# ELR H3-IES-SC-230AC/500AC-2 - Hybrid motor starter

2900568

https://www.phoenixcontact.com/gb/products/2900568

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Hybrid motor starter for starting 3~ AC motors up to 550 V AC, with 230 V AC input, 2.4 A output current, emergency stop function, and adjustable overload shutdown.

## Your advantages

- 22.5 mm wide
- Safety level in accordance with IEC 61508-1: SIL 3, ISO 13849: PL e
- Reduction in wiring
- Long service life
- Space saving
- 3-phase loop bridges
- Adjustable current for bimetal function
- Low-wear switching

## Commercial data

| | |
|---|---|
| Item number | 2900568 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DK7411 |
| Product key | DK7411 |
| GTIN | 4046356526142 |
| Weight per piece (including packing) | 242.6 g |
| Weight per piece (excluding packing) | 204.9 g |
| Customs tariff number | 85371098 |
| Country of origin | DE |

# Technical data

## Product properties

| | |
|---|---|
| Product type | Hybrid motor starters |
| Product family | CONTACTRON |
| Operating mode | 100% operating factor |

## Electrical properties

| | |
|---|---|
| Number of phases | 3 |
| Motor starter type | Direct starter |
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation for nominal condition | 2.2 W |
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation | 4.7 W |
| Minimum power dissipation | 2.6 W |
| Coordination type | 1 |

### Supply

| | |
|---|---|
| Rated control circuit supply voltage $U_S$ | 230 V AC |
| Control supply voltage range | 85 V AC ... 253 V AC |
| Rated control supply current $I_S$ | 4 mA |
| Mains frequency | 50/60 Hz |
| Protective circuit | Surge protection |

### Insulation characteristics

| | |
|---|---|
| Rated insulation voltage | 500 V |
| Rated surge voltage | 4 kV |
| Overvoltage category | III |
| Degree of pollution | 2 |
| Insulation characteristics between the control input and control supply voltage, and auxiliary circuit to the main circuit | Safe isolation (IEC 60947-1/EN 50178) at operating voltage ≤ 300 V AC |
| | Basic insulation (IEC 60947-1) at operating voltage 300 V AC ... 500 V AC |
| | Safe isolation (EN 50178) at operating voltage 300 ... 500 V AC |
| Isolation characteristics between the control input and control supply voltage to auxiliary circuit | Safe isolation (IEC 60947-1) in the auxiliary circuit ≤ 300 V AC |
| | Safe isolation (EN 50178) in the auxiliary circuit ≤ 300 V AC |

## Input data

### Control

| | |
|---|---|
| Input name | Control input |
| Rated actuating voltage $U_C$ | 230 V AC |
| Triggering voltage range | 85 V AC ... 253 V AC |
| Rated actuating current $I_C$ | 7 mA (Input type 1) |
| Mains frequency | 50 Hz 60 Hz 50/60 Hz |

| | |
|---|---|
| Switching threshold | 44 V AC (“0” signal) |
| | 85 V AC (“1” signal) |
| Switching level | < 5 V AC (For EMERGENCY STOP) |
| Typical turn-off time | < 70 ms |

## Output data

AC output

| | |
|---|---|
| Rated operating voltage $U_e$ | 500 V AC |
| Operating voltage range | 42 V AC ... 550 V AC |
| Rated operating current $I_e$ | 2.4 A (AC-51) |
| | 2.4 A (AC-53a) |
| Mains frequency | 50/60 Hz |
| Load current range | 180 mA ... 2.4 A (see to derating) |
| Trigger characteristic in acc. with IEC 60947-4-2 | Class 10A |
| Cooling time | 20 min (for auto reset) |
| Leakage current | 0 mA |
| Protective circuit | Surge protection |

Acknowledge output

| | |
|---|---|
| Note | Confirmation: floating change-over contact, signal contact |
| Contact switching type | 1 changeover contact |
| Switching capacity in accordance with IEC 60947-5-1 | 3 A (230 V, AC15) |
| | 2 A (24 V (DC13)) |

