cover from the top of the drive, the degree of protection for the drive becomes IP 20.

The protective blanking cover may vary according to the drive model (refer to the user guide).

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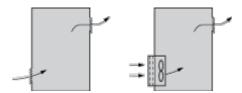
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Specific Recommendations for Mounting the Drive in an Enclosure

Ventilation

To ensure proper air circulation in the drive:

- Fit ventilation grilles.
- Ensure that there is sufficient ventilation. If there is not, install a forced ventilation unit with a filter. The openings and/or fans must provide a flow rate at least equal to that of the drive fans (refer to the product characteristics).



- Use special filters with IP 54 protection.
- Remove the blanking cover from the top of the drive.

Dust and Damp Proof Metal Enclosure (IP 54)

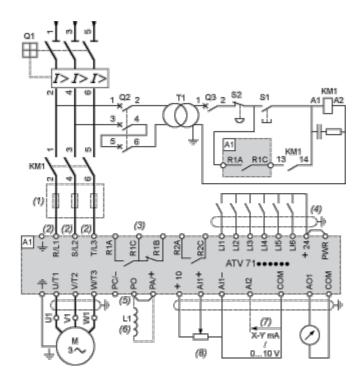
The drive must be mounted in a dust and damp proof enclosure in certain environmental conditions: dust, corrosive gases, high humidity with risk of condensation and dripping water, splashing liquid, etc.

This enables the drive to be used in an enclosure where the maximum internal temperature reaches 50°C.

Connections and Schema

Wiring Diagram Conforming to Standards EN 954-1 Category 1, IEC/EN 61508 Capacity SIL1, in Stopping Category 0 According to IEC/EN 60204-1

Three-Phase Power Supply with Upstream Breaking via Contactor

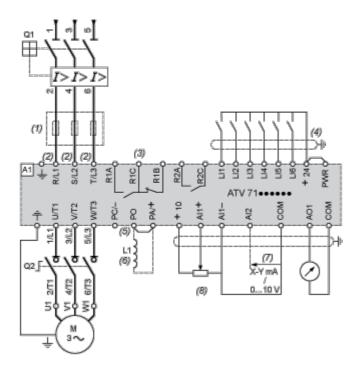


- A1 ATV61 drive
- KM1 Contactor
- L1 DC choke
- Q1 Circuit-breaker
- Q2 GV2 L rated at twice the nominal primary current of T1
- Q3 GB2CB05
- S1, S2 XB4 B or XB5 A pushbuttons
- T1 100 VA transformer 220 V secondary
- (1) Line choke (three-phase); mandatory for ATV61HC11Y...HC80Y drives (except when a special transformer is used (12-pulse)).
- (2) For ATV61HC50N4, ATV61HC63N4 and ATV61HC50Y...HC80Y drives, refer to the power terminal connections diagram.
- (3) Fault relay contacts. Used for remote signalling of the drive status.
- (4) Connection of the common for the logic inputs depends on the positioning of the SW1 switch. The above diagram shows the internal power supply switched to the "source" position (for other connection types, refer to the user guide).
- (5) There is no PO terminal on ATV61HC11Y...HC80Y drives.
- (6) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X, ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. For ATV61W•••N4 and ATV61W•••N4C drives, the DC choke is integrated.
- (7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (8) Reference potentiometer.

Product datasheet ATV61HU40Y

Wiring Diagram Conforming to Standards EN 954-1 Category 1, IEC/EN 61508 Capacity SIL1, in Stopping Category 0 According to IEC/EN 60204-1

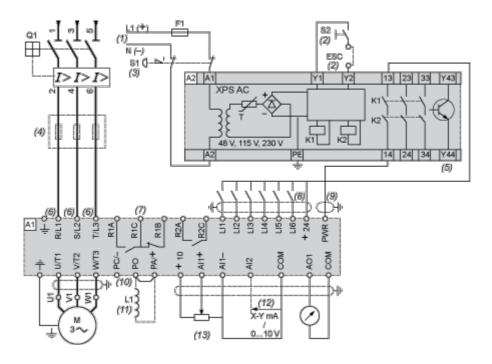
Three-Phase Power Supply with Downstream Breaking via Switch Disconnector



- A1 ATV61 drive
- L1 DC choke
- Q1 Circuit-breaker
- Q2 Switch disconnector (Vario)
- (1) Line choke (three-phase), mandatory for ATV61HC11Y...HC80Y drives (except when a special transformer is used (12-pulse)).
- (2) For ATV61HC50N4, ATV61HC63N4 and ATV61HC50Y...HC80Y drives, refer to the power terminal connections diagram.
- (3) Fault relay contacts. Used for remote signalling of the drive status.
- (4) Connection of the common for the logic inputs depends on the positioning of the SW1 switch. The above diagram shows the internal power supply switched to the "source" position (for other connection types, refer to the user quide).
- (5) There is no PO terminal on ATV61HC11Y...HC80Y drives.
- (6) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X, ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. For ATV61W•••N4 and ATV61W•••N4C drives, the DC choke is integrated.
- (7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (8) Reference potentiometer.

Wiring Diagram Conforming to Standards EN 954-1 Category 3, IEC/EN 61508 Capacity SIL2, in Stopping Category 0 According to IEC/EN 60204-1

Three-Phase Power Supply, Low Inertia Machine, Vertical Movement



A1 ATV61 drive

A2 Preventa XPS AC safety module for monitoring emergency stops and switches. One safety module can manage the "Power Removal" function for several drives on the same machine. In this case, each drive must connect its PWR terminal to its + 24 V via the safety contacts on the XPS AC module. These contacts are independent for each drive.

