

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 24 V DC input, 9 A output current, and emergency stop function.

## Your advantages

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

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2900561       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C470          |
| Product key                          | DK7414        |
| GTIN                                 | 4046356527842 |
| Weight per piece (including packing) | 311.05 g      |
| Weight per piece (excluding packing) | 217.18 g      |
| Customs tariff number                | 85371098      |
| Country of origin                    | DE            |

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

## 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                             | $\leq 2$ Hz (Load-dependent) |
| Maximum power dissipation for nominal condition | 13.5 W                       |
| Switching frequency                             | $\leq 2$ 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<br>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 $\leq 300$ 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 $\leq 300$ V AC      |
|                                                                                                                            | Safe isolation (EN 50178) in the auxiliary circuit $\leq 300$ 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                  |

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

|                               |                               |
|-------------------------------|-------------------------------|
| 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 (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 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 lbf·in. ... 7 lbf·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> |

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

|                             |                                                   |
|-----------------------------|---------------------------------------------------|
| 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. |

## 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

### ATEX

|                |                                  |
|----------------|----------------------------------|
| Identification | ⊕ II (2) G [Ex e] [Ex d] [Ex px] |
|                | ⊕ 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 |

### Performance Level (ISO 13849)

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

### Category (ISO 13849)

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

### UL data

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

|                    |                                                                        |
|--------------------|------------------------------------------------------------------------|
| 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

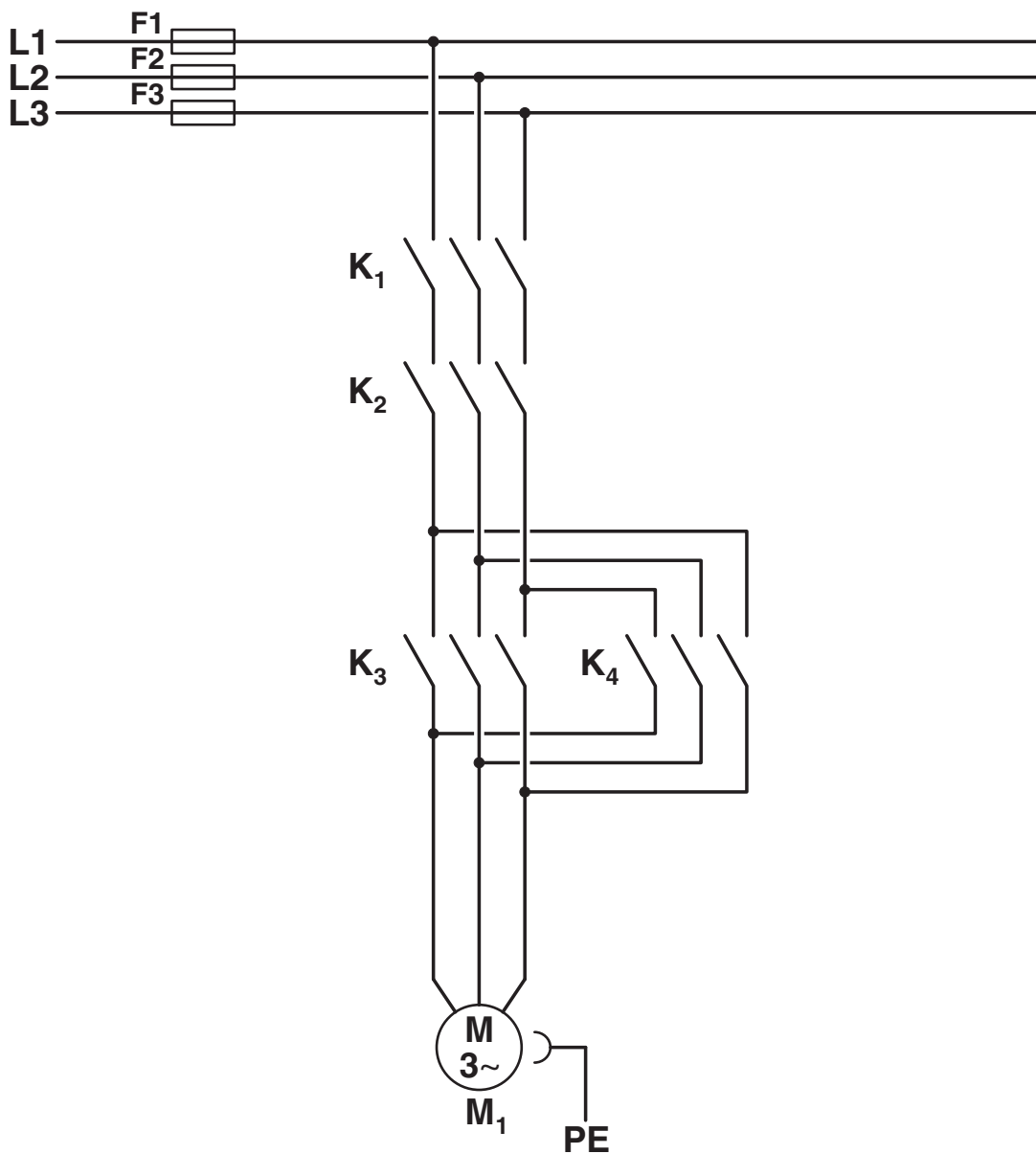
|                       |              |
|-----------------------|--------------|
| Standards/regulations | IEC 60947-1  |
|                       | EN 60947-4-2 |
|                       | IEC 61508    |
|                       | ISO 13849    |

