Specifications





## variable speed drive ATV61 -400kW 600HP - 380...480V - IP20

ATV61HC40N4

() Discontinued on: Sep 15, 2023

() To be end-of-service on: Dec 31, 2024

() Discontinued

Product availability: Stock - Normally stocked in distribution facility

### Main

Mann	
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	355 kW, 3 phase 380480 V 400 kW, 3 phase 380480 V
Maximum Horse Power Rating	600 hp, 3 phase 380480 V
Power Supply Voltage	380480 V - 1510 %
Supply Number Of Phases	3 phase
Line Current	597 A 480 V 3 phase 355 kW 637 A 380 V 3 phase 355 kW 644 A 480 V 3 phase 400 kW / 600 hp 709 A 380 V 3 phase 400 kW / 600 hp
Emc Filter	Level 3 EMC filter
Assembly Style	With heat sink
Apparent Power	419.3 kVA 380 V 3 phase 355 kW 466.6 kVA 380 V 3 phase 400 kW / 600 hp
Maximum Prospective Line Isc	50 kA 3 phase
Maximum Transient Current	910.8 A 60 s, 3 phase
Nominal Switching Frequency	2.5 kHz
Switching Frequency	28 kHz adjustable 2.58 kHz with derating factor
Asynchronous Motor Control	Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, 2 points Voltage/frequency ratio, 5 points Flux vector control without sensor, standard
Synchronous Motor Control Profile	Vector control without sensor, standard
Communication Port Protocol	Modbus CANopen
Type Of Polarization	No impedance Modbus

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

#### **Option Card**

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

### Complementary

Product Destination	Synchronous motors Asynchronous motors					
Power Supply Voltage Limits	323528 V					
Power Supply Frequency	5060 Hz - 55 %					
Power Supply Frequency Limits	47.563 Hz					
Continuous Output Current	759 A 2.5 kHz, 380 V - 3 phase 759 A 2.5 kHz, 460 V - 3 phase					
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 % 60 s					
Braking Torque	<= 125 % with braking resistor 30 % without braking resistor					
Regulation Loop	Frequency PI regulator					
Motor Slip Compensation	Can be suppressed Automatic whatever the load Not available in voltage/frequency ratio (2 or 5 points) Adjustable					
Diagnostic	for drive voltage 1 LED (red)					
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 IEC cable 104 °F (40 °C), copper 70 °C / PVC With UL Type 1 kit 3 UL 508 cable 104 °F (40 °C), copper 75 °C / PVC Without mounting kit 1 IEC cable 113 °F (45 °C), copper 70 °C / PVC Without mounting kit 1 IEC cable 113 °F (45 °C), copper 90 °C / XLPE/EPR					
Electrical Connection	Terminal 2.5 mm² / AWG 14 Al1-/Al1+, Al2, AO1, R1A, R1B, R1C, R2A, R2B, Ll1Ll6, PWR) Terminal 4 x 185 mm² / 4 x 500 kcmil L1/R, L2/S, L3/T, U/T1, V/T2, W/T3) Terminal 8 x 185 mm² / 4 x 500 kcmil PC/-, PO, PA/+)					
Tightening Torque	5.31 lbf.in (0.6 N.m) Al1-/Al1+, Al2, AO1, R1A, R1B, R1C, R2A, R2B, Ll1Ll6, PWR) 362.88 lbf.in (41 N.m), 360 lb.in PC/-, PO, PA/+) 362.88 lbf.in (41 N.m), 360 lb.in L1/R, L2/S, L3/T, U/T1, V/T2, W/T3)					
Supply	Internal supply for reference potentiometer (1 to 10 kOhm) 10.5 V DC, +/- 5 %, <10 mA overload and short-circuit protection Internal supply 24 V DC 2127 V), <200 mA overload and short-circuit protection External supply 24 V DC 1930 V)					
Analogue Input Number	2					

