# Productinformatieblad

Specificaties

## Altivar ATS490 softstarter, 590 A, 208 tot 690 V AC, stuurspanning 110 tot 230 V AC, Bypass, STO

ATS490C59Y

**EAN Code: 3606486948910**

## Hoofd

| | |
|---|---|
| **range of product** | Altivar Soft Starter ATS490 |
| **product or component type** | Soft starter |
| **bestemming product** | Asynchrone motoren |
| **productspecifieke toepassing** | Processen en infrastructuur |
| **device short name** | ATS490 |
| **aantal fasen in netwerk** | 3 fases |
| **utilisation category** | AC-3A<br>AC-53A |
| **Ue power supply voltage** | 208...690 V AC (- 15...10 %) |
| **power supply frequency** | 50...60 Hz - 20...20 % |
| **Ie toegekende bedrijfstroom** | Normale werking: 590 A in line (bij <40 °C) |
| **Service factor at Ie** | 100 |
| **rated current in heavy duty** | 480 A at 40 °C voor heavy duty |
| **IP-beschermingsgraad** | IP00 |
| **motorvermogen kW** | 160 kW bij 230 V op de voedingslijn van de motor normale werking<br>315 kW bij 400 V op de voedingslijn van de motor normale werking<br>355 kW bij 440 V op de voedingslijn van de motor normale werking<br>400 kW bij 500 V op de voedingslijn van de motor normale werking<br>400 kW bij 525 V op de voedingslijn van de motor normale werking<br>560 kW bij 660 V op de voedingslijn van de motor normale werking<br>560 kW bij 690 V op de voedingslijn van de motor normale werking<br>132 kW bij 230 V op de voedingslijn van de motor heavy duty<br>250 kW bij 400 V op de voedingslijn van de motor heavy duty<br>250 kW bij 440 V op de voedingslijn van de motor heavy duty<br>315 kW bij 500 V op de voedingslijn van de motor heavy duty<br>315 kW bij 525 V op de voedingslijn van de motor heavy duty<br>400 kW bij 660 V op de voedingslijn van de motor heavy duty<br>500 kW bij 690 V op de voedingslijn van de motor heavy duty<br>400 kW bij 400 V op de delta-terminals van de motor normale werking<br>250 kW bij 230 V op de delta-terminals van de motor heavy duty<br>355 kW bij 400 V op de delta-terminals van de motor heavy duty |
| **motorvermogen pk** | 200 hp bij 230 V normale werking<br>400 hp bij 460 V normale werking<br>500 hp bij 575 V normale werking<br>150 hp bij 208 V heavy duty<br>350 hp bij 460 V heavy duty<br>400 hp bij 575 V heavy duty |
| **Met veiligheidsfunctie Veilige koppeluitschakeling (STO)** | True |
| **Safe Torque Off (STO)** | STO (safe torque off): SIL 1 conforming to IEC 61508<br>STO (safe torque off): PL c/category 2 conforming to ISO 13849 |
| **Cybersecurity functions** | True |
| **Cybersecurity level and standard** | Security level (SL) 1 conform aan IEC 62443-4-2 |

De weergegeven prijs is de adviesprijs in euro excl. BTW. Deze kan onderhevig zijn aan korting. Neem contact op met uw lokale distributeur of detailhandel voor de daadwerkelijke prijs

| | |
|---|---|
| **protocol communicatiepoort** | Seriële modbus<br>Modbus TCP/EtherNet/IP |
| **optiekaart** | Communicatiemodule voor CANopen doorlussen<br>Communicatiemodule voor CANopen SUB-D<br>Communicatiemodule voor CANopen open stijl<br>Communicatiemodule voor Profibus DP V1<br>Communicatiemodule voor Profinet |

## Complementair

| | |
|---|---|
| **aansluiting apparaat** | Op de voedingslijn van de motor<br>Inside delta |
| **Overload current profile** | 400 % Ie for 13 s |
| **on-load factor** | 50 % |
| **Operating cycles/hour** | 10 cyc/u |
| **[Us] control circuit voltage** | 110...230 V AC 50...60 Hz - 15...10 % |
| **schijnbaar vermogen** | 280 VA |
| **Geïntegreerde beveiliging tegen motoroverbelasting** | True |
| **motor thermal protection class** | Klasse 10E |
| **type bescherming** | Fase-uitval: mains<br>Thermische beveiliging: starter<br>Thermische beveiliging: motor<br>Stroomoverbelasting: motor<br>Motor underload: motor<br>Excessive acceleration time: motor<br>Motor phase loss detection: motor<br>Protection against line phase inversion: mains<br>External thermal protection: motor<br>Protection delta inside wiring: starter<br>Kortsluitingen tussen motorfase en aarding: motor |
| **current limiting %In (5 x Ie maximum)** | 150…700 % |
| **[In] Rated current pwr loss specifctn** | 590 A |
| **Aantal door stroommodule gevulde sleuven** | 19 W |
| **Vermogensverlies per pool afhankelijk van stroom** | 164 W |
| **Power loss during starting** | 7847 W during starting at 40 °C at 400% Ie |
| **standards** | EN/IEC 60947-4-2<br>UL 60947-4-2<br>IEC 60664-1 |
| **product certifications** | CE<br>cULus<br>UKCA<br>RCM<br>CCC<br>DNV<br>ATEX<br>EAC<br>KC |
| **markering** | CE<br>CULus<br>UKCA<br>RCM<br>CCC<br>ATEX<br>EAC<br>KC |
| **spanning stuurkring** | 24 V DC |
| **aantal digitale ingangen** | 5 |

