

# ELR H3-IES-SC/500AC-9-IFS - Hybrid motor starter



2905156

<https://www.phoenixcontact.com/us/products/2905156>

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Networkable hybrid motor starter for starting 3~ AC motors up to 500 V AC, output current: 9 A, emergency stop function, adjustable overload shutdown, and screw connection, DIN rail connector provided.

## 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                          | 2905156            |
| Packing unit                         | 1 pc               |
| Minimum order quantity               | 1 pc               |
| Sales key                            | C478               |
| Product key                          | CK7433             |
| Catalog page                         | Page 30 (C-5-2019) |
| GTIN                                 | 4046356920148      |
| Weight per piece (including packing) | 305.1 g            |
| Weight per piece (excluding packing) | 282.7 g            |
| Customs tariff number                | 85371098           |
| Country of origin                    | DE                 |

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## Technical data

### Product properties

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

### Data management status

|                  |    |
|------------------|----|
| Article revision | 05 |
|------------------|----|

### Electrical properties

|                                                 |                         |
|-------------------------------------------------|-------------------------|
| Number of phases                                | 3                       |
| Motor starter type                              | Direct starter          |
| Switching frequency                             | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation for nominal condition | 12 W                    |
| Switching frequency                             | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation                       | 7 W                     |
| Minimum power dissipation                       | 0.88 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 $I_S$         | 60 mA                                                                               |
| Protective circuit                         | Surge protection<br>Reverse polarity protection; Parallel polarity protection diode |

### Insulation characteristics

|                                                                                                                            |                                                                  |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Rated insulation voltage                                                                                                   | 550 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)                                     |
| 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 |

### Emergency tripping

|                   |         |
|-------------------|---------|
| Operate threshold | > 60 A  |
| Response time     | < 0.5 s |

### Input data

#### Control

|            |              |
|------------|--------------|
| Input name | Enable input |
|------------|--------------|

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|                               |                                                                                                                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note                          | The enable input is compatible with signals with blanking (semiconductor output signals with test pulse with max. 3 ms duration), unblanking pulses of max. 4 ms are tolerated without adversely affecting the safety function. |
| Rated actuating voltage $U_C$ | 24 V DC                                                                                                                                                                                                                         |
| Triggering voltage range      | 19.2 V DC ... 30 V DC                                                                                                                                                                                                           |
| Rated actuating current $I_C$ | 7 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)                     |
|                                                   | 7 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. (for auto reset)        |
| Leakage current                                   | 0 mA                            |
| Protective circuit                                | Surge protection; Varistor      |

## Connection data

### Control circuits

|                                  |                                                   |
|----------------------------------|---------------------------------------------------|
| Connection method                | Screw connection                                  |
| Stripping length                 | 8 mm                                              |
| Screw thread                     | M3                                                |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>       |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>       |
| Conductor cross section AWG      | 24 ... 14                                         |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                                 |
|                                  | 5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in. |

### Load circuit

|                                  |                                             |
|----------------------------------|---------------------------------------------|
| Connection method                | Screw connection                            |
| Stripping length                 | 8 mm                                        |
| Screw thread                     | M3                                          |
| Conductor cross section rigid    | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 24 ... 14                                   |

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|                   |                                                 |
|-------------------|-------------------------------------------------|
| Tightening torque | 0.5 Nm ... 0.6 Nm                               |
|                   | 5 lb <sub>F</sub> in. ... 7 lb <sub>F</sub> 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 | V0 (Housing) |
|----------------------------------------|--------------|

## Environmental and real-life conditions

### Ambient conditions

|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Degree of protection                    | IP20                               |
| Ambient temperature (operation)         | -5 °C ... 60 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C                   |
| Altitude                                | ≤ 2000 m                           |

## Approvals

### UKCA

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

### ATEX

|                |                                     |
|----------------|-------------------------------------|
| Identification | ⊕ II (2) G [Ex eb] [Ex db] [Ex pxb] |
|                | ⊕ II (2) D [Ex tb] [Ex pb]          |
| Certificate    | PTB 15 ATEX 3000                    |

### UL approval

|             |              |
|-------------|--------------|
| Certificate | NLDX.E228652 |
|             | NRNT.E172140 |

### 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 |
|----------------|---|

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|      |               |
|------|---------------|
| Note | Safe shutdown |
|------|---------------|

## Category (ISO 13849)

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

## 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                | 7.6 A (480 V AC)                                                                  |
| Group installation | 20 A (class RK5, SCCR 5kA (480 V AC), #24 - 14 AWG max. solid and stranded)       |
|                    | 30 A (class CC or J, SCCR 100kA (480 V AC), #24 - 14 AWG max, solid and stranded) |
| Category code      | NLDX / NRNT                                                                       |
| Horsepower ratings | 2 hp (208 V AC)                                                                   |
|                    | 2 hp (230 V AC)                                                                   |
|                    | 2 hp (240 V AC)                                                                   |
|                    | 5 hp (480 V AC)                                                                   |

