# ELR H5-IES-PT-24DC/500AC-9-T - Hybrid motor starter

2906060

https://www.phoenixcontact.com/us/products/2906060

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Hybrid motor starter; functions: Start motor, Reverse motor, Motor protection (class 10A), Emergency stop, Higher resistance to transient voltages, ATEX; input: 24 V DC; output: 3~, 500 V AC, 9 A; Push-in connection

## Your advantages

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

## Commercial data

| | |
|---|---|
| Item number | 2906060 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | C470 |
| Product key | DK7414 |
| GTIN | 4055626024592 |
| Weight per piece (including packing) | 241.4 g |
| Weight per piece (excluding packing) | 219.07 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 | Reversing starter |
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation for nominal condition | 13.5 W |
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation | 14.6 W |
| Minimum power dissipation | 1.1 W |
| Coordination type | 1 |

#### Supply

| | |
|---|---|
| Rated control circuit supply voltage $U_S$ | 24 V DC |
| Control supply voltage range | 19.2 V DC ... 30 V DC |
| Rated control supply current $I_S$ | 40 mA |
| Protective circuit | Surge protection |
| | Reverse polarity protection |

#### Insulation characteristics

| | |
|---|---|
| Rated insulation voltage | 500 V |
| Rated surge voltage | 6 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 |

#### Emergency tripping

| | |
|---|---|
| Operate threshold | > 45 A |
| Response time | 2 s |

### Input data

#### Control

| | |
|---|---|
| Input name | Control input right/left |
| Rated actuating voltage $U_C$ | 24 V DC |

| | |
|---|---|
| Triggering voltage range | 19.2 V DC ... 30 V DC |
| Rated actuating current $I_C$ | 5 mA |
| Switching threshold | 9.6 V (“0” signal) |
| | 19.2 V (“1” signal) |
| Switching level | < 5 V DC (For EMERGENCY STOP) |
| Typical turn-off time | < 30 ms |
| Protective circuit | Reverse polarity protection |

## Output data

AC output

| | |
|---|---|
| Rated operating voltage $U_e$ | 500 V AC |
| Operating voltage range | 42 V AC ... 550 V AC |
| Rated operating current $I_e$ | 9 A (AC-51) |
| | 6.5 A (AC-53a) |
| Mains frequency | 50/60 Hz |
| Load current range | 1.5 A ... 9 A (see to derating) |
| Trigger characteristic in acc. with IEC 60947-4-2 | Class 10A |
| Cooling time | 20 min |
| 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 | Push-in connection |
| Stripping length | 10 mm |
| 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 |

Load circuit

| | |
|---|---|
| Connection method | Push-in connection |
| Stripping length | 10 mm |
| 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 |

## Signaling

| | |
|---|---|
| Status display | LED (yellow) |

| | |
|---|---|
| Operating voltage display | Green LED |
| Error indication | Red LED |

## Dimensions

| | |
|---|---|
| Width | 22.5 mm |
| Height | 107.5 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) | 5 °C ... 70 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m |

## Approvals

### 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 | 6.5 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 / NRNT |

## Standards and regulations

Standards/regulations

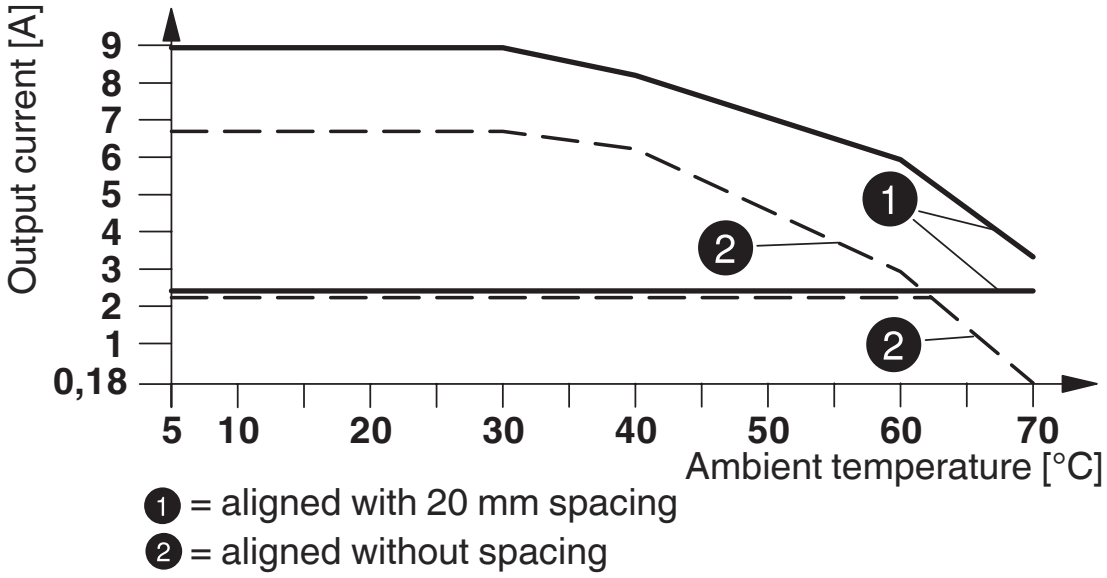
| | |
|---|---|
| Standards/regulations | IEC 60947-1 |
| | EN 60947-4-2 |
| | IEC 61508 |
| | ISO 13849 |

## 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 curve

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2906060

**UL Listed**
Approval ID: E228652

**CCC**
Approval ID: 2016010304871315

**cUL Listed**
Approval ID: E228652

**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 | 5b92b29e-4f01-4514-aa85-8dbb709f2fd0 |


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