

# ELR H5-ES-SC-230AC/500AC-2 - Hybrid motor starter



2900560

<https://www.phoenixcontact.com/us/products/2900560>

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The figure shows the 9 A version

Hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 230 V AC input, 2.4 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	2900560
Packing unit	1 pc
Note	Made to order (non-returnable)
Sales key	NULL
Product key	DK7412
GTIN	4046356527811
Weight per piece (including packing)	282.11 g
Weight per piece (excluding packing)	222.42 g
Customs tariff number	85371099
Country of origin	DE

## Technical data

### Product properties

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

Insulation characteristics: Air clearances and creepage distances between the power circuits

Insulation	safe isolation
Overvoltage category	III
Degree of pollution	2

### Electrical properties

Number of phases	3
Service life electrical	$3 \times 10^7$ cycles
Reversing frequency	$\leq 2$ Hz
Maximum power dissipation	4.7 W
Minimum power dissipation	2.6 W
Coordination type	1

Air clearances and creepage distances between the power circuits

Rated insulation voltage	500 V
Rated surge voltage	6 kV

### Supply

Rated control circuit supply voltage $U_S$	230 V AC
Control supply voltage range	92 V AC ... 253 V AC
Rated control supply current $I_S$	4 mA
Mains frequency	50/60 Hz
Protective circuit	Surge protection

### Input data

#### Control

Rated actuating voltage $U_C$	230 V AC
Triggering voltage range	92 V AC ... 253 V AC
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
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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
Residual voltage	< 0.3 V
Protective circuit	Surge protection

## Acknowledge output

Note	Confirmation 01: floating changeover contact
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## 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

### 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

## 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)
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## Environmental and real-life conditions

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## Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-40 °C ... 80 °C

## Approvals

### 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

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	2.4 A (480 V)

## Standards and regulations

### Standards/regulations

Standards/regulations	DIN EN 50178
	EN 60947

### Power station requirements

Standards/regulations	DWR 1300/ZXX01/DD/7080.8d
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### Air clearances and creepage distances between the power circuits

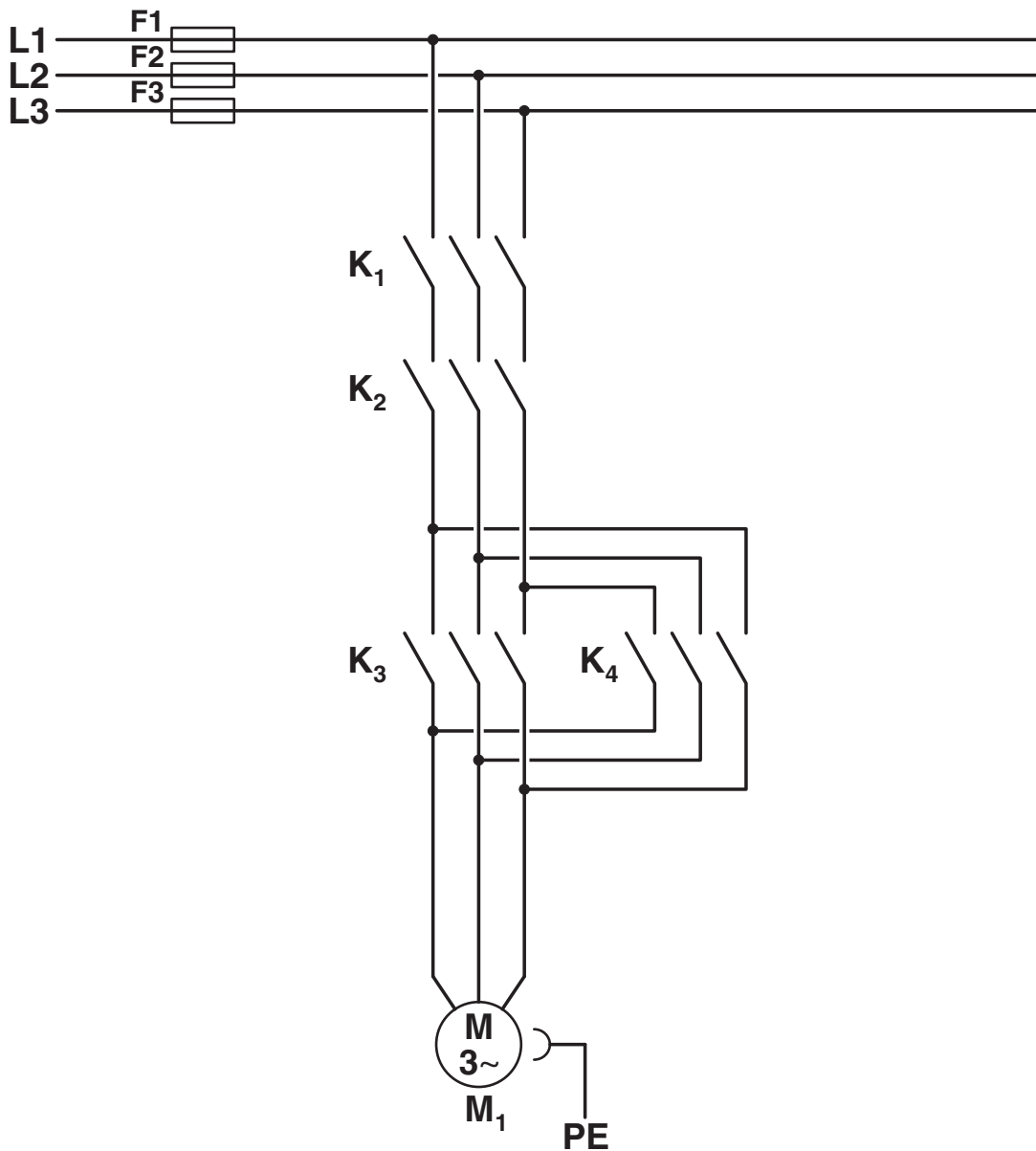
Standards/regulations	DIN EN 50178
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## Mounting

