Specification





variable speed drive ATV61 - 55kW / 690V - 60HP / 575V - IP20

ATV61HD55Y

- ! Discontinued on: Feb 17, 2021
- ! To be end-of-service on: Mar 1, 2028



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

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	45 kW, 3 phase 500 V 55 kW, 3 phase 690 V
Maximum Horse Power Rating	60 hp, 3 phase 575 V
Power Supply Voltage	500690 V - 1510 %
Supply Number Of Phases	3 phase
Line Current	57 A 600 V 3 phase 45 kW / 60 hp 63 A 690 V 3 phase 45 kW / 60 hp 68 A 500 V 3 phase 45 kW / 60 hp
Emc Filter	Level 3 EMC filter
Assembly Style	With heat sink
Maximum Prospective Line Isc	22 kA 3 phase
Maximum Transient Current	81.6 A 60 s, 3 phase
Nominal Switching Frequency	2.5 kHz
Switching Frequency	2.54.9 kHz adjustable 2.54.9 kHz with derating factor
Asynchronous Motor Control	Voltage/frequency ratio - Energy Saving, quadratic U/f Voltage/frequency ratio, 5 points Flux vector control without sensor, standard Voltage/frequency ratio, 2 points
Synchronous Motor Control Profile	Vector control without sensor, standard
Communication Port Protocol	CANopen Modbus
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

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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	62 A 2.5 kHz, 575 V - 3 phase 62 A 2.5 kHz, 690 V - 3 phase 68 A 2.5 kHz, 500 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	Automatic whatever the load Can be suppressed Adjustable Not available in voltage/frequency ratio (2 or 5 points)
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 150 mm² / 300 kcmil L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB)
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 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 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	Al1-/Al1+ bipolar differential voltage +/- 10 V DC 24 V max 11 bits + sign
Analogue input Type	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	+/- 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
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
	AO1 software-configurable voltage 010 V DC 470 Ohm 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
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) LI1LI5), > 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 (source) LI6)if configured as logic input, < 5 V, > 11 V
Acceleration And Deceleration	S, U or customized
Ramps	Automatic adaptation of ramp if braking capacity exceeded, by using resistor
	Linear adjustable separately from 0.01 to 9000 s
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 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
Traduction 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	149.91 lb(US) (68 kg)
Width	12.60 in (320 mm)
Height	24.80 in (630 mm)
Depth	11.42 in (290 mm)

Environment

Noise Level	63.7 dB 86/188/EEC
Dielectric Strength	3110 V DC between earth and power terminals 5345 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 55011 class A group 2 EN/IEC 61800-3 EN/IEC 61800-5-1 EN 61800-3 environments 2 category C3 IEC 60721-3-3 class 3C2 EN 61800-3 environments 1 category C3 UL Type 1
Product Certifications	GOST C-tick NOM 117 CSA DNV UL
Pollution Degree	3 EN/IEC 61800-5-1 3 UL 840
Degree Of Proctection	IP20 on upper part without blanking plate on cover EN/IEC 60529 IP20 on upper part without blanking plate on cover EN/IEC 61800-5-1 IP21 EN/IEC 60529 IP21 EN/IEC 61800-5-1 IP41 on upper part EN/IEC 60529 IP41 on upper part EN/IEC 61800-5-1 IP54 on lower part EN/IEC 60529 IP54 on lower part EN/IEC 61800-5-1
Vibration Resistance	1 gn 13200 Hz)EN/IEC 60068-2-6 1.5 mm peak to peak 313 Hz)EN/IEC 60068-2-6
Shock Resistance	15 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	14122 °F (-1050 °C) without derating) 122140 °F (5060 °C) with derating factor)
Ambient Air Temperature For Storage	-13158 °F (-2570 °C)
Operating Altitude	<= 3280.84 ft (1000 m) without derating 3280.847414.7 ft (10002260 m) with current derating 1 % per 100 m

Ordering and shipping details

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Category	US1CP4C22138
Discount Schedule	CP4C
Gtin	3389119214766
Returnability	No
Country Of Origin	FR

Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	18.50 in (47.0 cm)
Package 1 Width	23.62 in (60.0 cm)
Package 1 Length	31.50 in (80.0 cm)
Package 1 Weight	135.58 lb(US) (61.5 kg)

Contractual warranty

Warranty 18 months



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RoHS/REACh

Well-being performance



Mercury Free



Rohs Exemption Information

Yes

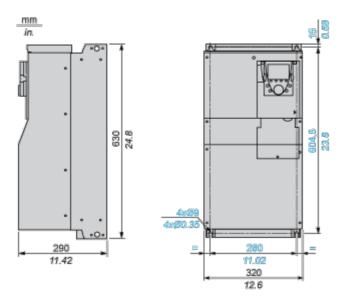
Certifications & Standards

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
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

