

ATV71HU22M3

variable speed drive ATV71 - 2.2kW-3HP -
240V - EMC filter-graphic terminal



Main

| | |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Range of product | Altivar 71 |
| Product or component type | Variable speed drive |
| Product specific application | Complex, high-power machines |
| Component name | ATV71 |
| Motor power kW | 1.5 kW, single phase at 200...240 V 2.2 kW, 3 phases at 200...240 V |
| Motor power hp | 2 Hp, single phase at 200...240 V 3 hp, 3 phases at 200...240 V |
| Maximum motor cable length | 50 M shielded cable 100 m unshielded cable |
| Power supply voltage | 200...240 V - 15...10 % |
| Network number of phases | Single phase 3 phases |
| Line current | 12.8 A for 240 V 3 phases 2.2 kW / 3 hp 15 A for 200 V 3 phases 2.2 kW / 3 hp 15.7 A for 240 V single phase 1.5 kW / 2 hp 18.2 A for 200 V single phase 1.5 kW / 2 hp |
| EMC filter | Integrated |
| Assembly style | With heat sink |
| Apparent power | 3.7 KVA at 240 V single phase 1.5 kW / 2 hp 5.3 kVA at 240 V 3 phases 2.2 kW / 3 hp |
| Prospective line I _{sc} | 5 KA for 3 phases 5 kA for single phase |
| Nominal output current | 11 A at 4 kHz 230 V 3 phases 2.2 kW / 3 hp 8 A at 4 kHz 230 V single phase 1.5 kW / 2 hp |
| Maximum transient current | 12 A for 60 s single phase 1.5 kW / 2 hp 13.2 A for 2 s single phase 1.5 kW / 2 hp 16.5 A for 60 s 3 phases 2.2 kW / 3 hp 18.1 A for 2 s 3 phases 2.2 kW / 3 hp |
| Output frequency | 0.1...599 Hz |
| Nominal switching frequency | 4 kHz |
| Switching frequency | 1...16 kHz adjustable 4...16 kHz with derating factor |
| Asynchronous motor control profile | Flux vector control (FVC) with sensor (current vector) Sensorless flux vector control (SFVC) (voltage or current vector) Voltage/Frequency ratio (2 or 5 points) ENA (Energy adaptation) system for unbalanced loads |
| Type of polarization | No impedance for Modbus |

Complementary

| | |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product destination | Synchronous motors Asynchronous motors |
| Power supply voltage limits | 170...264 V |
| Power supply frequency | 50...60 Hz - 5...5 % |
| Power supply frequency limits | 47.5...63 Hz |
| Speed range | 1...100 for asynchronous motor in open-loop mode, without speed feedback 1...1000 for asynchronous motor in closed-loop mode with encoder feedback 1...50 for synchronous motor in open-loop mode, without speed feedback |