| | |
|---|---|
| **discreet inputtype** | (DI1) digital input, 4.4 kOhm<br>(DI2) digital input, 4.4 kOhm<br>(DI3) digital input, 4.4 kOhm<br>(DI4) digital input, 4.4 kOhm<br>(STO) digital input, > 1 kOhm |
| **inputcompatibiliteit** | DI1: discrete input niveau 1 PLC conform aan EN/IEC 61131-2<br>DI2: discrete input niveau 1 PLC conform aan EN/IEC 61131-2<br>DI3: discrete input niveau 1 PLC conform aan EN/IEC 61131-2<br>DI4: discrete input niveau 1 PLC conform aan EN/IEC 61131-2<br>STO: discrete input niveau 1 PLC conform aan EN/IEC 61131-2 |
| **discrete inputlogica** | Digital input DI1 bij Status 0: 0...< 5 V en <= 2 mA bij Status 1: > 11 V, >= 5 mA<br>Digital input DI2 bij Status 0: 0...< 5 V en <= 2 mA bij Status 1: > 11 V, >= 5 mA<br>Digital input DI3 bij Status 0: 0...< 5 V en <= 2 mA bij Status 1: > 11 V, >= 5 mA<br>Digital input DI4 bij Status 0: 0...< 5 V en <= 2 mA bij Status 1: > 11 V, >= 5 mA<br>Digital input STO bij Status 0: 0...< 5 V en <= 2 mA bij Status 1: > 11 V, >= 5 mA |
| **relaisuitgang nummer** | 3 |
| **relaisuitgang type** | Relaisoutputs R1A, R1C NO<br>Relaisoutputs R2A, R2C NO<br>Relaisoutputs R3A, R3C NO |
| **minimale schakelstroom** | 100 mA bij 12 V DC voor relais outputs |
| **maximale schakelstroom** | Relaisoutputs 2 A / 250 V AC for AC-15 100000 cycles following IEC 60947-5-1<br>Relaisoutputs 2 A / 30 V DC for DC-13 150000 cycles following IEC 60947-5-1 |
| **aantal digitale uitgangen** | 2 |
| **discreet uitgangstype** | Programmeerbare digitale uitgang DQ1 <= 30 V 100 mA<br>Programmeerbare digitale uitgang DQ2 <= 30 V 100 mA |
| **Uitgangscompatibiliteit** | Open collector niveau 1 PLC conform aan IEC 65A-68 |
| **aantal analoge ingangen** | 1 |
| **analoog inputtype** | AI1/PTC1 : PTC/PT 100/PT 1000/KTY84 temperature probe<br>PTC2 : PTC/PT 100/PT 1000/KTY84 temperature probe<br>PTC3 : PTC/PT 100/PT 1000/KTY84 temperature probe |
| **aantal analoge uitgangen** | 1 |
| **analoog outputtype** | Huidige output AQ1 : 0...20 mA / 4...20 mA , impedance< 500 Ohm<br>Spanningsuitgang AQ1 : 0...10 V , impedance> 470 Ohm |
| **protocol communicatiepoort** | Seriële modbus<br>Modbus TCP/EtherNet/IP |
| **type connector** | 1 RJ45 for connecting Modbus serial<br>1 RJ45 for connecting Modbus TCP/EtherNet/IP |
| **fysieke interface** | 2-draads RS485<br>100-BASE-TX category 5 or industrial Ethernet |
| **transmissieframe** | RTU<br>TCP/UDP |
| **transmissiesnelheid** | 4.8…38.4 kbps<br>100 BASE TX |
| **dataformaat** | 8 bits, configurable odd, even or no parity 1or 2 stop |
| **aantal adressen** | 0…247 voor seriële modbus |
| **toegangsmethode** | Slave seriële modbus |
| **type polarisatie** | Geen impedantie voor seriële modbus |
| **Beschikbaar display** | True |
| **werkingspositie** | Vertikaal +/- 10 graden |
| **height** | 455 mm |
| **width** | 304 mm |
| **depth** | 300 mm |

| | |
|---|---|
| **net weight** | 28 kg |
| **interne bypass** | True |
| **beschikbarefunctie** | Voorverwarming<br>Rook-extractie<br>Tweede motorset<br>Deceleration with torque control<br>Braking<br>Boost<br>Line contactor control<br>Reverse contactor control<br>Anti-jam<br>Jog<br>Borehole pump starting<br>Condition monitoring<br>Power monitoring<br>Cyberveilige firmware-update |
| **materiaalaangifte** | True |

