

Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-0,6 - 2900692

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Hybrid motor starter for reversing 3~ AC motors up to 500 V AC and 0.6 A output current, with 230 V AC control voltage, adjustable overload shutdown and emergency stop function to SIL 3/PL e

Illustration shows the 24 V design

Product Features

- 22.5 mm wide
- Safety level according to IEC 61508-1: SIL 3, ISO 13849: PL e
- Long service life
- Space saving
- Reduction in wiring
- Bimetal function can be set up to 9 A
- 3-phase loop bridges



Key Commercial Data

| | |
|--------------------------------------|----------|
| Packing unit | 1 pc |
| Weight per Piece (excluding packing) | 284.2 g |
| Custom tariff number | 85371099 |
| Country of origin | Germany |

Technical data

Dimensions

| | |
|--------|----------|
| Width | 22.5 mm |
| Height | 99 mm |
| Depth | 114.5 mm |

Ambient conditions

| | |
|---|-------------------------------------|
| Ambient temperature (operation) | -25 °C ... 70 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |

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Technical data

Ambient conditions

| | |
|----------------------|------|
| Degree of protection | IP20 |
|----------------------|------|

Device supply

| | |
|--|----------------------|
| Rated control circuit supply voltage U_s | 230 V AC (50/60 Hz) |
| Control supply voltage range | 85 V AC ... 253 V AC |
| Rated control supply current I_s | 4 mA |
| Protective circuit | Surge protection |

Input data

| | |
|-------------------------------|--|
| Input name | Control input right/left |
| Rated actuating voltage U_c | 230 V AC |
| Voltage range | 85 V AC ... 253 V AC |
| Rated actuating current I_c | 7 mA |
| 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 load output

| | |
|---|------------------------------------|
| Output name | AC output |
| Rated operating voltage U_e | 500 V AC |
| Operating voltage range | 42 V AC ... 550 V AC |
| Mains frequency | 50 Hz 60 Hz |
| Load current range | 75 mA ... 600 mA (see to derating) |
| Trigger characteristic in acc. with IEC 60947 | Class 10A |
| Cooling time | 20 min. (for auto reset) |
| Rated operating current at AC-51 | 0.6 A |
| Rated operating current at AC-53a | 0.6 A |
| Leakage current | 0 mA |
| Protective circuit | Surge protection |

Output data reply output

| | |
|---|--|
| Output name | Acknowledge output |
| Note | Confirmation: floating change-over contact, signal contact |
| Contact type | 1 PDT |
| Switching capacity according to IEC 60947-5-1 | 3 A (230 V, AC15) 2 A (24 V, DC13) |

General

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Technical data

General

| | |
|---------------------------|--|
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Mounting position | vertical (horizontal DIN rail, motor output below) |
| Assembly instructions | alignable, for spacing see derating |
| Operating mode | 100% operating factor |
| Maximum power dissipation | 2.5 W |
| Minimum power dissipation | 0.88 W |
| Operating voltage display | Green LED |
| Status display | Yellow LED |
| Indication | Red LED |

Connection data, input side

| | |
|----------------------------------|---|
| Connection name | Control circuits |
| Connection method | Screw connection |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Conductor cross section solid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section AWG | 24 ... 14 |
| Torque | 0.5 Nm ... 0.6 Nm |

Connection data, output side

| | |
|----------------------------------|---|
| Connection name | Load circuit |
| Connection method | Screw connection |
| Stripping length | 8 mm |
| Screw thread | M3 |
| Conductor cross section solid | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section flexible | 0.2 mm ² ... 2.5 mm ² |
| Conductor cross section AWG | 24 ... 14 |
| Torque | 0.5 Nm ... 0.6 Nm |

Standards/regulations

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

Insulation characteristics

| | |
|--------------------------|-------|
| Rated insulation voltage | 500 V |
|--------------------------|-------|

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Technical data

Insulation characteristics

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

Approvals/conformities

| | |
|---|----------------------------------|
| Safety Integrity Level according to IEC 61508 | SIL 3 (safe shutdown) |
| | SIL 2 (motor protection) |
| Category acc. to EN ISO 13849 | 3 (Safe shutdown) |
| Performance level according to ISO 13849 | e (Safe shutdown) |
| ATEX | # II (2) G [Ex e] [Ex d] [Ex px] |
| | # II (2) D [Ex t] [Ex p] |
| EU type-examination certificate | PTB 07 ATEX 3145 |

UL data

| | |
|--------------------|--|
| SCCR | 100 kA (480 V AC (fuse: 30 A class CC/30 A class J (high fault))) |
| | 5 kA (480 V AC (fuse: 20 A RK5 (standard fault))) |
| FLA | 0.6 A (480 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 / NRNT |

Standards and Regulations

| | |
|-----------------------|----------------------------------|
| Designation | Standards/regulations |
| Standards/regulations | IEC 60947-1 |
| | EN 60947-4-2 |
| | IEC 61508 |
| | ISO 13849 |
| ATEX | # II (2) G [Ex e] [Ex d] [Ex px] |
| | # II (2) D [Ex t] [Ex p] |

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Classifications

eCl@ss

| | |
|------------|----------|
| eCl@ss 4.0 | 27371102 |
| eCl@ss 4.1 | 27371102 |
| eCl@ss 5.0 | 27371601 |
| eCl@ss 5.1 | 27371601 |
| eCl@ss 6.0 | 27371601 |
| eCl@ss 7.0 | 27371601 |
| eCl@ss 8.0 | 27370905 |
| eCl@ss 9.0 | 27370905 |

