

ATV61WD11N4U

variable speed drive ATV61 - 11kW 15HP -
380...480V - EMC filter - IP54

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

Price*: 2334.95 USD



Main

Commercial Status	Commercialised
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	11 kW 3 phasesat 380...480 V
Motor power hp	15 hp 3 phasesat 380...480 V
[Us] rated supply voltage	380...480 V (- 15...10 %)
Phase	3 phases
Line current	21.9 Afor 380 V 3 phases 11 kW / 15 hp 17.8 Afor 480 V 3 phases 11 kW / 15 hp
EMC filter	Class C2 EMC filter integrated
Variant	With EMC plate conforming to NEMA type 12 standard
Assembly style	Enclosed
Apparent power	14.4 kVAfor 380 V 3 phases 11 kW / 15 hp
Prospective line Isc	22 kA 3 phases
Maximum transient current	24.7 Afor 60 s 3 phases
Nominal switching frequency	8 kHz
Switching frequency	8...16 kHz with derating factor 2...16 kHz adjustable
Asynchronous motor control profile	Voltage/Frequency ratio, 2 points Voltage/Frequency ratio, 5 points Flux vector control without sensor, standard Voltage/Frequency ratio - Energy Saving, quadratic U/f
Synchronous motor control profile	Vector control without sensor, standard
Communication port protocol	CANopen Modbus
Type of polarization	No impedance Modbus
Option card	Profibus DP V1 communication card Profibus DP communication card Multi-pump card Modbus/Uni-Telway communication card Modbus TCP communication card Modbus Plus communication card METASYS N2 communication card LonWorks communication card Interbus-S communication card I/O extension card Fipio communication card Ethernet/IP communication card DeviceNet communication card Controller inside programmable card CC-Link communication card BACnet communication card APOGEE FLN communication card

The information provided in this documentation contains general descriptions and/or technical characteristics of the products contained herein. 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. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. *Prices are indicative

Complementary

Product destination	Asynchronous motors Synchronous motors
Supply voltage limits	323...528 V
Supply frequency	50...60 Hz (- 5...5 %)
Network frequency limits	47.5...63 Hz
Continuous output current	22.5 Aat 8 kHz, 380 V 3 phases 21 Aat 8 kHz, 460 V 3 phases
Speed drive output frequency	0.1...1000 Hz
Speed range	1...100 in open-loop mode, without speed feedback
Speed accuracy	+/- 10 % of nominal slip 0.2 Tn to Tn torque variation 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	30 % without braking resistor ≤ 125 % with braking resistor
Regulation loop	Frequency PI regulator
Motor slip compensation	Adjustable Automatic whatever the load Can be suppressed Not available in voltage/frequency ratio (2 or 5 points)
Local signalling	1 LED red presence of drive voltage
Output voltage	≤ power supply voltage
Isolation	Between power and control terminals
Type of cable	Without mounting kit: 1-strand IEC cableat 113 °F (45 °C), copper 90 °C XLPE/EPR Without mounting kit: 1-strand IEC cableat 113 °F (45 °C), copper 70 °C PVC With UL Type 1 kit: 3-strand UL 508 cableat 104 °F (40 °C), copper 75 °C PVC With an IP21 or an IP31 kit: 3-strand IEC cableat 104 °F (40 °C), copper 70 °C PVC
Electrical connection	L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB terminal 6 mm² / AWG 8 AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR terminal 2.5 mm² / AWG 14
Tightening torque	L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB 26.55 lbf.in (3 N.m) / 26.5 lb.in AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR 5.31 lbf.in (0.6 N.m)
Supply	Internal supply 24 V DC (21...27 V), ≤ 200 mAfor overload and short-circuit protection Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC +/- 5 %, ≤ 10 mAfor overload and short-circuit protection External supply 24 V DC (19...30 V), 30 W
Analogue input number	2
Analogue input type	AI2 software-configurable voltage 0...10 V DC, input voltage 24 V max, impedance 30000 Ohm, resolution 11 bits AI2 software-configurable current 0...20 mA, impedance 242 Ohm, resolution 11 bits AI1-/AI1+ bipolar differential voltage +/- 10 V DC, input voltage 24 V max, resolution 11 bits + sign
Sampling duration	Discrete input LI6 (if configured as logic input) 2 ms, +/- 0.5 ms Discrete input LI1...LI5 2 ms, +/- 0.5 ms Analog output AO1 2 ms, +/- 0.5 ms Analog input AI2 2 ms, +/- 0.5 ms Analog input AI1-/AI1+ 2 ms, +/- 0.5 ms
Accuracy	AO1 +/- 1 % for a temperature variation 60 °C AI2 +/- 0.6 % for a temperature variation 60 °C AI1-/AI1+ +/- 0.6 % for a temperature variation 60 °C
Linearity error	AO1 +/- 0.2 % AI2 +/- 0.15 % of maximum value AI1-/AI1+ +/- 0.15 % of maximum value
Analogue output number	1
Analogue output type	AO1 software-configurable logic output 10 V, ≤ 20 mA AO1 software-configurable voltage, analogue output range 0...10 V DC, impedance 470 Ohm, resolution 10 bits AO1 software-configurable current, analogue output range 0...20 mA, impedance 500 Ohm, resolution 10 bits