## Omgeving

| | |
|---|---|
| **elektromagnetische compatibiliteit** | Geleide en uitgestraalde emissies niveau A conforming to IEC 60947-4-2<br>Gedempte oscillerende golven level 3 conforming to IEC 61000-4-18<br>Elektrostatische ontlading level 3 conforming to IEC 61000-4-2<br>Immuniteit voor elektrische transiënten level 4 conforming to IEC 61000-4-4<br>Immuniteit voor gestraalde radio-elektrische interferentie level 3 conforming to IEC 61000-4-3<br>Spanning/stroomimpuls level 3 conforming to IEC 61000-4-5<br>Immuniteit voor geleide interferentie, geïnduceerd doorradio-elektrische velden level 3 conforming to EN/IEC 61000-4-6 |
| **pollution degree** | Niveau 3 |
| **[Uimp] rated impulse withstand voltage** | 6 kV |
| **[Ui] rated insulation voltage** | 690 V |
| **Omgevingsklasse (tijdens werking)** | Klasse 3C3 volgens IEC 60721-3-3<br>Klasse 3S3 volgens IEC 60721-3-3 |
| **omgevingsluchttemperatuur voor werking** | -25…40 °C (zonderverlies)<br>40…60 °C (with current derating of 1 % per °C above 40 °C) |
| **ambient air temperature for storage** | -40…70 °C |
| **Analoge uitgangsstroom** | -40…70 °C |
| **bedrijfshoogte** | <= 2000 m zonderverlies<br>> 2000...4800 m with current derating 1 % per 100 m above 2000 m |
| **relatieve vochtigheid** | 5…95 % zonder condensatie of waterdruppels conform aan EN/IEC 60068-2-3 |
| **Maximale vervorming onder trillende belasting (tijdens werking)** | 1,5 mm bij 2...13 Hz |
| **Maximale vervorming onder trillende belasting (tijdens opslag)** | 1,75 mm bij 2...9 Hz |
| **Maximale doorbuiging onder trillende belasting (tijdens transport)** | 1,75 mm bij 2...9 Hz |
| **Maximale versnelling onder trillingsspanning (tijdens werking)** | 1 gn at 13…200 Hz |
| **Maximale versnelling onder trillende belasting (tijdens opslag)** | 1 gn at 9…200 Hz<br>1.5 gn at 200…500 Hz |
| **Maximale versnelling onder trillende belasting (tijdens transport)** | 1 gn at 9…200 Hz<br>1.5 gn at 200…500 Hz |
| **Maximale versnelling bij schok (tijdens bedrijf)** | 15 gn at 11 ms |
| **Maximale versnelling onder schokbelasting (tijdens opslag)** | 10 gn at 11 ms |
| **Maximale versnelling onder schokbelasting (tijdens transport)** | 10 gn at 11 ms |

## Verpakkingseenheid

| | |
|---|---|
| **Unit Type of Package 1** | PCE |
| **Number of Units in Package 1** | 1 |
| **Package 1 Height** | 53 cm |
| **Package 1 Width** | 60 cm |
| **Package 1 Length** | 40 cm |
| **Package 1 Weight** | 38 kg |
| **Unit Type of Package 2** | P06 |
| **Number of Units in Package 2** | 2 |
| **Package 2 Height** | 67,4 cm |
| **Package 2 Width** | 60 cm |
| **Package 2 Length** | 80 cm |
| **Package 2 Weight** | 84,5 kg |

## Environmental Data

Schneider Electric wil tegen 2050 de Net Zero-status hebben bereikt via partnerschappen in de toeleveringsketen, materialen met een lagere impact en circulariteit via onze doorlopende campagne "Use Better, Use Longer, Use Again" om de levensduur van producten en de recycleerbaarheid te verlengen.

Uitleg van Environmental Data >

Hoe evalueren we de duurzaamheid van producten? >

### Milieuvoetafdruk

| | |
|---|---|
| Totale levenscyclus ecologische voetafdruk | **6203** |
| Milieuprofiel van product (PEP) | **Milieuprofiel van het product** |

## Use Better

### Materialen en verpakking

| | |
|---|---|
| Pakket met gerecycleerd karton | **Ja** |
| Verpakkingen zonder kunststof | **Nee** |
| EU-richtlijn RoHS | **Voldoet aan vrijstellingen** |
| SCIP-nummer | **Ee8571a3-ff67-4048-b02f-625b529e64e2** |
| REACh-regelgeving | **REACh-verklaring** |
| PVC-vrij | **Ja** |

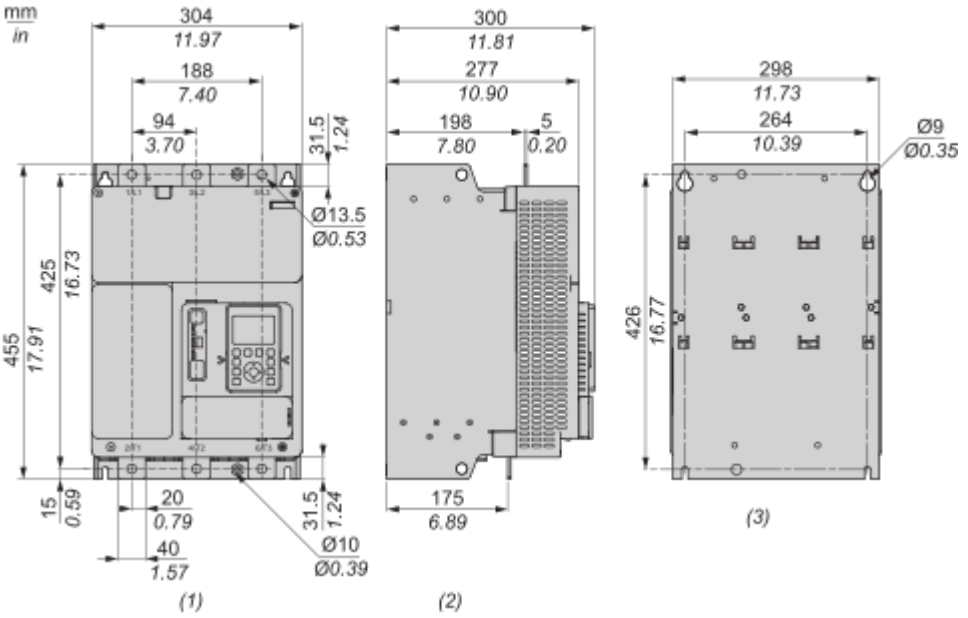
## Use Again

### Herverpakken en herfabriceren

| | |
|---|---|
| Circulair Profiel | **Informatie over einde levensduur** |
| Terugname | **No** |
| WEEE Label | **Het product moet op markten van de Europese Unie worden afgevoerd volgens specifieke afvalinzamelingsregels en mag nooit in een gewone vuilnisbak terechtkomen.** |