Analogue Input Type	AI1-/AI1+ bipolar differential voltage +/- 10 V DC 24 V max 11 bits + sign
	Al2 software-configurable current 020 mA 242 Ohm 11 bits
	Al2 software-configurable voltage 010 V DC 24 V max 30000 Ohm 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	
Absolute Accuracy Frecision	+/- 0.6 % AI1-/AI1+) for a temperature variation 60 °C +/- 0.6 % AI2) for a temperature variation 60 °C
	+/- 1 % AO1) for a temperature variation 60 °C
Linearity Error	+/- 0.15 % of maximum value Al1-/Al1+)
	+/- 0.15 % of maximum value Al2)
	+/- 0.2 % AO1)
Analogue Output Number	1
Analogue Output Type	AO1 software-configurable current 020 mA 500 Ohm 10 bits
C	AO1 software-configurable voltage 010 V DC 470 Ohm 10 bits
	AO1 software-configurable logic output 10 V, 20 mA
Disorato Output Number	
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
Maximum Response Time	
Maximum Response Time	<= 100 ms in STO (Safe Torque Off)
	R1A, R1B, R1C <= 7 ms +/- 0.5 ms R2A, R2B <= 7 ms +/- 0.5 ms
Minimum Switching Current	3 mA 24 V DC configurable relay logic
Maximum Switching Current	R1, R2 2 A 250 V AC inductive, cos phi = 0.4 7 ms
	R1, R2 2 A 30 V DC inductive, cos phi = 0.4 7 ms
	R1, R2 5 A 250 V AC resistive, cos phi = 1 0 ms
	R1, R2 5 A 30 V DC resistive, cos phi = 1 0 ms
Discrete Input Number	7
Discrete Input Type	Programmable LI1LI5) 24 V DC <= 30 V)level 1 PLC - 3500 Ohm
	Switch-configurable LI6) 24 V DC <= 30 V)level 1 PLC - 3500 Ohm
	Switch-configurable PTC probe LI6)06 - 1500 Ohm
	Safety input PWR) 24 V DC <= 30 V) - 1500 Ohm
Discrete Input Logic	Negative logic (sink) L11L15), > 16 V, < 10 V
	Positive logic (source) LI1LI5), < 5 V, > 11 V Negative logic (sink) LI6)if configured as logic input, > 16 V, < 10 V
	Positive logic (sink) Li6)if configured as logic input, $< 5 V$ , $< 10 V$
Acceleration And Deceleration	Linear adjustable separately from 0.01 to 9000 s
Ramps	Automatic adaptation of ramp if braking capacity exceeded, by using resistor
	S, U or customized
Braking To Standstill	By DC injection
Protection Type	Against exceeding limit speed drive
	Against exceeding minit speed 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
Insulation 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)Modbus 1 RJ45 on terminal)Modbus Male SUB-D 9 on RJ45CANopen					
Physical Interface	2-wire RS 485 Modbus					
Transmission Frame	RTU Modbus					
Transmission Rate	4800 bps, 9600 bps, 19200 bps, 38.4 Kbps Modbus on terminal 9600 bps, 19200 bps Modbus on front face 20 kbps, 50 kbps, 125 kbps, 250 kbps, 500 kbps, 1 Mbps CANopen					
Data Format	8 bits, 1 stop, even parity Modbus on front face 8 bits, odd even or no configurable parity Modbus on terminal					
Number Of Addresses	1127 CANopen 1247 Modbus					
Method Of Access	Slave CANopen					
Marking	CE					
Operating Position	Vertical +/- 10 degree					
Net Weight	705.48 lb(US) (320 kg)					
Width	35.04 in (890 mm)					
Height	54.72 in (1390 mm)					
Depth	14.84 in (377 mm)					

## Environment

Noise Level	70 dB 86/188/EEC						
Dielectric Strength	3535 V DC between earth and power terminals 5092 V DC between control and power terminals						
Electromagnetic Compatibility	Conducted radio-frequency immunity test level 3 IEC 61000-4-6 Electrical fast transient/burst immunity test level 4 IEC 61000-4-4 Electrostatic discharge immunity test level 3 IEC 61000-4-2 Radiated radio-frequency electromagnetic field immunity test level 3 IEC 61000-4-3 Voltage dips and interruptions immunity test IEC 61000-4-11						
Standards	EN 61800-3 environments 2 category C3 EN 55011 class A group 2 EN 61800-3 environments 1 category C3 IEC 60721-3-3 class 3C2 EN/IEC 61800-3 UL Type 1 EN/IEC 61800-5-1						
Product Certifications	CSA DNV UL C-tick NOM 117 GOST						
Pollution Degree	3 EN/IEC 61800-5-1 3 UL 840						
Degree Of Proctection	IP41 on upper part EN/IEC 60529 IP41 on upper part EN/IEC 61800-5-1 IP00 EN/IEC 60529 IP00 EN/IEC 61800-5-1 IP30 on side parts EN/IEC 60529 IP30 on side parts EN/IEC 61800-5-1 IP30 on the front panel EN/IEC 61800-5-1						
Vibration Resistance	0.6 gn 10…200 Hz)EN/IEC 60068-2-6 1.5 mm peak to peak 3…10 Hz)EN/IEC 60068-2-6						
Shock Resistance	4 gn 11 ms EN/IEC 60068-2-27						
Relative Humidity	595 % without condensation IEC 60068-2-3 595 % without dripping water IEC 60068-2-3						