## Mounting

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

## Drawings

Circuit diagram



## Conventional structure

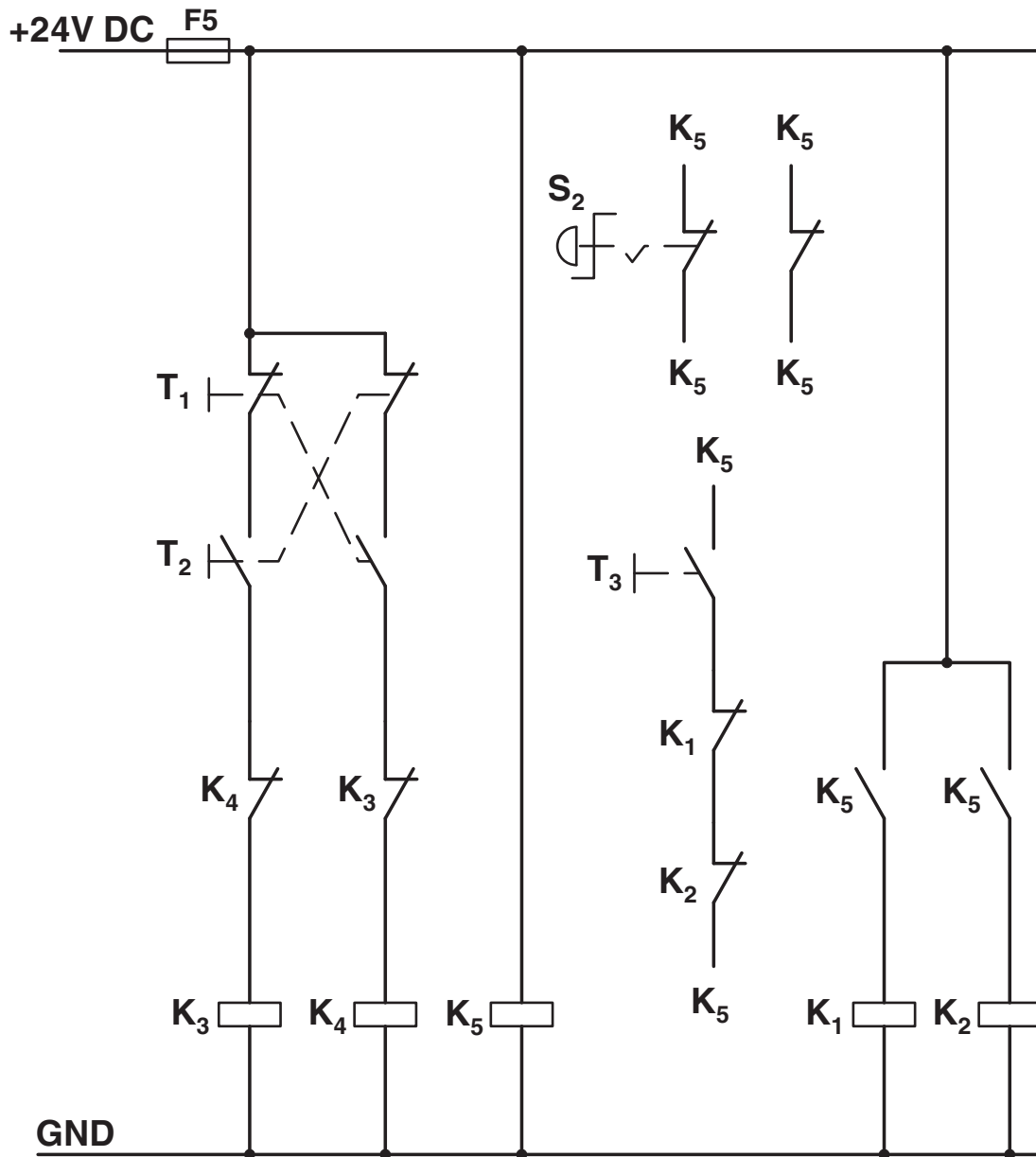
Main current path for contactor according to category 3