Dimensions Drawings

## Dimensions

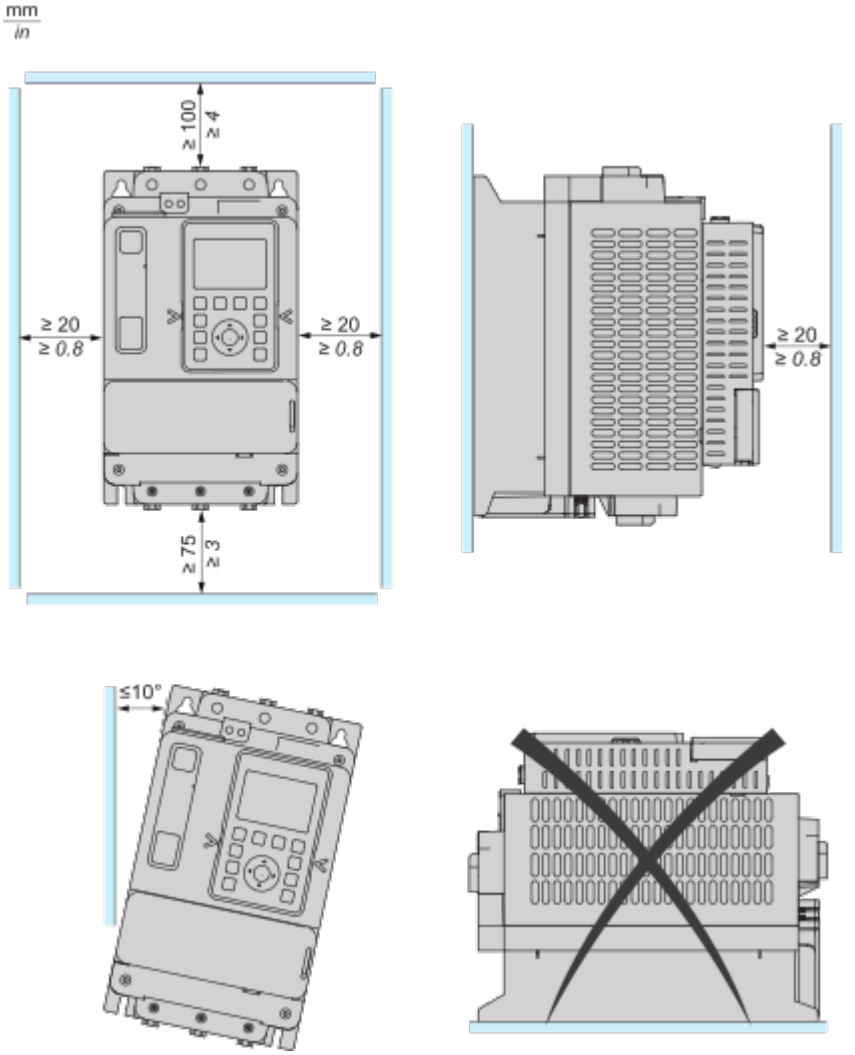



**(1)** : Front
**(2)** : Side
**(3)** : Rear

## Mounting and Clearance

### Mounting Position

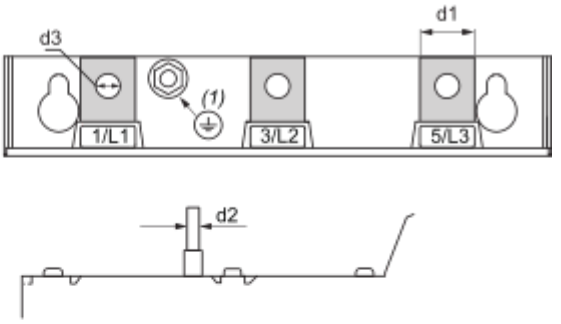
The soft starter is designed to be mounted inside cabinets vertically at ± 10° for cooling purposes.
Respect the minimum clearances so that the cooling air can circulate from the bottom to the top of the soft starter. The minimum clearances apply to any device close to the soft starter such as circuit breakers, fuses and contactors.
Do not install the soft starter above heating elements.