| | |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Speed accuracy | +/- 0.01 % of nominal speed in closed-loop mode with encoder feedback 0.2 Tn to Tn +/- 10 % of nominal slip without speed feedback 0.2 Tn to Tn |
| Torque accuracy | +/- 15 % in open-loop mode, without speed feedback +/- 5 % in closed-loop mode with encoder feedback |
| Transient overtorque | 170 % of nominal motor torque +/- 10 % for 60 s every 10 minutes 220 % of nominal motor torque +/- 10 % for 2 s |
| Braking torque | <= 150 % with braking or hoist resistor 30 % without braking resistor |
| Synchronous motor control profile | Vector control without speed feedback |
| Regulation loop | Adjustable PI regulator |
| Motor slip compensation | Adjustable Suppressable Automatic whatever the load Not available in voltage/frequency ratio (2 or 5 points) |
| Diagnostic | 1 LED (red) for drive voltage |
| Output voltage | <= power supply voltage |
| Insulation | Electrical between power and control |
| Type of cable for mounting in an enclosure | With a NEMA Type1 kit: 3 wire(s)UL 508 cable at 40 °C, copper 75 °C / PVC With an IP21 or an IP31 kit: 3 wire(s)IEC cable at 40 °C, copper 70 °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, clamping capacity: 2.5 mm ² , AWG 14 (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) Terminal, clamping capacity: 4 mm ² , AWG 10 (L1/R, L2/S, L3/T, U/T1, V/T2, W/T3, PC/-, PO, PA/+, PA, PB) |
| Tightening torque | 0.6 N.M (AI1-/AI1+, AI2, AO1, R1A, R1B, R1C, R2A, R2B, LI1...LI6, PWR) 1.4 N.m, 12.3 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, protection type: overload and short-circuit protection Internal supply: 24 V DC (21...27 V), <200 mA, protection type: overload and short-circuit protection |
| Analogue input number | 2 |
| Analogue input type | AI1-/AI1+ bipolar differential voltage: +/- 10 V DC 24 V max, resolution 11 bits + sign AI2 software-configurable current: 0...20 mA, impedance: 242 Ohm, resolution 11 bits AI2 software-configurable voltage: 0...10 V DC 24 V max, impedance: 30000 Ohm, resolution 11 bits |
| Input sampling time | 2 Ms +/- 0.5 ms (AI1-/AI1+) - analog input(s) 2 Ms +/- 0.5 ms (AI2) - analog input(s) 2 Ms +/- 0.5 ms (LI1...LI5) - discrete input(s) 2 ms +/- 0.5 ms (LI6)if configured as logic input - discrete input(s) |
| Response time | <= 100 ms in STO (Safe Torque Off) AO1 2 ms, tolerance +/- 0.5 ms for analog output(s) R1A, R1B, R1C 7 ms, tolerance +/- 0.5 ms for discrete output(s) R2A, R2B 7 ms, tolerance +/- 0.5 ms for discrete output(s) |
| Absolute accuracy precision | +/- 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 (AI1-/AI1+, AI2) +/- 0.2 % (AO1) |
| Analogue output number | 1 |
| Analogue output type | AO1 software-configurable logic output 10 V 20 mA AO1 software-configurable current 0...20 mA, impedance: 500 Ohm, resolution 10 bits AO1 software-configurable voltage 0...10 V DC, impedance: 470 Ohm, resolution 10 bits |
| 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 |
| 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 R1, R2: 2 A at 30 V DC inductive load, cos phi = 0.4 R1, R2: 5 A at 250 V AC resistive load, cos phi = 1 R1, R2: 5 A at 30 V DC resistive load, cos phi = 1 |
| Discrete input number | 7 |

| | |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discrete input type | LI1...LI5: programmable 24 V DC with level 1 PLC, impedance: 3500 Ohm LI6: switch-configurable 24 V DC with level 1 PLC, impedance: 3500 Ohm LI6: switch-configurable PTC probe 0...6, impedance: 1500 Ohm PWR: safety input 24 V DC, impedance: 1500 Ohm conforming to ISO 13849-1 level d |
| Discrete input logic | Negative logic (sink) (LI1...LI5), > 16 V (state 0), < 10 V (state 1) Positive logic (source) (LI1...LI5), < 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 ramps | Linear adjustable separately from 0.01 to 9000 s S, U or customized Automatic adaptation of ramp if braking capacity exceeded, by using resistor |
| 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 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 |
| Communication port protocol | CANopen Modbus |
| 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 | 1...127 for CANopen 1...247 for Modbus |
| Method of access | Slave CANopen |
| Marking | CE |
| Operating position | Vertical +/- 10 degree |
| Height | 260 mm |
| Depth | 187 mm |
| Width | 155 mm |
| Product weight | 4 kg |
| Functionality | Full |
| Specific application | Other applications |
| Option card | 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 Interface card for encoder Communication card for Modbus Plus Communication card for Modbus TCP Communication card for Modbus/Uni-Telway Overhead crane card Communication card for Profibus DP Communication card for Profibus DP V1 |

Environment

| | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Noise level | 54.5 dB conforming to 86/188/EEC |
| Dielectric strength | 2830 V DC between earth and power terminals 4230 V DC between control and power terminals |
| Electromagnetic compatibility | 1.2/50 μ s - 8/20 μ s surge immunity test level 3 conforming to IEC 61000-4-5 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 |
| Standards | EN 61800-3 environments 2 category C2 IEC 60721-3-3 class 3S2 EN 61800-3 environments 1 category C2 EN 55011 class A group 1 EN/IEC 61800-5-1 IEC 60721-3-3 class 3C1 UL Type 1 EN/IEC 61800-3 |
| Product certifications | UL C-Tick GOST CSA NOM 117 |
| Pollution degree | 2 conforming to EN/IEC 61800-5-1 |
| IP degree of protection | IP20 |
| Vibration resistance | 1 gn (f= 13...200 Hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f= 3...13 Hz) conforming to EN/IEC 60068-2-6 |
| Shock resistance | 15 gn for 11 ms conforming to EN/IEC 60068-2-27 |
| Relative humidity | 5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3 |
| Ambient air temperature for operation | -10...50 °C (without derating) |
| Ambient air temperature for storage | -25...70 °C |
| Operating altitude | <= 1000 m without derating 1000...3000 m with current derating 1 % per 100 m |