Discrete output number	2
Discrete output type	(R2A, R2B) configurable relay logic NO, electrical durability 100000 cycles (R1A, R1B, R1C) configurable relay logic NO/NC, electrical durability 100000 cycles
Response time	R2A, R2B <= 7 ms, tolerance +/- 0.5 ms R1A, R1B, R1C <= 7 ms, tolerance +/- 0.5 ms <= 100 ms in STO (Safe Torque Off)
Minimum switching current	Configurable relay logic 3 mA at 24 V DC
Maximum switching current	R1, R2 on resistive load, 5 A at 30 V DC, cos phi = 1, L/R = 0 ms R1, R2 on resistive load, 5 A at 250 V AC, cos phi = 1, L/R = 0 ms R1, R2 on inductive load, 2 A at 30 V DC, cos phi = 0.4, L/R = 7 ms R1, R2 on inductive load, 2 A at 250 V AC, cos phi = 0.4, L/R = 7 ms
Discrete input number	7
Discrete input type	(PWR) safety input, 24 V DC, voltage limits <= 30 V, impedance 1500 Ohm (LI6) switch-configurable PTC probe, 0...6, impedance 1500 Ohm (LI6) switch-configurable, 24 V DC, voltage limits <= 30 V, with level 1 PLC, impedance 3500 Ohm (LI1...LI5) programmable, 24 V DC, voltage limits <= 30 V, with level 1 PLC, impedance 3500 Ohm
Discrete input logic	LI6 (if configured as logic input) positive logic (source), < 5 V (state 0), > 11 V (state 1) LI6 (if configured as logic input) negative logic (sink), > 16 V (state 0), < 10 V (state 1) LI1...LI5 positive logic (source), < 5 V (state 0), > 11 V (state 1) LI1...LI5 negative logic (sink), > 16 V (state 0), < 10 V (state 1)
Acceleration and deceleration ramps	Automatic adaptation of ramp if braking capacity exceeded, by using resistor Linear adjustable separately from 0.01 to 9000 s S, U or customized
Braking to standstill	By DC injection
Protection type	Motor thermal protection Motor power removal Motor motor phase break Drive thermal protection Drive short-circuit between motor phases Drive power removal Drive overvoltages on the DC bus Drive overheating protection Drive overcurrent between output phases and earth Drive line supply undervoltage Drive line supply overvoltage Drive input phase breaks Drive break on the control circuit Drive against input phase loss Drive against exceeding limit speed
Insulation resistance	> 1 mOhm at 500 V DC for 1 minute to earth
Frequency resolution	Display unit 0.1 Hz Analog input 0.024/50 Hz
Type of connector	Male SUB-D 9 on RJ45 CANopen 1 RJ45 Modbus on terminal 1 RJ45 Modbus on front face
Physical interface	2-wire RS 485 Modbus
Transmission frame	RTU Modbus
Transmission rate	20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen 9600 bps, 19200 bps Modbus on front face 4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus on terminal
Data format	8 bits, odd even or no configurable parity Modbus on terminal 8 bits, 1 stop, even parity Modbus on front face
Number of addresses	1...247 Modbus 1...127 for CANopen
Method of access	Slave CANopen
Marking	CE
Operating position	Vertical +/- 10 degree
Product weight	48.5 lb(US) (22 kg)
Width	10.24 in (260 mm)
Height	20.67 in (525 mm)
Depth	11.26 in (286 mm)