Connections and Schema

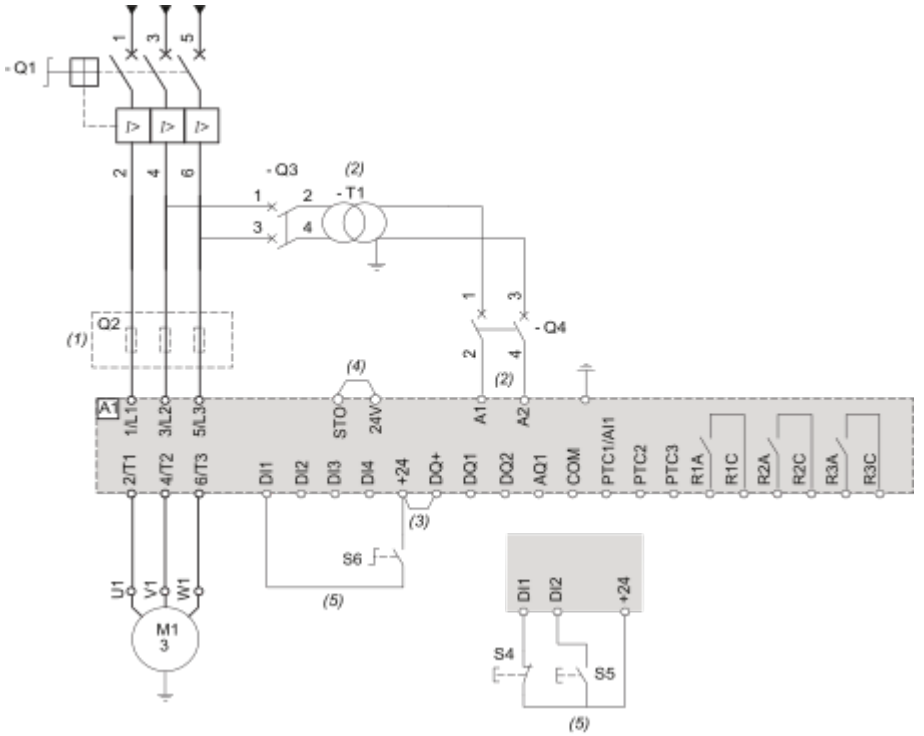
## Wiring

### Wiring the Power Part


**1/L1, 3/L2, 5/L3** : Mains supply inputs
**2/T1, 4/T2, 6/T3** : Outputs to motor
**(1)** : Ground connection

### Connection In Line, No Line Contactor, Type 1 or 2 Coordination, 2-wire or 3-wire control

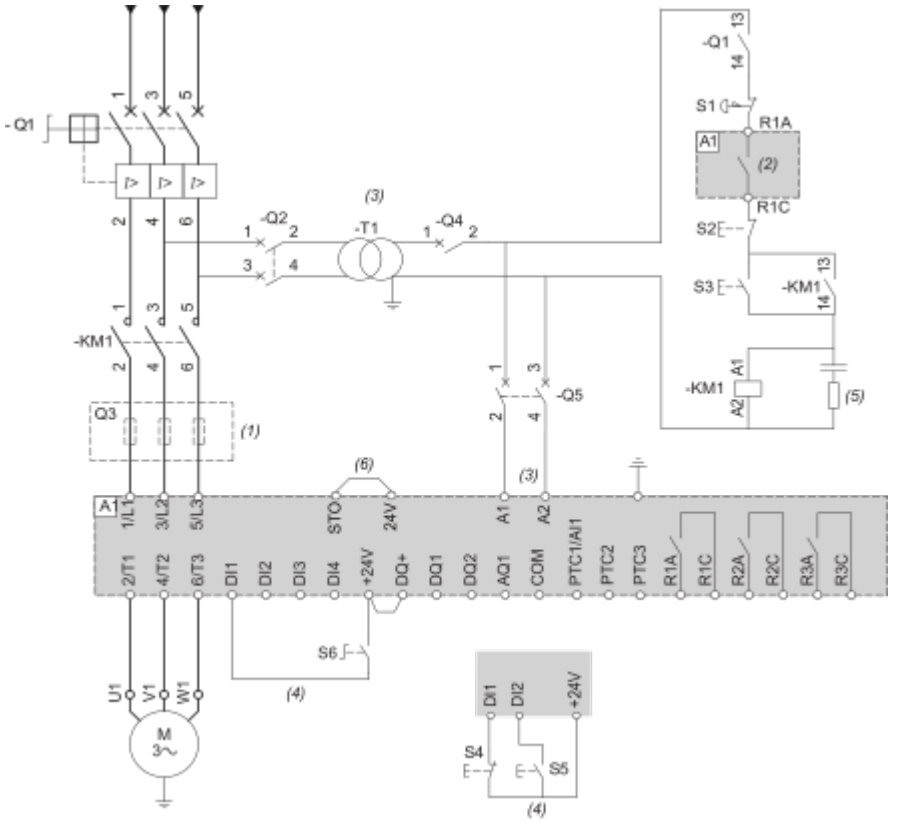


**(1)** : Installation of additional fast-acting fuses is mandatory to upgrade to type 2 coordination according to IEC 60947–4–2.
**(2)** : The transformer must supply 110...230 Vac +10% - 15%, 50/60Hz.
**(3)** : 24Vdc supply on DQ+ if usage of DQ outputs.
**(4)** : STO Safe Torque Off
**(5)** : 3–wire control and 2–wire control.

| Designation | Component | Description |
|---|---|---|
| Q1 | Circuit breaker | Short circuit protection device for the motor |
| Q2 | Fast acting fuses | Short circuit protection device of the soft starter to be used only when type 2 coordination |
| Q3 | Circuit breaker | Short circuit protection device for the primary of the transformer |
| Q4 | Circuit breaker | Short circuit protection device for the secondary of the transformer |
| S4 | Normally close contact push- button | STOP command for 3-wire control |
| S5 | Normally open contact push- button | RUN command for 3-wire control |
| S6 | Selector switch, 2 positions, stay–put, normally open contact | RUN/STOP command for 2-wire control |

## Connection In Line, With Line Contactor, Type 1 or 2 Coordination, 2-wire or 3-wire control

**Line contactor controlled by Power ON and Power OFF push-buttons or on detected error**
Use relay output R1 set to **[Operating State Fault]** (factory setting)