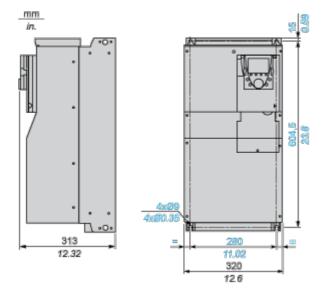
Dimensions Drawings

UL Type 1/IP 20 Drives

Dimensions without Option Card



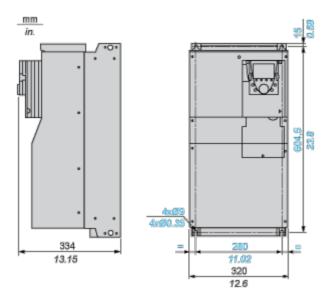
Dimensions with 1 Option Card (1)



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

Dimensions with 2 Option Cards (1)

ATV61HD55Y



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

ATV61HD55Y

Mounting and Clearance

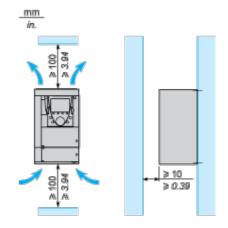
Mounting Recommendations

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:

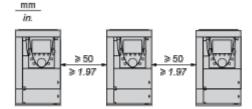
- Avoid placing it close to heating elements
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit.

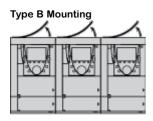
Clearance



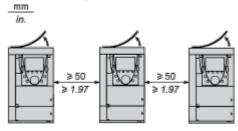
Mounting Types

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).

Product data sheet ATV61HD55Y

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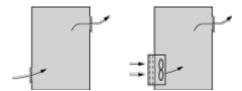
ATV61HD55Y

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.

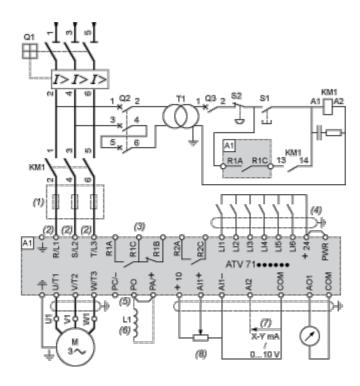
This enables the drive to be used in an enclosure where the maximum internal temperature reaches 50°C.

ATV61HD55Y

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

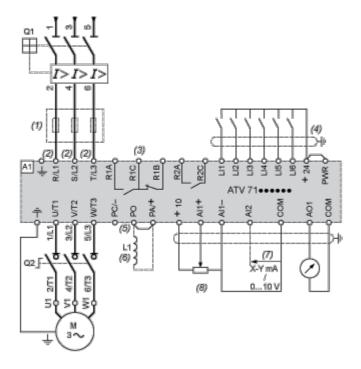
T1 100 VA transformer 220 V secondary

- (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 data sheet ATV61HD55Y

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

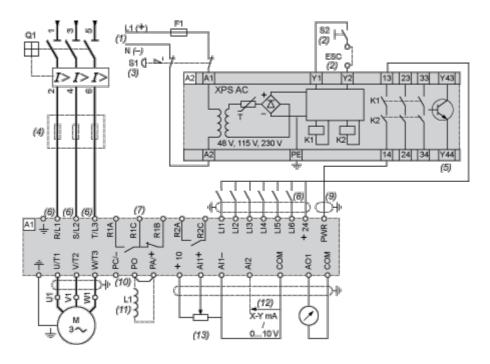
Three-Phase Power Supply with Downstream Breaking via Switch Disconnector



- 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,

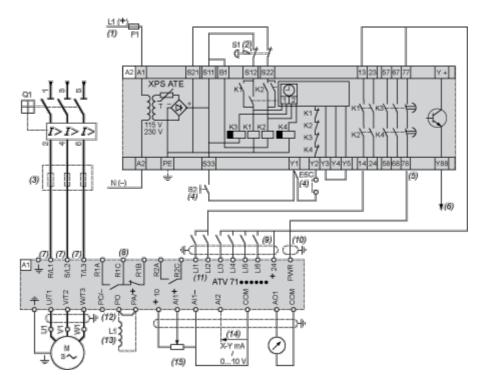
ATV61HD55Y

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.

ATV61HD55Y

- (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.

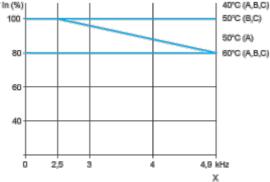
18

ATV61HD55Y

Performance Curves

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.



X Switching frequency

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