Ambient Air Temperature For Operation	14113 °F (-1045 °C) without derating) 113140 °F (4560 °C) with derating factor)
Ambient Air Temperature For Storage	-13158 °F (-2570 °C)
Operating Altitude	<= 3280.84 ft (1000 m) without derating

3280.84...9842.52 ft (1000...3000 m) with current derating 1 % per 100 m

## Ordering and shipping details

Category	US1CP4C22140
Discount Schedule	CP4C
Gtin	3389118086449
Returnability	No
Country Of Origin	US

## **Packing Units**

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	20.87 in (53.0 cm)
Package 1 Width	36.22 in (92.0 cm)
Package 1 Length	57.09 in (145.0 cm)
Package 1 Weight	740.75 lb(US) (336.0 kg)
Unit Type Of Package 2	PAL
Number Of Units In Package 2	1
Package 2 Height	22.50 in (57.15 cm)
Package 2 Width	36.50 in (92.71 cm)
Package 2 Length	57.50 in (146.05 cm)
Package 2 Weight	803.00 lb(US) (364.234 kg)

### **Contractual warranty**

Warranty

18 months

## Sustainability Screen

**Green Premium<sup>TM</sup> 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-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

Yes

Learn more about Green Premium >

Guide to assess a product's sustainability >



RoHS/REACh

### Well-being performance

Mercury Free

Rohs Exemption Information

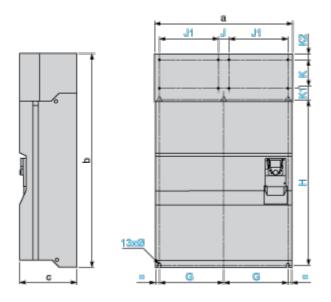
### **Certifications & Standards**

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.				
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				

**Dimensions Drawings** 

### UL Type 1/IP 20 Drives

### Dimensions with or without 1 Option Card (1)



#### Dimensions in mm

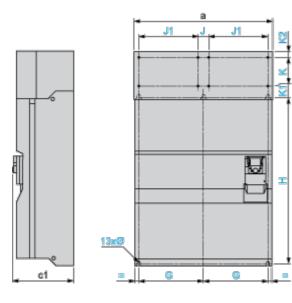
а	b	с	G	J	J1	Н	K	K1	K2	Ø
890	1390	377	417.5	75	380	1120	150	75	30	11.5

Dimensions in in.

а	b	с	G	J	J1	Н	К	K1	K2	Ø
35.04	54.72	14.84	16.44	2.95	14.96	44.09	5.90	2.95	1.18	0.45

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

#### Dimensions with 2 Option Cards (1)



Dimensions in mm

## ATV61HC40N4

а		c1	G	J	J1	Н	K	K1	K2	Ø
89	90	392	417.5	75	380	1120	150	75	30	11.5

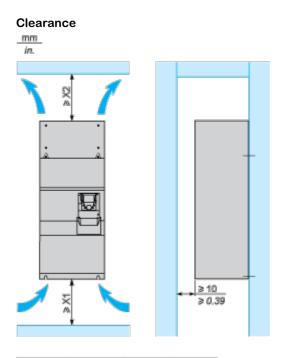
Dimensions in in.