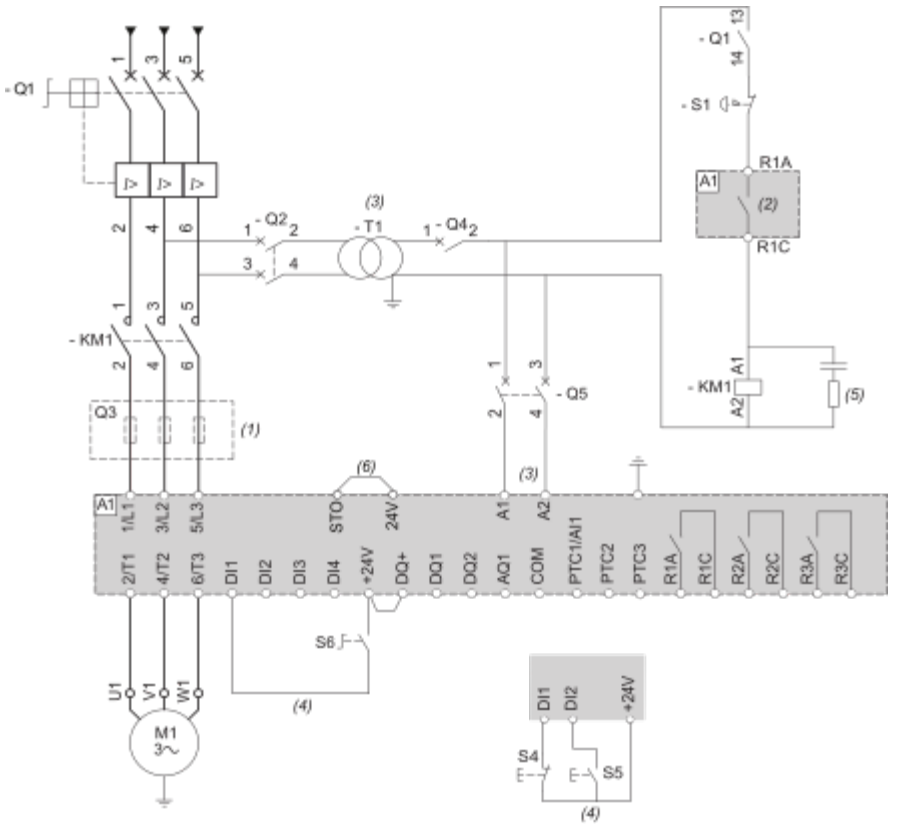

**(1)** : Installation of additional fast-acting fuses is mandatory to upgrade to type 2 coordination according to IEC 60947–4–2.

**(2)** : Take into account the electrical characteristics of the relays.
**(3)** : The transformer must supply 110...230 Vac +10% - 15%, 50/60Hz.
**(4)** : 3–wire control and 2–wire control.
**(5)** : Select the appropriate voltage surge suppressor.
**(6)** : STO Safe Torque Off

| Designation | Component | Description |
|---|---|---|
| Q1 | Circuit breaker | Short circuit protection device for the motor |
| Q2 | Circuit breaker | Short circuit protection device for the primary of the transformer |
| Q3 | Fast acting fuses | Short circuit protection device of the soft starter to be used only when type 2 coordination |
| Q4 | Circuit breaker | Short circuit protection device for the secondary of the transformer |
| Q5 | Circuit breaker | Short circuit protection device for the control part of the soft starter |
| KM1 | Contactor | Line contactor |
| S1 | Emergency Stop push-button | Emergency Stop to de-energized KM1 line contactor |
| S2 | Normally close push-button | Power OFF |
| S3 | Normally open push-button | Power ON |
| S4 | Normally close contact push-button | STOP command for 3-wire control |
| S5 | Normally open contact push-button | RUN command for 3-wire control |
| S6 | Selector switch, 2 positions, stay–put, normally open contact | RUN/STOP command for 2-wire control |

### Connection In Line, With Line Contactor, Type 1 or 2 Coordination, 2-wire control

**Line contactor controlled based on RUN & STOP or on detected error.**
Use relay output R1 set to **[Mains Contactor]**



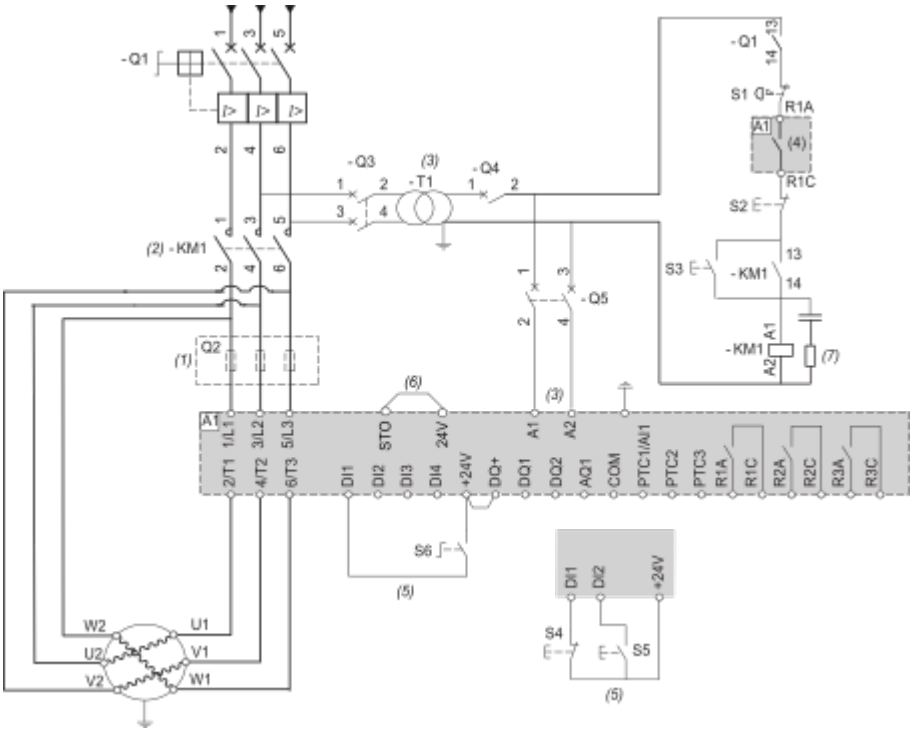

**(1)** : Installation of additional fast-acting fuses is mandatory to upgrade to type 2 coordination according to IEC 60947–4–2.
**(2)** : Take into account the electrical characteristics of the relays.
**(3)** : The transformer must supply 110...230 Vac +10% - 15%, 50/60Hz.
**(4)** : 2–wire control and 3–wire control.
**(5)** : Select the appropriate voltage surge suppressor.
**(6)** : STO Safe Torque Off.