ETIM

| | |
|----------|----------|
| ETIM 2.0 | EC000066 |
| ETIM 3.0 | EC000066 |
| ETIM 4.0 | EC000066 |
| ETIM 5.0 | EC002055 |

UNSPSC

| | |
|---------------|----------|
| UNSPSC 6.01 | 30211915 |
| UNSPSC 7.0901 | 39121514 |
| UNSPSC 11 | 39121514 |
| UNSPSC 12.01 | 39121514 |
| UNSPSC 13.2 | 39121514 |

Approvals

Approvals

Approvals

UL Listed / cUL Listed / IECCE CB Scheme / GL / GL-SW / UL Listed / cUL Listed / EAC / EAC / cULus Listed / GL

Ex Approvals


ATEX

Approvals submitted


Approval details

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Approvals

UL Listed 


cUL Listed 

IECEE CB Scheme 

GL


GL-SW

UL Listed 

cUL Listed 

EAC

EAC

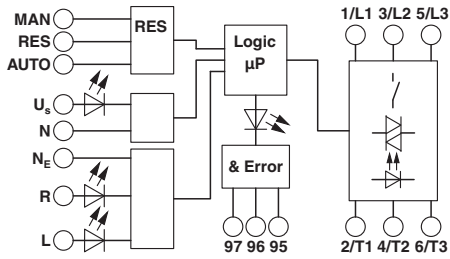
cULus Listed 

GL

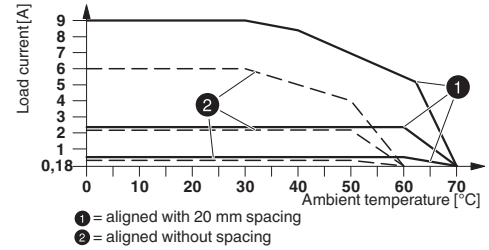
Drawings

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Block diagram

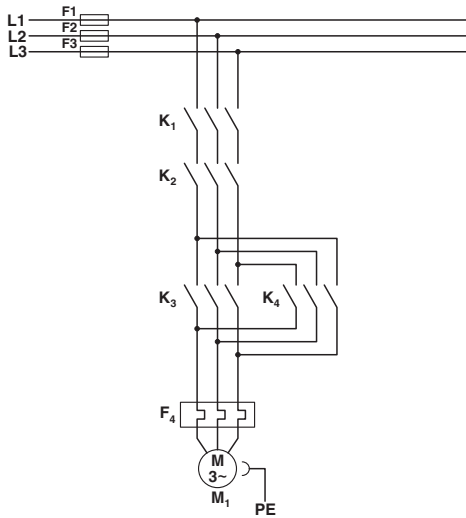


Diagram



Derating diagram

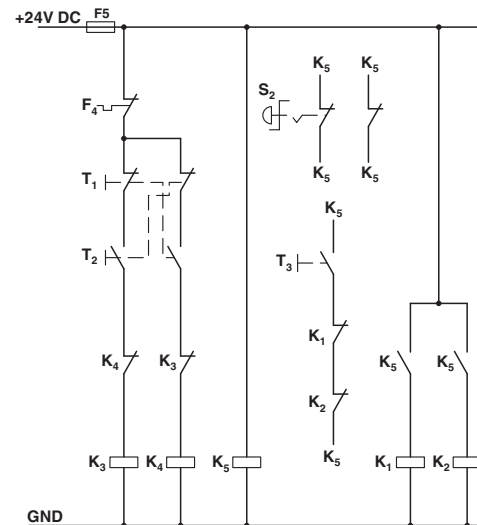
Circuit diagram



Conventional structure
Main current path for reversing contactor according to category 3

- K1 + K2 = Emergency stop contactor
- K3 = Left contactor
- K4 = Right contactor
- F4 = Motor protection relay

Circuit diagram

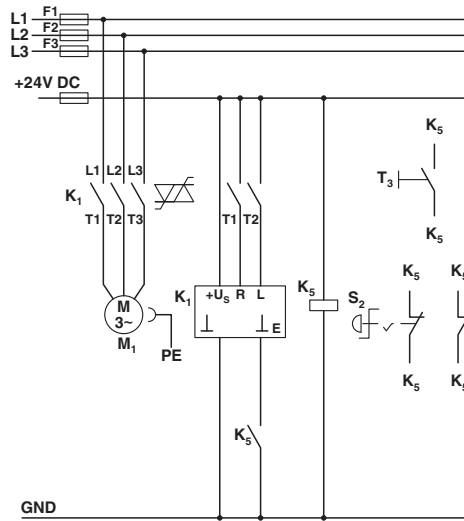


Conventional structure
Control current path reversing contactor according to category 3

- K1 + K2 = Emergency stop contactor
- K3 = Left contactor
- K4 = Right contactor
- K5 = PSR SCP-24DC.../Safety relay
- T1 = Right, T2 = Left, T3 = Reset
- S2 = Emergency stop
- F4 = Motor protection relay

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Circuit diagram



Structure with CONTACTRON

Main and control current path for '4 in 1' hybrid motor starter with reversing function according to category 3

K1 = '4 in 1' hybrid motor starter with reversing function

K5 = PSR SCP-24DC.../Safety relay

T1 = Right, T2 = Left, T3 = Reset

S2 = Emergency stop