## Standards and regulations

### Standards/regulations

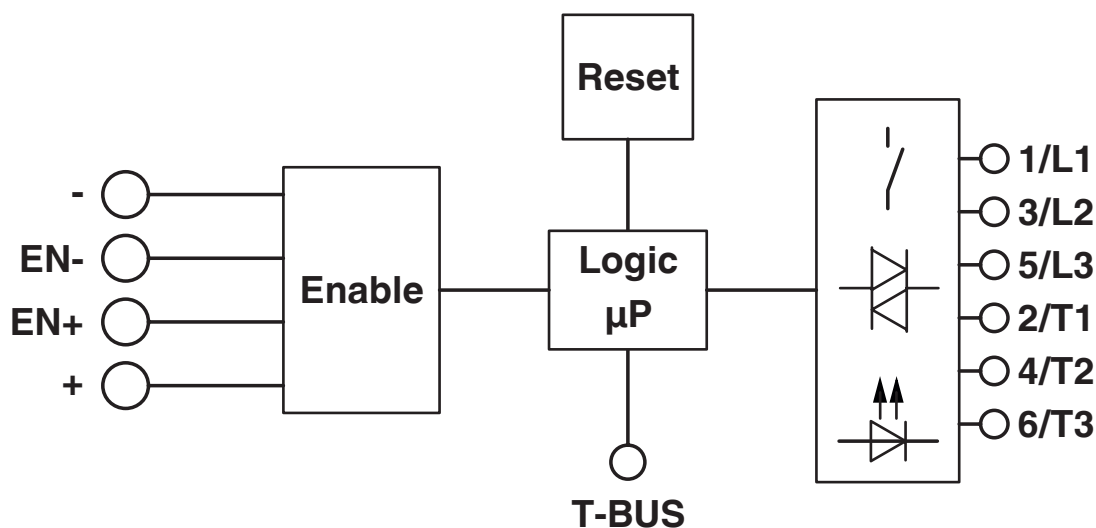
|                       |              |
|-----------------------|--------------|
| Standards/regulations | IEC 60947-1  |
|                       | EN 60947-4-2 |
|                       | IEC 61508    |
|                       | ISO 13849    |

## Mounting

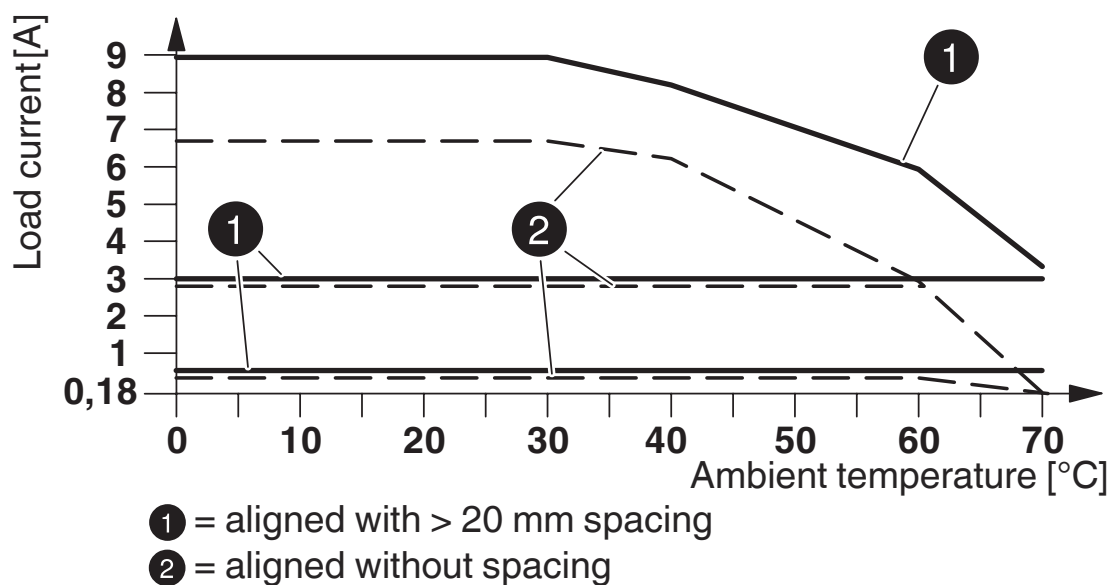
|                   |                                                    |
|-------------------|----------------------------------------------------|
| Mounting type     | DIN rail mounting                                  |
| Thread type       | ()                                                 |
|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

## Drawings

Block diagram



Diagram



Derating diagram

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2905156>



### IECEE CB Scheme

Approval ID: DE1-60807



### EAC

Approval ID: RU\*C-DE.\*08.B.00520\*



### UL Listed

Approval ID: FILE E 172140



### CCC

Approval ID: 2016010304900298



### cUL Listed

Approval ID: FILE E 172140



### cUL Listed

Approval ID: E228652



### UL Listed

Approval ID: E228652



### ATEX

Approval ID: PTB 15 ATEX 3000

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27370905 |
| ECLASS-13.0 | 27370905 |
| ECLASS-12.0 | 27370905 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001037 |
|----------|----------|

### UNSPSC

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

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## Environmental product compliance

|                                         |                                                                                                                                                                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EU RoHS                                 |                                                                                                                                                                                                                                   |
| Fulfills EU RoHS substance requirements | Yes                                                                                                                                                                                                                               |
| Exemption                               | 7(a), 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.)     | Lead(CAS: 7439-92-1)                                                                                                                                                                                                              |
| SCIP                                    | 015146b1-af0b-42fd-8da8-756cbeb23b5b                                                                                                                                                                                              |

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