## Connection data

Control circuits

| | |
|---|---|
| Connection method | Screw connection |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Conductor cross-section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |

Load circuit

| | |
|---|---|
| Connection method | Screw connection |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Conductor cross-section rigid | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section AWG | 24 ... 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |

## Signaling

| | |
|---|---|
| Status display | LED (yellow) |
| Operating voltage display | Green LED |
| Error indication | Red LED |

## Dimensions

| | |
|---|---|
| Width | 22.5 mm |
| Height | 107 mm |
| Depth | 114 mm |

## Material specifications

| | |
|---|---|
| Flammability rating according to UL 94 (Housing) | V0 (Housing) |

## Environmental and real-life conditions

### Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -25 °C ... 70 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m |

## Approvals

### UKCA

| | |
|---|---|
| Certificate | UKCA-compliant |

### ATEX

| | |
|---|---|
| Identification | Ⓔx II (2) G [Ex e] [Ex d] [Ex px] |
| | Ⓔx II (2) D [Ex t] [Ex p] |
| Certificate | PTB 07 ATEX 3145 |

### UL approval

| | |
|---|---|
| Certificate | NLDX.E228652 |

### Safety Integrity Level (SIL, IEC 61508)

| | |
|---|---|
| Identification | ≤ 3 |
| Note | Safe shutdown |

### Safety Integrity Level (SIL, IEC 61508)

| | |
|---|---|
| Identification | 2 |
| Note | Motor protection |

### Performance Level (ISO 13849)

| | |
|---|---|
| Identification | ≤ e |
| Note | Safe shutdown |

### Category (ISO 13849)

| | |
|---|---|
| Identification | ≤ 3 |
| Note | Safe shutdown |

UL data

| | |
|---|---|
| SCCR | 100 kA (500 V AC (fuse: 30 A class CC/30 A class J (high fault))) |
| | 5 kA (500 V AC (fuse: 20 A RK5 (standard fault))) |
| FLA | 2.4 A (500 V AC) |
| Group installation | 20 A (class RK5, SCCR 5kA, #24 - 14 AWG max. solid and stranded) |
| | 30 A (class CC or J, SCCR 100kA, #24 - 14 AWG max, solid and stranded) |
| Category code | NLDX |

## Standards and regulations

Standards/regulations

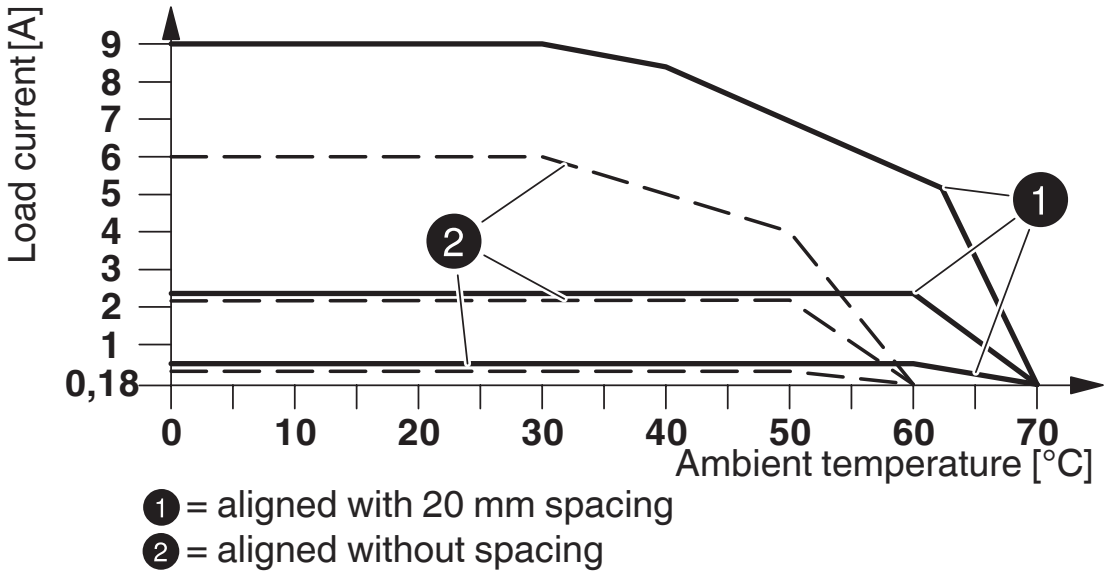
| | |
|---|---|
| Standards/regulations | IEC 60947-1 |
| | IEC 60947-4-2 |
| | IEC 61508 |
| | ISO 13849 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | alignable, for spacing see derating |
| Mounting position | vertical (horizontal DIN rail, motor output below) |