Packing Units

| | |
|------------------|----------|
| Package 1 Weight | 5.810 kg |
| Package 1 Height | 3.060 dm |
| Package 1 width | 3.150 dm |
| Package 1 Length | 3.850 dm |

Offer Sustainability

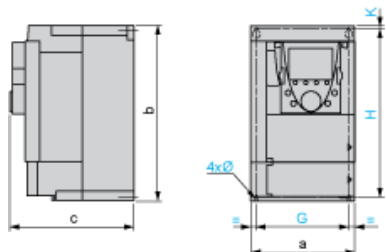
| | |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status | Green Premium product |
| REACH Regulation | REACH Declaration |
| EU RoHS Directive | Pro-active compliance (Product out of EU RoHS legal scope) EU RoHS Declaration |
| Mercury free | Yes |
| RoHS exemption information | Yes |
| China RoHS Regulation | China RoHS Declaration |
| Environmental Disclosure | Product Environmental Profile |
| Circularity Profile | End Of Life Information |
| 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 |

Contractual warranty

| | |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

UL Type 1/IP 20 Drives

Dimensions without Option Card



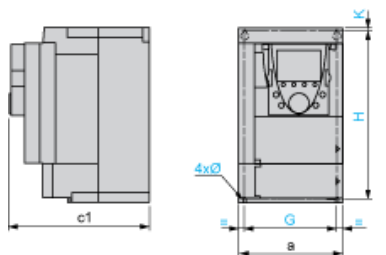
Dimensions in mm

| a | b | c | G | H | K | Ø |
|-----|-----|-----|-----|-----|---|---|
| 155 | 260 | 187 | 138 | 249 | 4 | 5 |

Dimensions in in.

| a | b | c | G | H | K | Ø |
|------|-------|------|------|------|------|------|
| 6.10 | 10.24 | 7.36 | 5.43 | 9.80 | 0.15 | 0.19 |

Dimensions with 1 Option Card (1)



Dimensions in mm

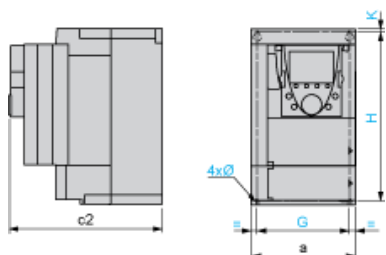
| a | c1 | G | H | K | Ø |
|-----|-----|-----|-----|---|---|
| 155 | 210 | 138 | 249 | 4 | 5 |

Dimensions in in.

| a | c1 | G | H | K | Ø |
|------|------|------|------|------|------|
| 6.10 | 8.26 | 5.43 | 9.80 | 0.15 | 0.19 |

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

Dimensions with 2 Option Cards (1)



Dimensions in mm

| a | c2 | G | H | K | Ø |
|-----|-----|-----|-----|---|---|
| 155 | 233 | 138 | 249 | 4 | 5 |

Dimensions in in.

| a | c2 | G | H | K | Ø |
|------|------|------|------|------|------|
| 6.10 | 9.17 | 5.43 | 9.80 | 0.15 | 0.19 |

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

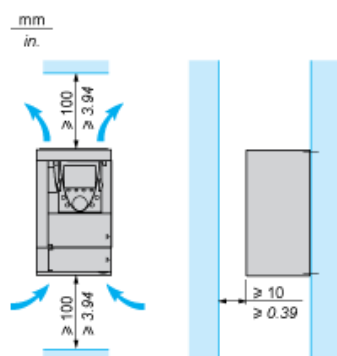
Mounting Recommendations

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:

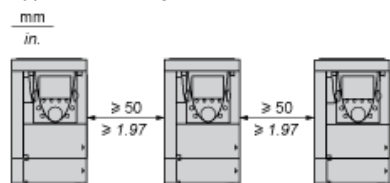
- Avoid placing it close to heating elements
- Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit.