| Designation | Component | Description |
|---|---|---|
| Q1 | Circuit breaker | Short circuit protection device for the motor |
| Q2 | Circuit breaker | Short circuit protection device for the primary of the transformer |
| Q3 | Fast acting fuses | Short circuit protection device of the soft starter to be used only when type 2 coordination according to IEC 60947-4-2 is required |
| Q4 | Circuit breaker | Short circuit protection device for the secondary of the transformer |
| Q5 | Circuit breaker | Short circuit protection device for the control part of the soft starter |
| KM1 | Contactor | Line contactor |
| S1 | Emergency Stop push-button | Emergency Stop to de-energized KM1 line contactor |
| S4 | Normally close contact push-button | STOP command for 3-wire control |

| | | |
|---|---|---|
| S5 | Normally open contact push-button | RUN command for 3-wire control |
| S6 | Selector switch, 2 positions, stay–put, normally open contact | RUN/STOP. command for 2–wire control |

## Connection Inside the Delta, Type 1 and 2 Coordination, 2-wire or 3-wire

**Line contactor controlled based on RUN and STOP command or detected error**
Use relay output R1 set to **[Operating State Fault]** (factory setting).




**(1)** : Installation of additional fast-acting fuses is mandatory to upgrade to type 2 coordination according to IEC 60947–4–2.
**(2)** : KM1 is mandatory to avoid uncontrolled voltage on the motor.
**(3)** : The transformer must supply 110...230 Vac +10% — 15%, 50/60Hz.
**(4)** : Take into account the electrical characteristics of the relays, especially when connecting to high rating contactor.
**(5)** : 3–wire control, 2–wire control.
**(6)** : STO Safe Torque Off.
**(7)** : Select the appropriate voltage surge suppressor.

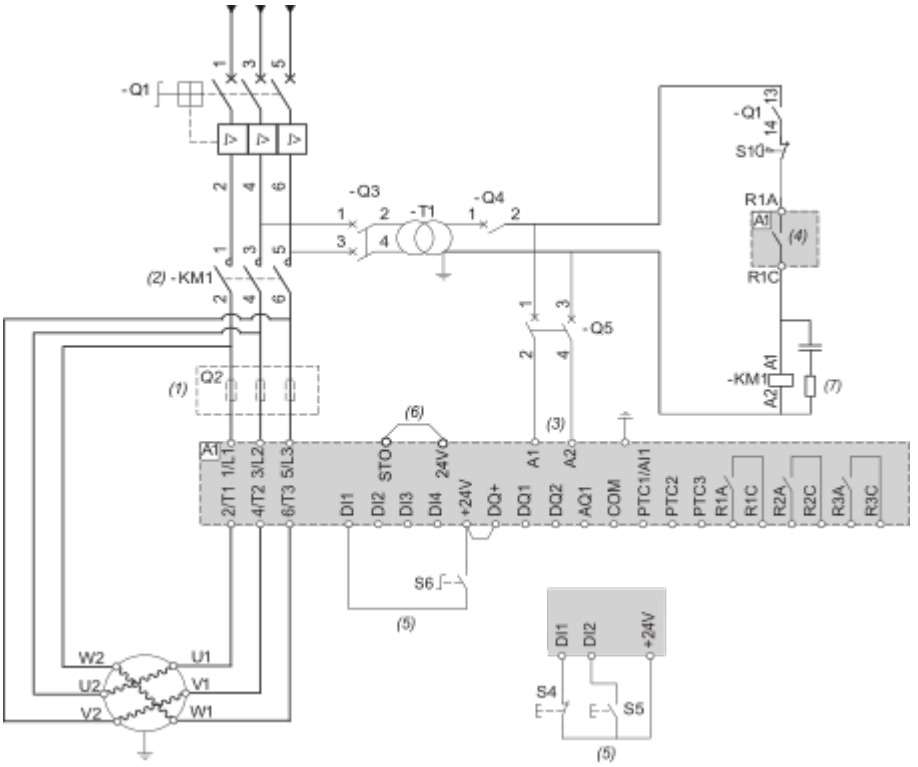
| Designation | Component | Description |
|---|---|---|
| Q1 | Circuit breaker | Short circuit protection device for the motor |
| Q2 | Fast acting fuses | Short circuit protection device of the soft starter to be used only when type 2 coordination according to IEC 60947-4-2 is required |
| Q3 | Circuit breaker | Short circuit protection device for the primary of the transformer |
| Q4 | Circuit breaker | Short circuit protection device for the secondary of the transformer |
| Q5 | Circuit breaker | Short circuit protection device for the control part of the soft starter |

| | | |
|---|---|---|
| KM1 | Contactor | Line contactor |
| S1 | Emergency Stop push-button | Emergency Stop to de-energized KM1 line contactor |
| S2 | Normally close push-button | Power OFF |
| S3 | Normally open push-button | Power ON |
| S4 | Normally close contact push-button | STOP command for 3-wire control |
| S5 | Normally open contact push-button | RUN command for 3-wire control |
| S6 | Selector switch, 2 positions, stay–put, normally open contact | RUN/STOP. command for 2–wire control |

### Connection Inside the Delta, Type 1 or 2 Coordination, 2-wire or 3–wire

**Line contactor controlled based on RUN and STOP command or detected error**

Use relay output R1 set to [Mains Contactor]