Environment

Noise level	55.6 dB conforming to 86/188/EEC
Dielectric strength	5092 V DC between control and power terminals 3535 V DC between earth and power terminals
Electromagnetic compatibility	Voltage dips and interruptions immunity test conforming to IEC 61000-4-11 Radiated radio-frequency electromagnetic field immunity test conforming to IEC 61000-4-3 level 3 Electrostatic discharge immunity test conforming to IEC 61000-4-2 level 3 Electrical fast transient/burst immunity test conforming to IEC 61000-4-4 level 4 Conducted radio-frequency immunity test conforming to IEC 61000-4-6 level 3
Standards	EN 55011 class A group 1 EN 61800-3 environments 1 category C2 EN 61800-3 environments 2 category C2 EN/IEC 61800-3 EN/IEC 61800-5-1 IEC 60721-3-3 class 3C1 IEC 60721-3-3 class 3S2 UL Type 12
Product certifications	CSA C-Tick DNV GOST NOM 117 UL
Pollution degree	2 conforming to EN/IEC 61800-5-1
IP degree of protection	IP54 conforming to UL Type 12 IP54 conforming to EN/IEC 61800-5-1 IP54 conforming to EN/IEC 60529
Vibration resistance	1.5 mm peak to peak (f = 3...13 Hz) conforming to EN/IEC 60068-2-6 1 gn (f = 13...200 Hz) conforming to EN/IEC 60068-2-6
Shock resistance	15 gn 11 ms conforming to EN/IEC 60068-2-27
Relative humidity	5...95 % without dripping water conforming to IEC 60068-2-3 5...95 % without condensation conforming to IEC 60068-2-3
Ambient air temperature for operation	14...122 °F (-10...50 °C) with derating factor 14...104 °F (-10...40 °C) without derating
Ambient air temperature for storage	-13...158 °F (-25...70 °C)
Operating altitude	3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m ≤ 3280.84 ft (1000 m) without derating

Ordering and shipping details

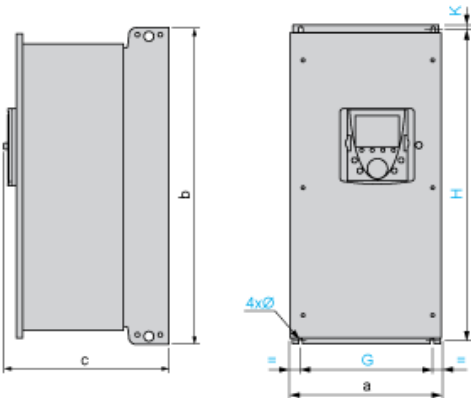
Category	22137 - ATV61 7.5 THRU 50 HP DRIVES
Discount Schedule	CP4C
Nbr. of units in pkg.	1
Product availability	Non-Stock - Not normally stocked in distribution facility
Returnability	N
Country of origin	ID

Contractual warranty

Warranty period	18 months
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UL Type 12/IP 54 Drives

Dimensions



Dimensions in mm

a	b	c	G	H	K	Ø
260	525	286	220	511	6	6

Dimensions in in.