Clearance

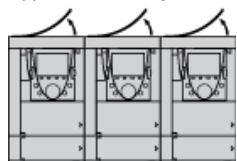


Mounting Types

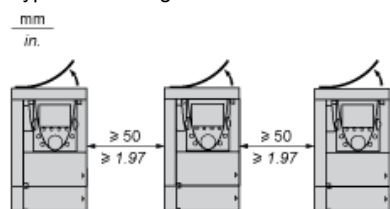
Type A Mounting



Type B 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).

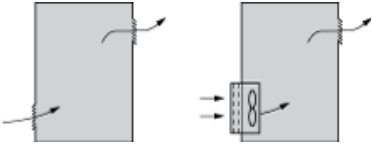
The protective blanking cover must be removed from ATV 71P•••N4Z drives when they are mounted in a dust and damp proof enclosure.

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.

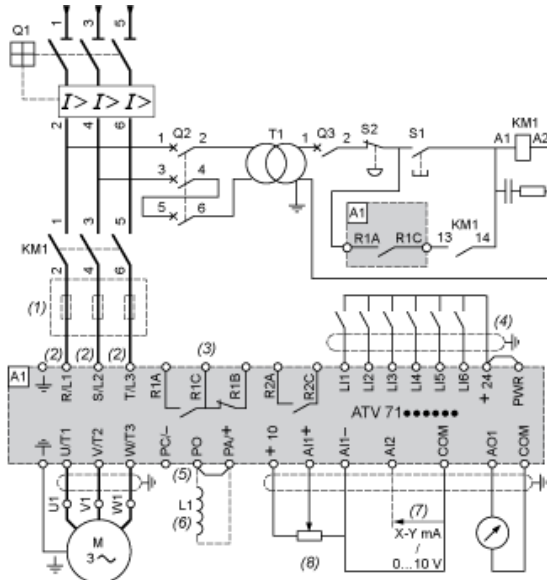
Dust and Damp Proof Metal Enclosure (IP 54)

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.

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

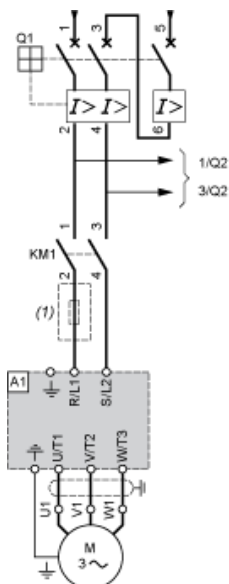


- A1 ATV71 drive
- KM1 Contactor
- L1 DC choke
- Q1 Circuit-breaker
- Q2 GV2 L rated at twice the nominal primary current of T1
- Q3 GB2CB05
- S1, XB4 B or XB5 A pushbuttons
- S2
- T1 100 VA transformer 220 V secondary
- (1) Line choke (three-phase); mandatory for ATV71HC11Y...HC63Y drives (except when a special transformer is used (12-pulse)).
- (2) For ATV71HC40N4 drives combined with a 400 kW motor, ATV71HC50N4 and ATV71HC40Y...HC63Y, 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 ATV71HC11Y...HC63Y drives.
- (6) Optional DC choke for ATV71H...M3, ATV71HD11M3X...HD45M3X, ATV71•075N4...•D75N4 and ATV71P...N4Z drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV71HD55M3X, HD75M3X, ATV71HD90N4...HC50N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it.
- (7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (8) Reference potentiometer.

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

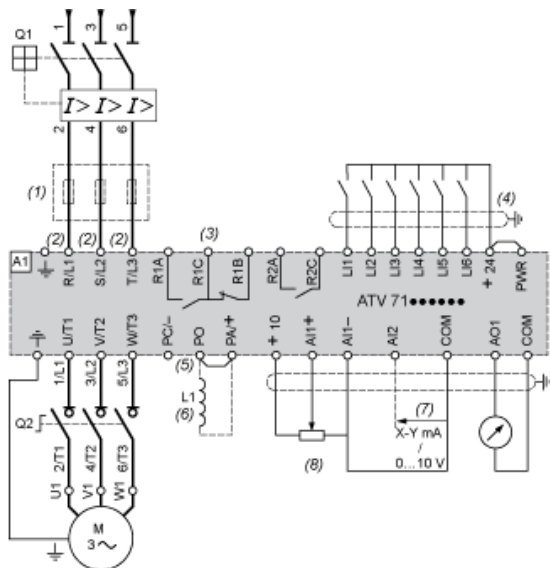
Power Section for Single-Phase Power Supply