K1 + K2 = Emergency stop contactor

K3 = Left contactor

K4 = Right contactor

Circuit diagram



## Conventional structure

Control current path protection according to category 3

K1 + K2 = Emergency stop contactor

K3 = Left contactor

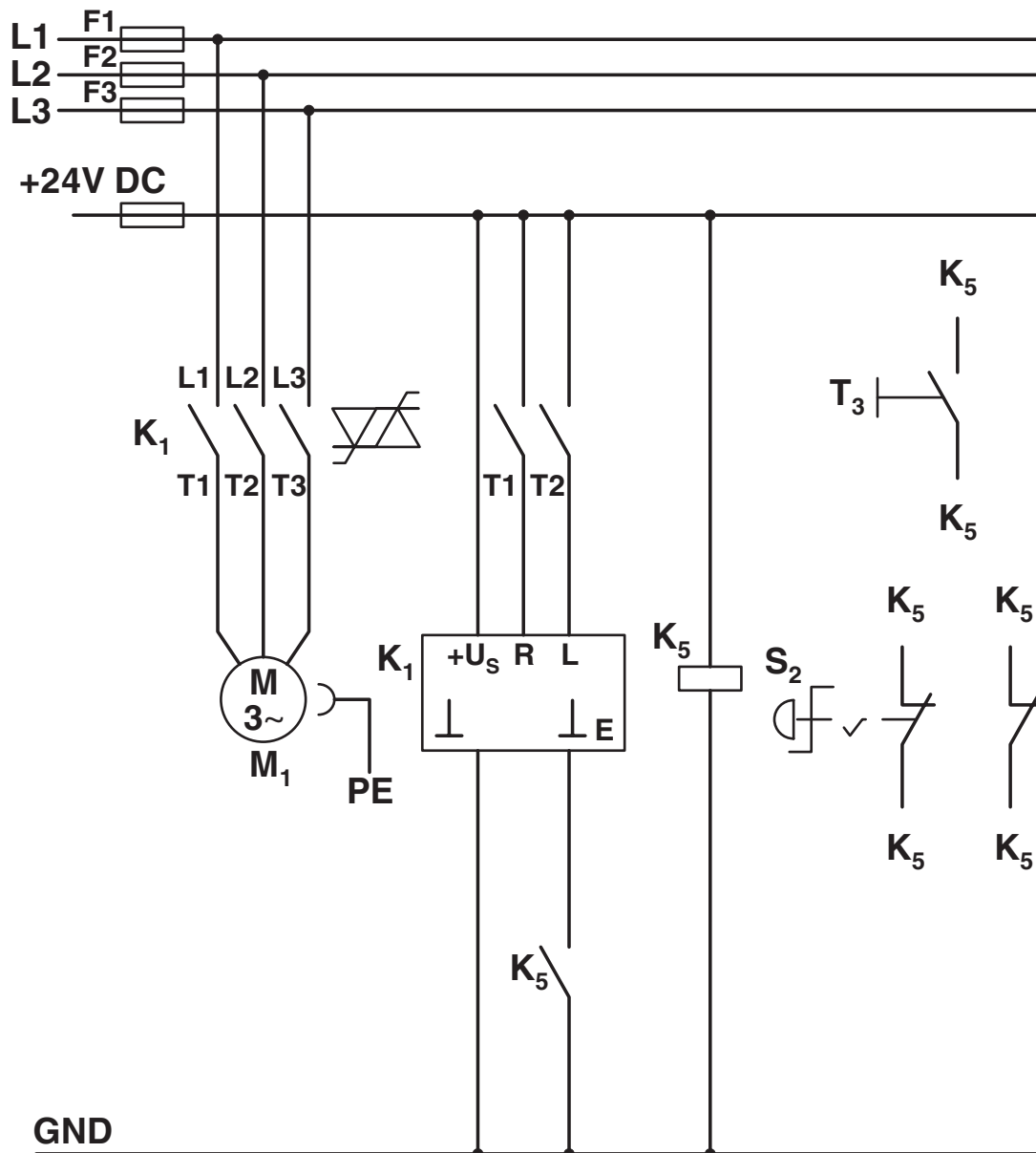
K4 = Right contactor

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

T1 = Right, T2 = Left, T3 = Reset

S2 = Emergency stop

Circuit diagram



## Structure with CONTACTRON

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

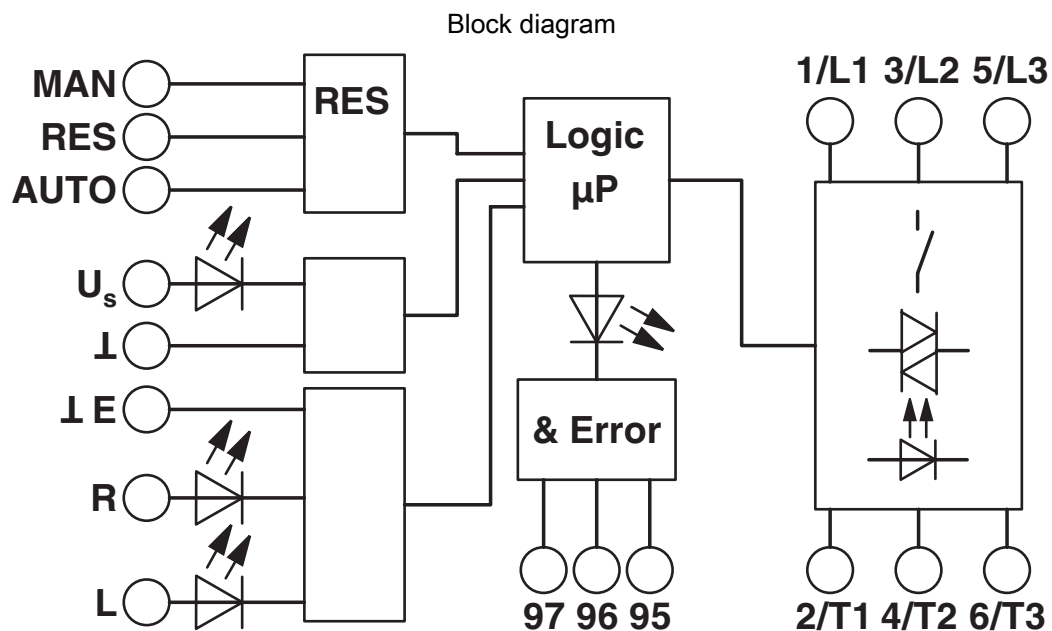
K1 = '3 in 1' hybrid motor starter with reversing function

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

T1 = Right, T2 = Left, T3 = Reset

S2 = Emergency stop





# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2900561>

|                                                                                     |                                                  |
|-------------------------------------------------------------------------------------|--------------------------------------------------|
|    | <b>IECEE CB Scheme</b><br>Approval ID: DE1-55728 |
|    | <b>EAC</b><br>Approval ID: RU*C-DE.*08.B.00520*  |
|    | <b>UL Listed</b><br>Approval ID: FILE E 323771   |
|    | <b>CCC</b><br>Approval ID: 2016010304871315      |
|  | <b>cUL Listed</b><br>Approval ID: FILE E 323771  |
|  | <b>cUL Listed</b><br>Approval ID: E228652        |
|  | <b>UL Listed</b><br>Approval ID: E228652         |
|  | <b>ATEX</b><br>Approval ID: PTB 07 ATEX 3145     |

# ELR H5-ES-SC- 24DC/500AC-9 - Hybrid motor starter



2900561

<https://www.phoenixcontact.com/us/products/2900561>

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## 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                                | 4299214a-4611-4050-a40a-d5e11bfa50d4 |