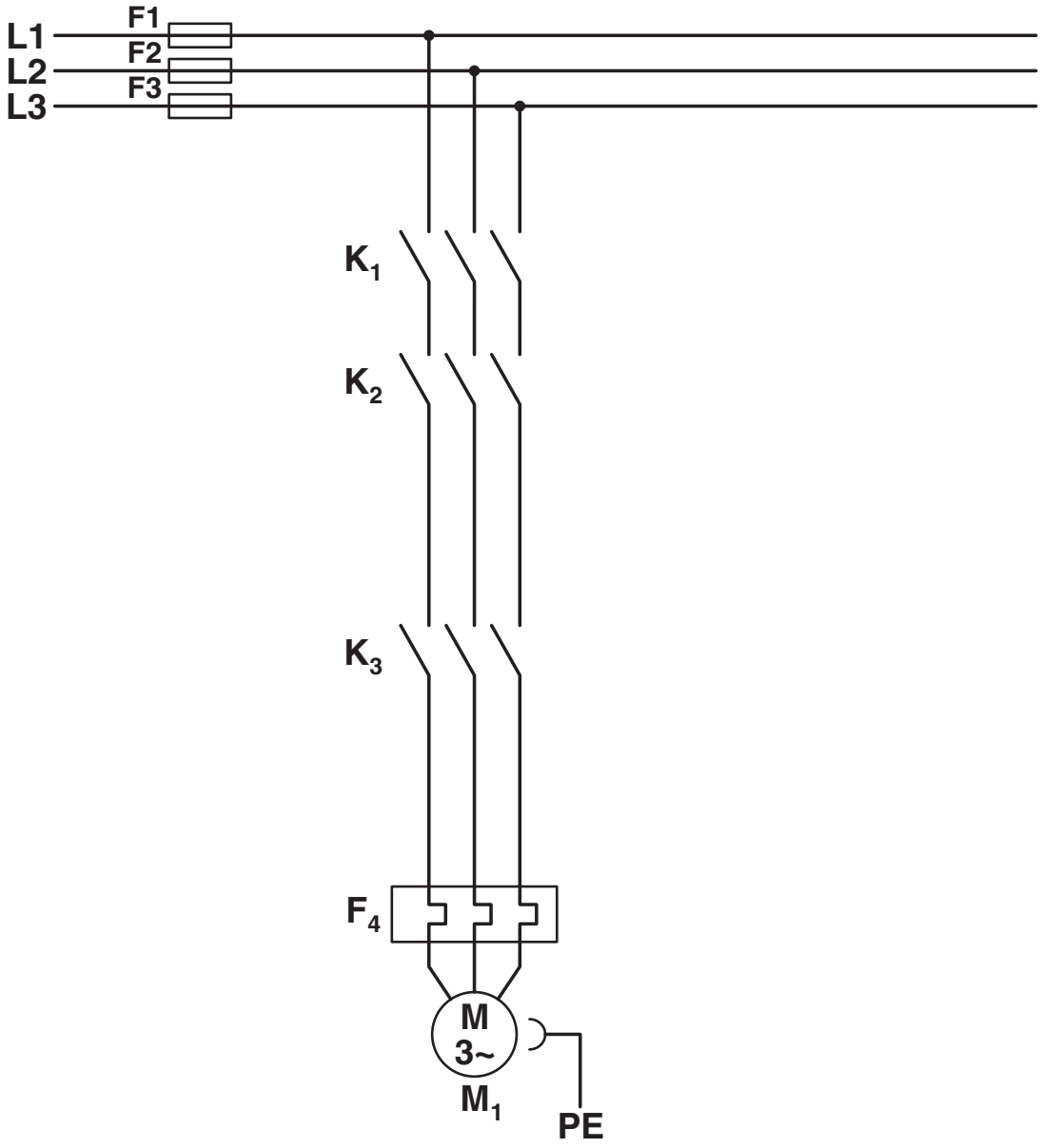
## Drawings

Diagram




Derating diagram

Circuit diagram

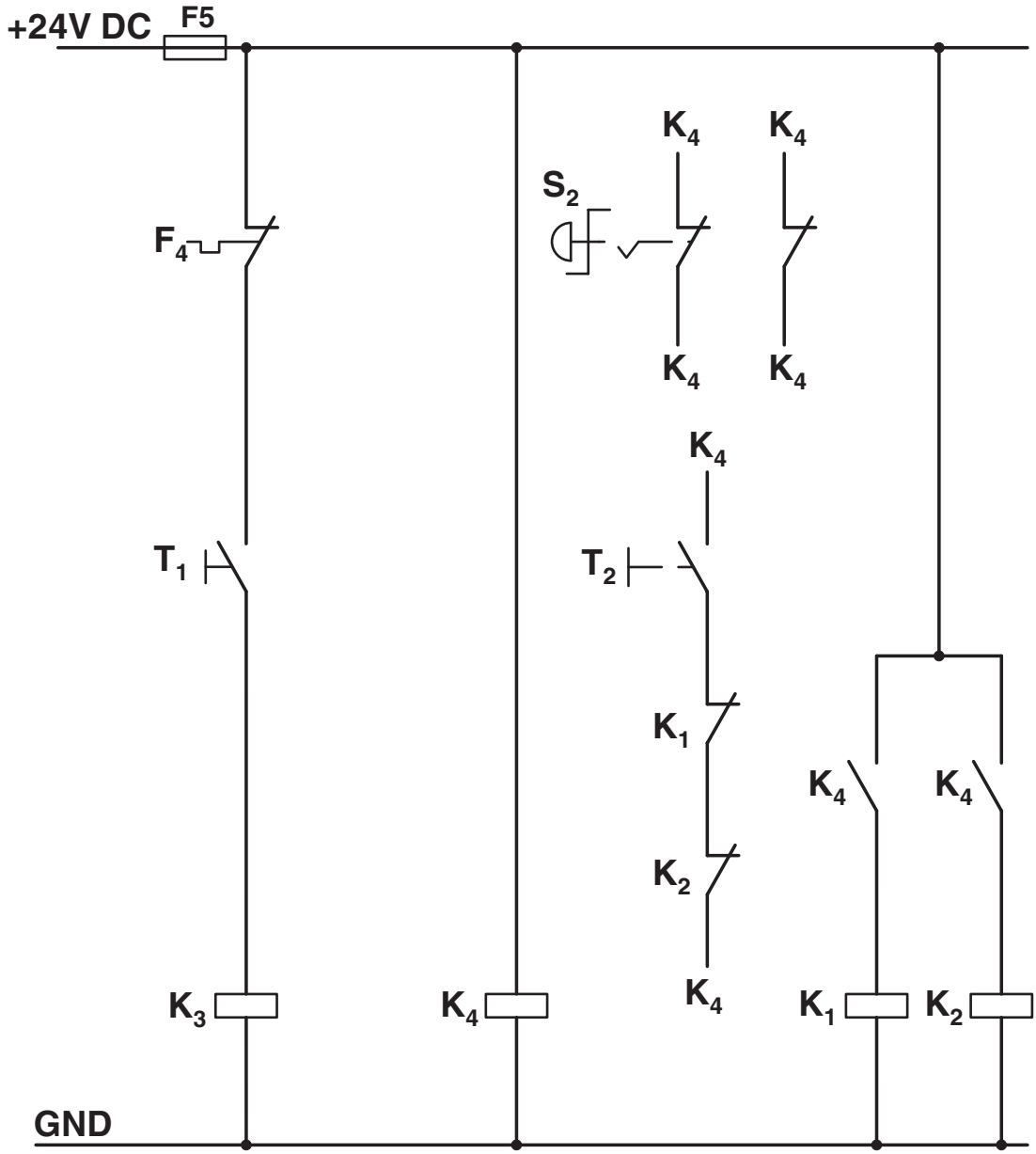



## Conventional structure

Main current path for contactor according to category 3

K1 + K2 = Emergency stop contactor
K3 = Right contactor
F4 = Motor protection relay