- A1 ATV71 drive
 KM1 Contactor
 Q1 Circuit-breaker
 Q2 GV2 L rated at twice the nominal primary current of T1
 (1) Line Choke (single-phase); mandatory for ATV71HU40M3...HU75M3 drives with a 200...240 V 50/60 Hz single-phase power supply.
- 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

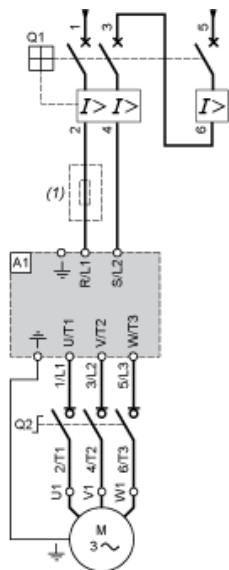


- A1 ATV71 drive
 L1 DC choke
 Q1 Circuit-breaker
 Q2 Switch disconnecter (Vario)
- (1) Line choke (three-phase), mandatory for ATV71HC11Y...HC63Y drives (except when a special transformer is used (12-pulse)).
 (2) For ATV71HC40N4 drives combined with a 400 kW motor, ATV71HC50N4 and ATV71HC40Y...HC63Y, 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 ATV71HC11Y...HC63Y drives.
 (6) Optional DC choke for ATV71H...M3, ATV71HD11M3X...HD45M3X, ATV71•075N4...•D75N4 and ATV71P...N4Z drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV71HD55M3X, HD75M3X, ATV71HD90N4...HC50N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it.
 (7) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
 (8) Reference potentiometer.

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

Power Section for Single-Phase Power Supply



A1 ATV71 drive

Q1 Circuit-breaker

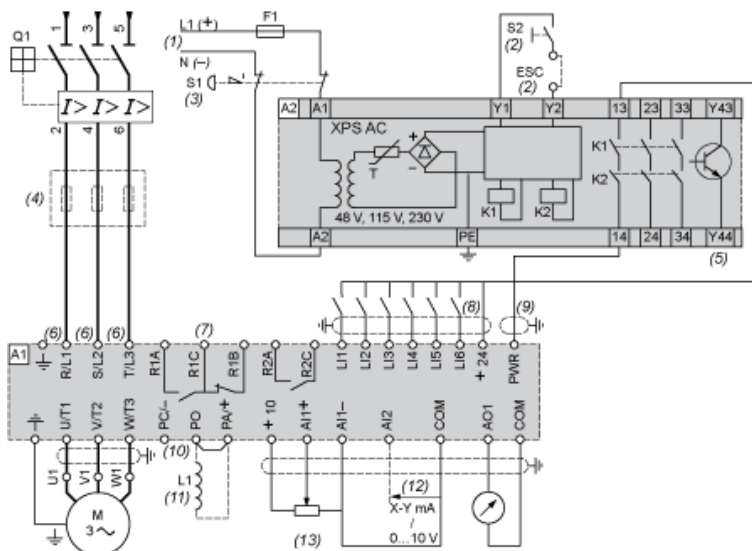
Q2 Switch disconnect (Vario)

(1) Line Choke (single-phase); mandatory for ATV71HU40M3...HU75M3 drives with a 200...240 V 50/60 Hz single-phase power supply.

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

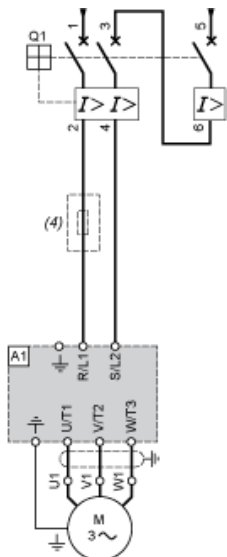


- A1 ATV71 drive
- A2 Preventa XPS AC safety module for monitoring emergency stops and switches. One safety module can manage the “Power Removal” function for several drives on the same machine. In this case, each drive must connect its PWR terminal to its + 24 V via the safety contacts on the XPS AC 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, 48 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 ATV71HC11Y...HC63Y 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 ATV71HC40N4 drives combined with a 400 kW motor, ATV71HC50N4 and ATV71HC40Y...HC63Y, 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 ATV71HC11Y...HC63Y drives.
- (11) Optional DC choke for ATV71H...M3, ATV71HD11M3X...HD45M3X, ATV71•075N4...•D75N4 and ATV71P...N4Z drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV71HD55M3X, HD75M3X, ATV71HD90N4...HC50N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it.
- (12) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
- (13) Reference potentiometer.