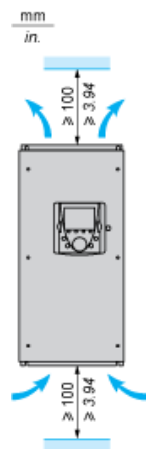
a	b	c	G	H	K	Ø
10.24	20.67	11.26	8.66	20.12	0.23	0.23

Mounting Recommendations

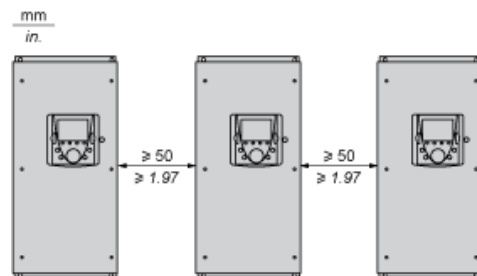
Depending on the conditions in which the drive is to be used, its installation will require certain precautions and the use of appropriate accessories. Install the unit vertically:

- 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

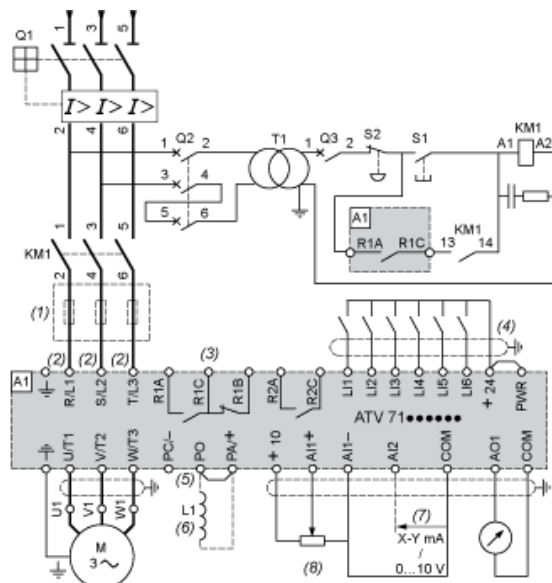


Mounting



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

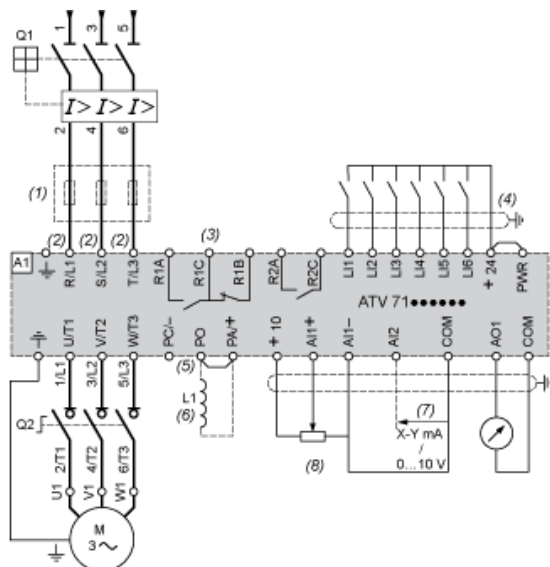


- A1 ATV61 drive
KM1 Contactor
L1 DC choke
Q1 Circuit-breaker
Q2 GV2 L rated at twice the nominal primary current of T1
Q3 GB2CB05
S1, XB4 B or XB5 A pushbuttons
S2
T1 100 VA transformer 220 V secondary
- (1) Line choke (three-phase); mandatory for ATV61HC11Y...HC80Y drives (except when a special transformer 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.

NOTE: All terminals are located at the bottom of the drive. Fit interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

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 Disconnecter



A1 ATV61 drive

L1 DC choke

Q1 Circuit-breaker

Q2 Switch disconnecter (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 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.