- F1 Fuse
- L1 DC choke
- Q1 Circuit-breaker
- S1 Emergency stop button with 2 contacts
- S2 XB4 B or XB5 A pushbutton
- (1) Power supply: 24 Vdc or Vac, 115 Vac, 230 Vac.
- (2) S2: resets XPS AC module on power-up or after an emergency stop. ESC can be used to set external starting conditions.
- (3) Requests freewheel stopping of the movement and activates the "Power Removal" safety function.
- (4) Line choke (three-phase), mandatory for and ATV61HC11Y...HC80Y drives (except when a special transformer is used (12-pulse)).
- (5) The logic output can be used to signal that the machine is in a safe stop state.
- (6) For ATV61HC50N4, ATV61HC63N4 and ATV61HC50Y...HC80Y drives, refer to the power terminal connections diagram.
- (7) Fault relay contacts. Used for remote signalling of the drive status.
- (8) Connection of the common for the logic inputs depends on the positioning of the SW1 switch. The above diagram shows the internal power supply switched to the "source" position (for other connection types, refer to the user guide).
- (9) Standardized coaxial cable, type RG174/U according to MIL-C17 or KX3B according to NF C 93-550, external diameter 2.54 mm /0.09 in., maximum length 15 m / 49.21 ft. The cable shielding must be earthed.
- (10) There is no PO terminal on ATV61HC11Y...HC80Y drives.
- (11) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X,

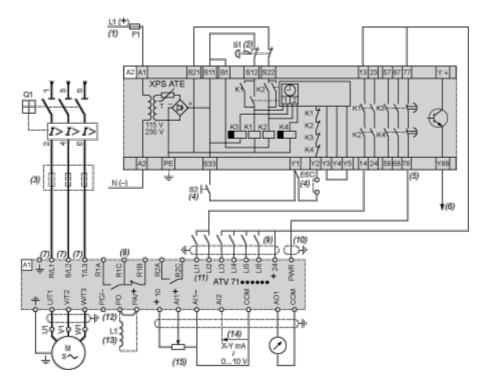
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ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. For ATV61W•••N4 and ATV61W•••N4C drives, the DC choke is integrated.

- (12) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (13) Reference potentiometer.

Wiring Diagram Conforming to Standards EN 954-1 Category 3, IEC/EN 61508 Capacity SIL2, in Stopping Category 1 According to IEC/EN 60204-1

Three-Phase Power Supply, High Inertia Machine



A1 ATV61 drive

A2 (5) Preventa XPS ATE safety module for monitoring emergency stops and switches. One safety module can manage the "Power Removal" safety function for several drives on the same machine. In this case the time delay must be adjusted on the drive controlling the motor that requires the longest stopping time. In addition, each drive must connect its PWR terminal to its + 24 V via the safety contacts on the XPS ATE module. These contacts are independent for each drive.

- F1 Fuse
- L1 DC choke
- Q1 Circuit-breaker
- S1 Emergency stop button with 2 contacts
- S2 XB4 B or XB5 A pushbutton
- (1) Power supply: 24 Vdc or Vac, 115 Vac, 230 Vac.
- (2) Requests controlled stopping of the movement and activates the "Power Removal" safety function.
- (3) Line choke (three-phase), mandatory for ATV61HC11Y...HC80Y drives (except when a special transformer is used (12-pulse)).
- (4) S2: resets XPS ATE module on power-up or after an emergency stop. ESC can be used to set external starting conditions.
- (5) The logic output can be used to signal that the machine is in a safe state.
- (6) For stopping times requiring more than 30 seconds in category 1, use a Preventa XPS AV safety module which can provide a maximum time delay of 300 seconds.
- (7) For ATV61HC50N4, ATV61HC63N4 and ATV61HC50Y...HC80Y drives, refer to the power terminal connections diagram.
- (8) Fault relay contacts. Used for remote signalling of the drive status.

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- (9) Connection of the common for the logic inputs depends on the positioning of the SW1 switch. The above diagram shows the internal power supply switched to the "source" position (for other connection types, refer to the user guide).
- (10) Standardized coaxial cable, type RG174/U according to MIL-C17 or KX3B according to NF C 93-550, external diameter 2.54 mm/0.09 in., maximum length 15 m/49.21 ft. The cable shielding must be earthed.
- (11) Logic inputs LI1 and LI2 must be assigned to the direction of rotation: LI1 in the forward direction and LI2 in the reverse direction.
- (12) There is no PO terminal on ATV61HC11Y...HC80Y drives.
- (13) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X, ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. For ATV61W•••N4 and ATV61W•••N4C drives, the DC choke is integrated.
- (14) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (15) Reference potentiometer.

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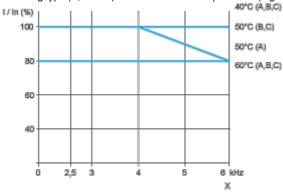
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Performance Curves

Switching frequency

Derating Curves

The derating curves for the drive nominal current (In) depend on the temperature, the switching frequency and the mounting type (A, B or C). For intermediate temperatures (e.g. 55°C), interpolate between 2 curves.



NOTE: Above 50°C, the drive should be fitted with a control card fan kit.