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

Power Section for Single-Phase Power Supply



A1 ATV71 drive

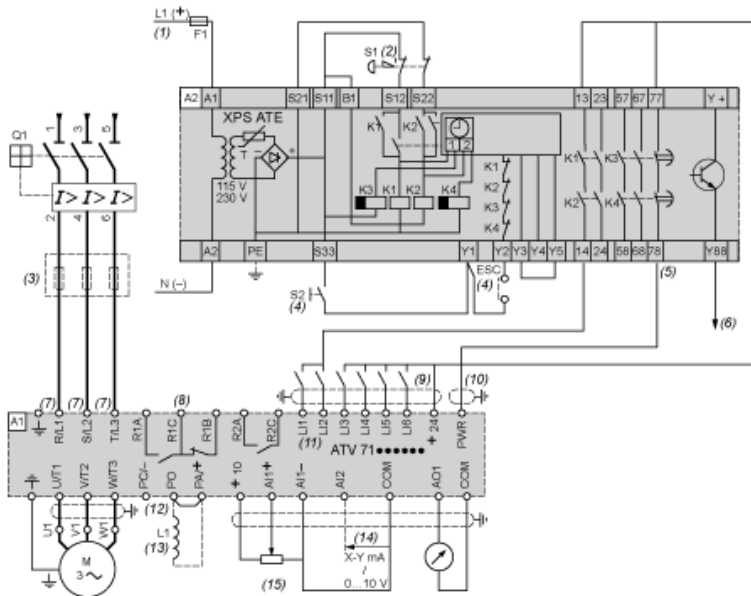
Q1 Circuit-breaker

(4) Line Choke (single-phase); mandatory for ATV71HU40M3...HU75M3 drives with a 200...240 V 50/60 Hz single-phase power supply.

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

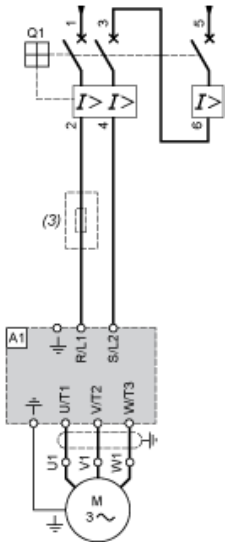


- A1 ATV71 drive
A2 Preventa XPS ATE safety module for monitoring emergency stops and switches. One safety module can manage the "Power Removal" (5) safety function for several drives on the same machine. In this case the time delay must be adjusted on the drive controlling the motor that requires the 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 N/C contacts
S2 Run button
- (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 ATV71HC11Y...HC63Y 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) 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.
(6) The logic output can be used to signal that the machine is in a safe state.
(7) For ATV71HC40N4 drives combined with a 400 kW motor, ATV71HC50N4 and ATV71HC40Y...HC63Y, 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 ATV71HC11Y...HC63Y drives.
(13) Optional DC choke for ATV71H...M3, ATV71HD11M3X...HD45M3X, ATV71•075N4...•D75N4 and ATV71P...N4Z drives. Connected in place of the strap between the PO and PA/+ terminals. For ATV71HD55M3X, HD75M3X, ATV71HD90N4...HC50N4 drives, the choke is supplied with the drive; the customer is responsible for connecting it.
(14) Software-configurable current (0...20 mA) or voltage (0...10 V) analog input.
(15) Reference potentiometer.

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

Power Section for Single-Phase Power Supply



A1 ATV71 drive

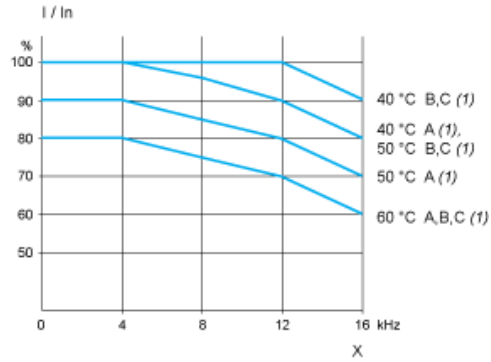
Q1 Circuit-breaker

(3) Line Choke (single-phase); mandatory for ATV71HU40M3...HU75M3 drives with a 200...240 V 50/60 Hz single-phase power supply.

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, the switching frequency and the mounting type. For intermediate temperatures (e.g. 55°C), interpolate between 2 curves.



- X Switching frequency
- (1) Mounting type