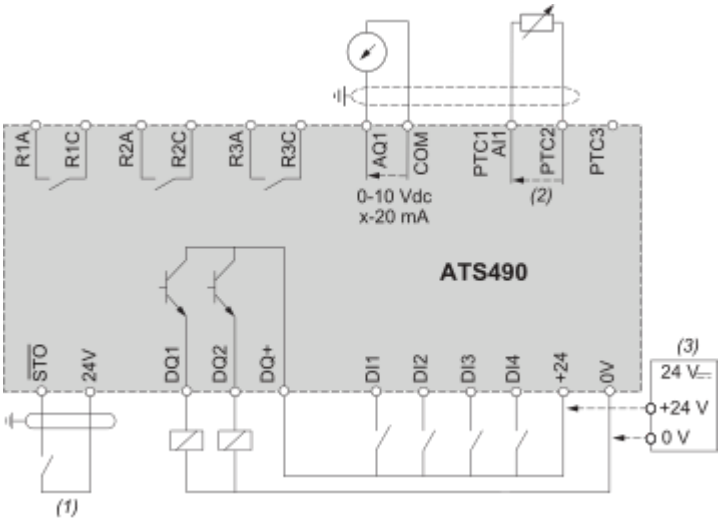



**(1)** : Installation of additional fast-acting fuses is mandatory to upgrade to type 2 coordination according to IEC 60947–4–2.
**(2)** : KM1 is mandatory to avoid uncontrolled voltage on the motor.
**(3)** : The transformer must supply 110...230 Vac +10% — 15%, 50/60Hz.
**(4)** : Take into account the electrical characteristics of the relays.
**(5)** : 3–wire control and 2–wire control.
**(6)** : STO Safe Torque Off.
**(7)** : Select the appropriate voltage surge suppressor.

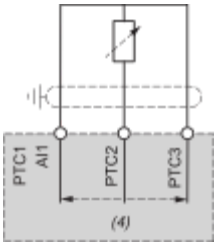
| Designation | Component | Description |
|---|---|---|
| Q1 | Circuit breaker | Short circuit protection device for the motor |

| | | |
|---|---|---|
| Q2 | Circuit breaker | Short circuit protection device for the primary of the transformer |
| Q3 | Fast acting fuses | Short circuit protection device of the soft starter to be used only when type 2 coordination |
| Q4 | Circuit breaker | Short circuit protection device for the secondary of the transformer |
| Q5 | Circuit breaker | Short circuit protection device for the control part of the soft starter |
| KM1 | Contactor | Line contactor |
| S1 | Emergency Stop push-button | Emergency Stop to de-energized KM1 line contactor |
| S4 | Normally close contact push-button | STOP command for 3-wire control and power Off |
| S5 | Normally open contact push-button | RUN command for 3-wire control and power On |
| S6 | Selector switch, 2 positions, stay–put, normally open contact | RUN/STOP command for 2–wire control |

### Control Block Wiring Diagram



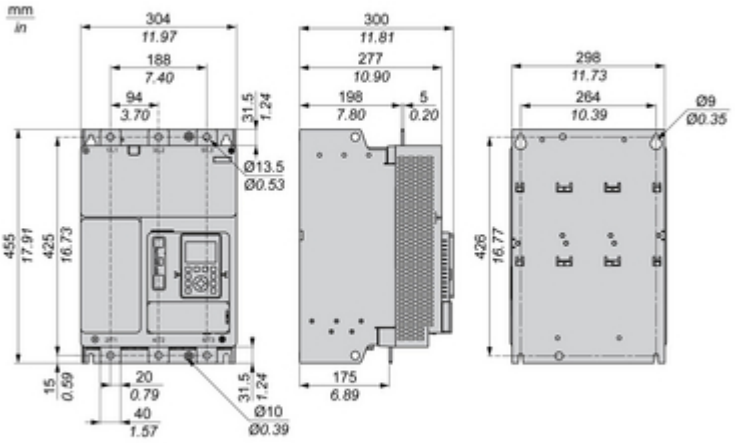

**R1A, R1C, R2A, R2C, R3A, R3C** : Programmable NO relays
**DI1, DI2, DI3, DI4** : Digital inputs
**AQ1** : Analogue output
**PTC1/AI1, PTC2, PTC3** : Motor thermal sensor connection
**DQ1, DQ2, DQ+** : Digital outputs
STO : Safety function STO input
**(1)** : STO Safe Torque Off
**(2)** : 2 wire PTC/PT100/PT1000/KTY
**(3)** : Optional, in case of +24 External Supply usage
**PT100, PT1000 Thermal Probe 3 Wires :**




**(4)** : 3 wire PT100/PT1000

Technical Illustration

**Dimensions**



Technical Illustration

**Wiring diagram**

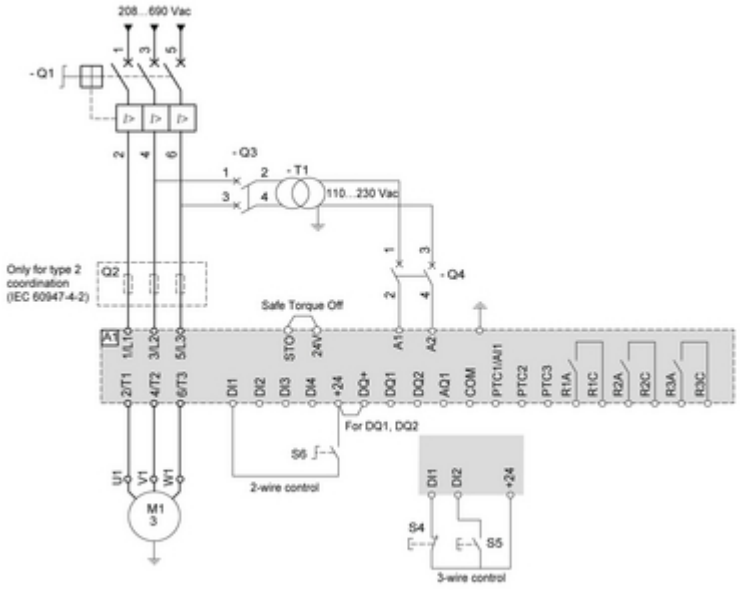


Image of product / Alternate images

**Alternative**


1/L1
3/L2
5/L3
2/T1
4/T2
6/T3