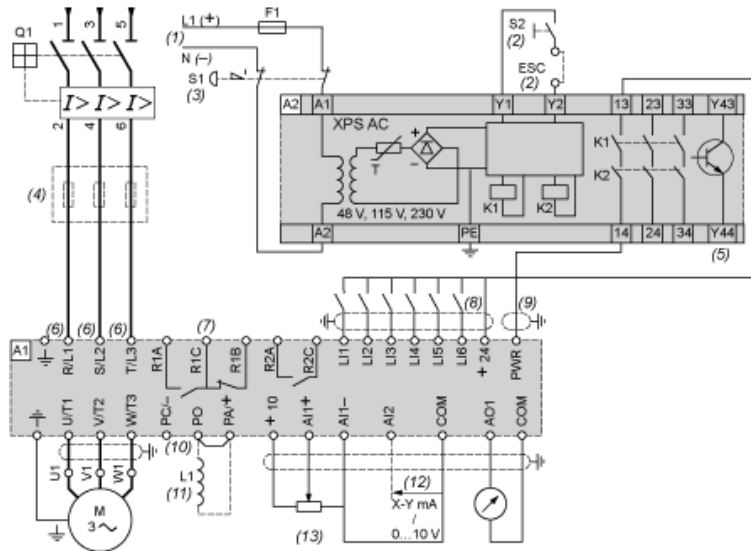
(7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.

(8) Reference potentiometer.

NOTE: All terminals are located at the bottom of the drive. Fit interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

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

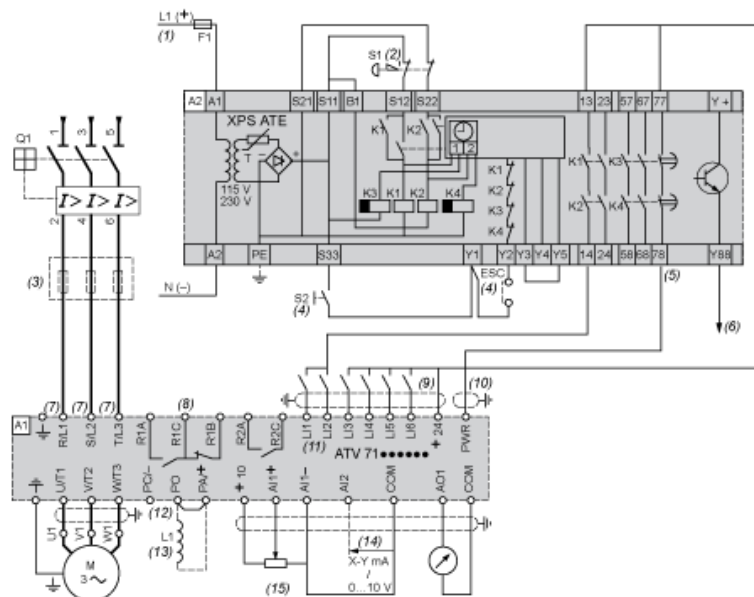


- A1 ATV61 drive
- A2 Preventa XPS AC safety module for monitoring emergency stops and switches. One safety module can manage the "Power Removal" function for several drives on the same machine. In this case, each drive must connect its PWR terminal to its + 24 V via the safety contacts on the XPS AC 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, 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.

NOTE: All terminals are located at the bottom of the drive. Fit interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

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

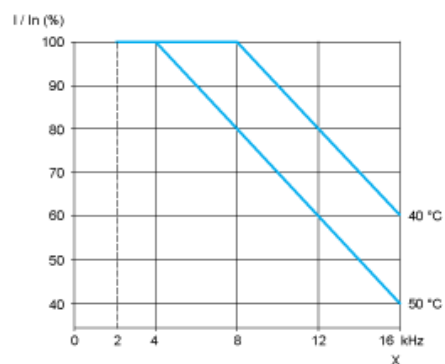


- A1 ATV61 drive
- A2 Preventa XPS ATE safety module for monitoring emergency stops and switches. One safety module can manage the "Power Removal"
- (5) safety function for several drives on the same machine. In this case the time delay must be adjusted on the drive controlling the motor that requires 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.
- (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.

NOTE: All terminals are located at the bottom of the drive. Fit interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.

Derating Curves

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



X Switching frequency