Circuit diagram

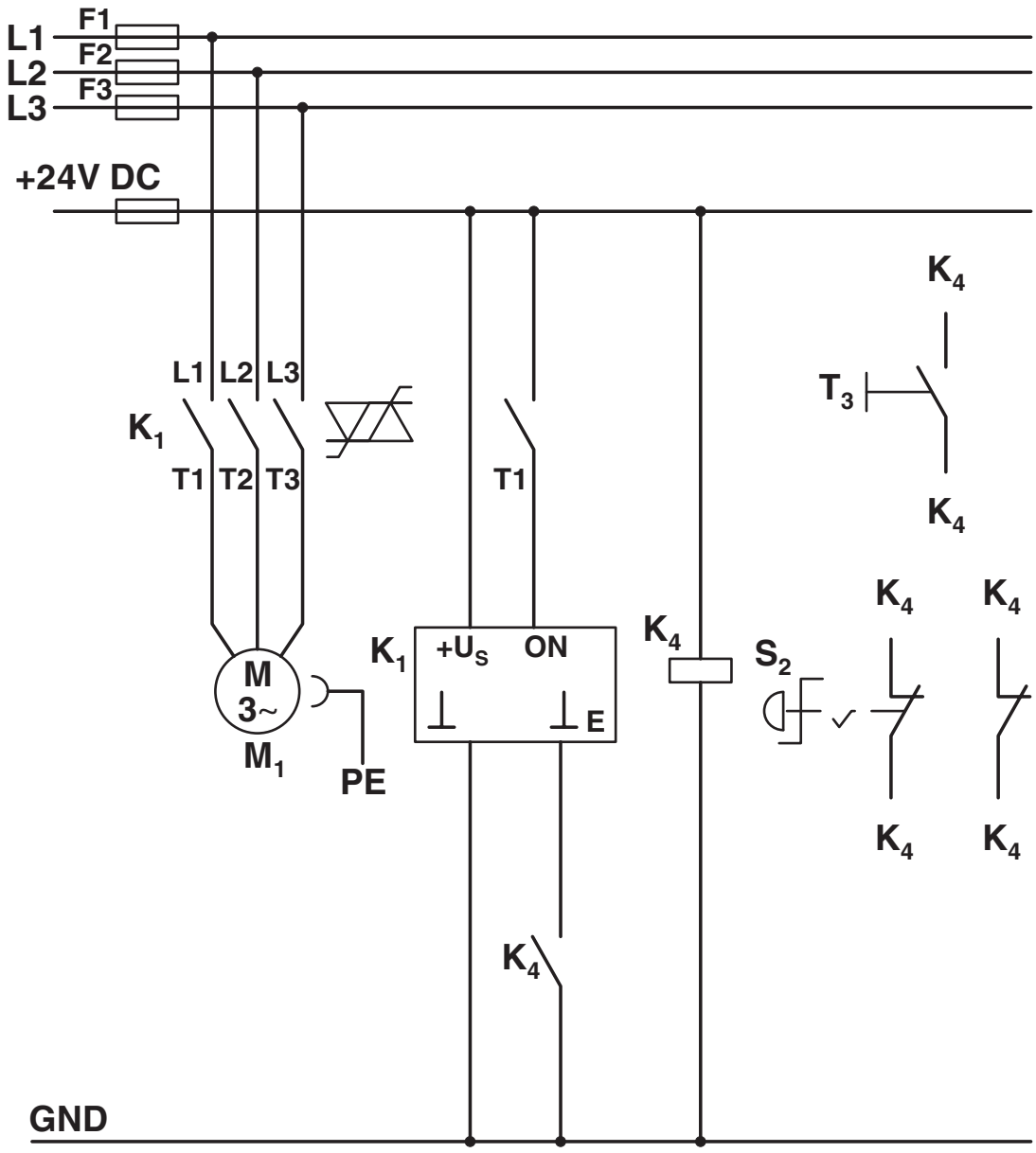



## Conventional structure

Control current path for contactor according to category 3

K1 + K2 = Emergency stop contactor
K3 = Right contactor
K4 = PSR SCP-24DC.../safety relay
T1 = Right, T3 = Reset
S2 = Emergency stop
F4 = Motor protection relay

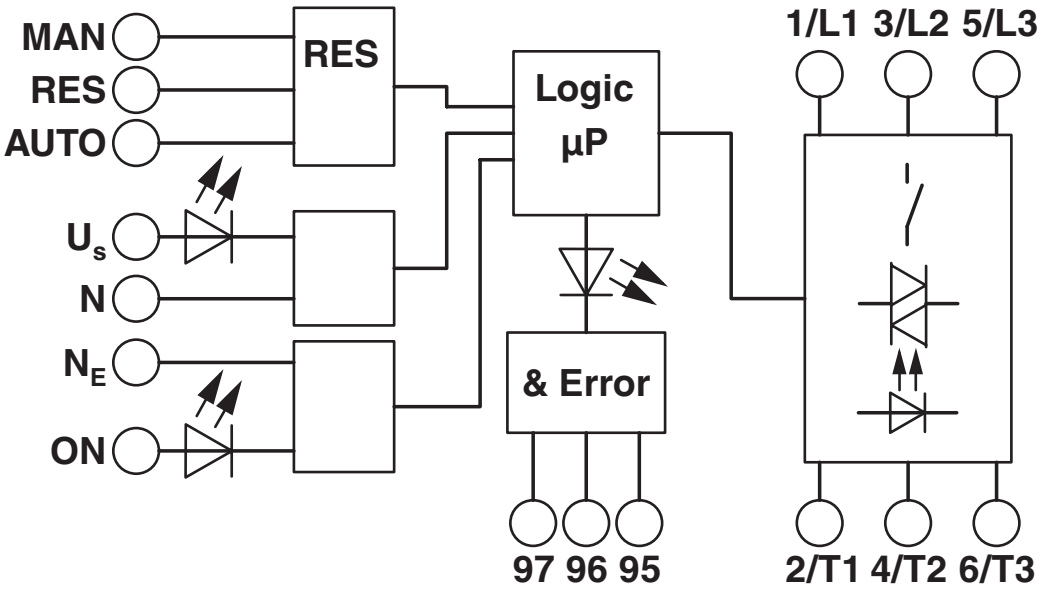
Circuit diagram




## Structure with CONTACTRON

Main and control current path for '3 in 1' hybrid motor starter according to category 3
K1 = '3 in 1' hybrid motor starter
K4 = PSR SCP-24DC.../safety relay
T1 = Right, T3 = Reset
S2 = Emergency stop

Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/gb/products/2900568

**IECEE CB Scheme**
Approval ID: DE1-55728

**UL Listed**
Approval ID: FILE E 323771

**CCC**
Approval ID: 2016010304871315

**cUL Listed**
Approval ID: FILE E 323771

**cUL Listed**
Approval ID: E228652

**UL Listed**
Approval ID: E228652

**CCC**
Approval ID: 2024010304672817

**ATEX**
Approval ID: PTB 07 ATEX 3145

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27370905 |
| ECLASS-15.0 | 27370905 |
| ECLASS-15.0 ASSET | 27250101 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001037 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 25173900 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(a)-I, 7(c)-I |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|---|---|
| REACH candidate substance (CAS No.) | 1-Methyl-2-pyrrolidone (NMP)(CAS: 872-50-4) |
| | Lead(CAS: 7439-92-1) |
| SCIP | 374f8a9c-57da-4ab5-9d9e-e076f9918792 |


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