а	c1	G	J	J1	Н	К	K1	K2	Ø
35.04	15.43	16.44	2.95	14.96	44.09	5.90	2.95	1.18	0.45

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

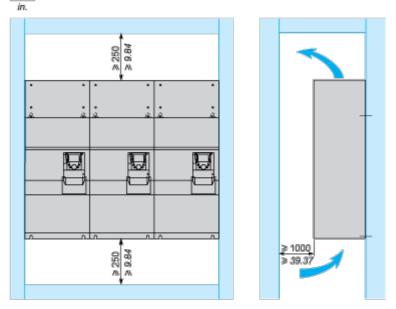
### Mounting and Clearance

#### **Mounting Recommendations**



X1 in mm	X2 in mm	X1 in in.	X2 in in.
250	300	9.84	11.81

These drives can be mounted side by side, observing the following mounting recommendations:



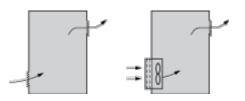
### ATV61HC40N4

#### 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.

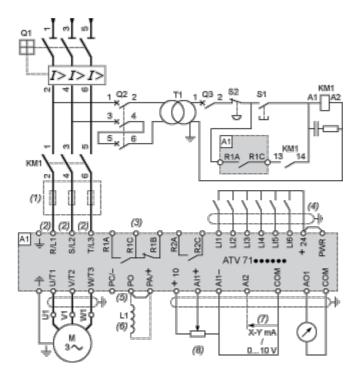
#### Dust and Damp Proof Metal Enclosure (IP 54)

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.

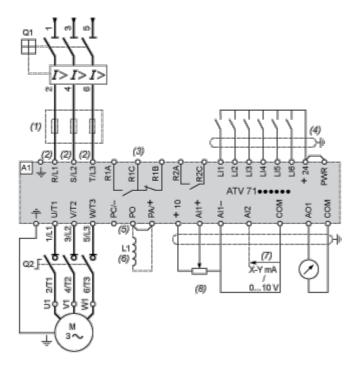
(7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.

(8) Reference potentiometer.

### ATV61HC40N4

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 guide).

(5) There is no PO terminal on ATV61HC11Y...HC80Y drives.

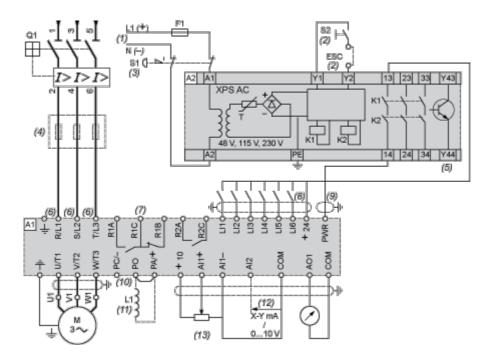
(6) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X, ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. 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.

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,

### ATV61HC40N4

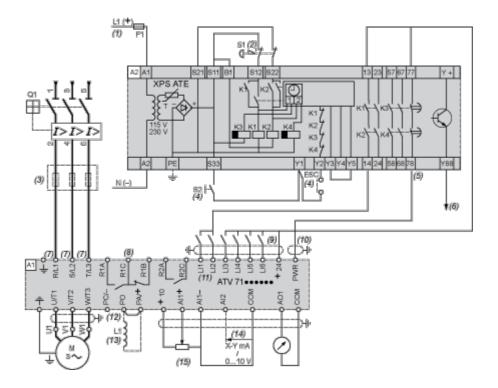
ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it. For ATV61W•••N4 and ATV61W•••N4C drives, the DC choke is integrated.

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

### ATV61HC40N4

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.

### ATV61HC40N4

(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.

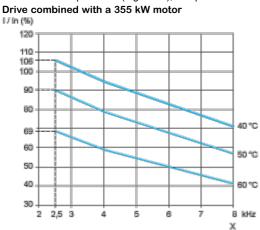
(13) Optional DC choke for ATV61H•••M3, ATV61HD11M3X...HD45M3X and ATV61H075N4...HD75N4 drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV61HD55M3X...HD90M3X, ATV61HD90N4...HC63N4 drives, the choke is supplied with the drive; the customer is responsible for connecting 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.

### Performance Curves

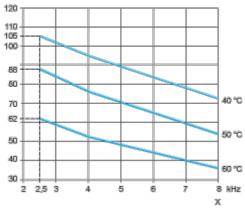
#### **Derating Curves**

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



X Switching frequency

Drive combined with a 400 kW motor I / Im (%)



X Switching frequency