Assembly note	can be aligned with spacing = 20 mm
Mounting position	Vertical (horizontal DIN rail)

## Drawings

Circuit diagram



### Conventional structure

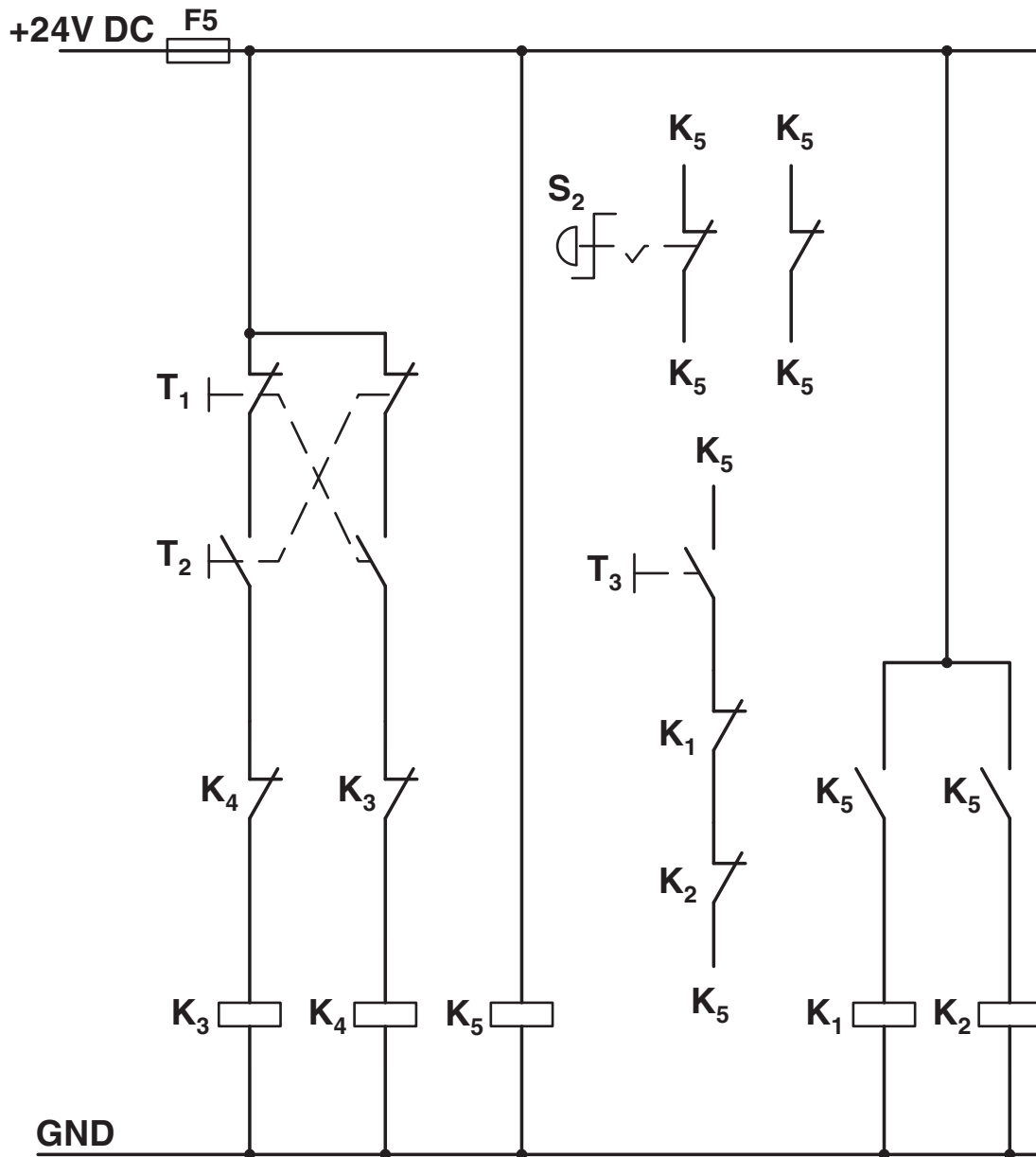
Main current path for contactor according to category 3

K1 + K2 = Emergency stop contactor

K3 = Left contactor

K4 = Right contactor

Circuit diagram

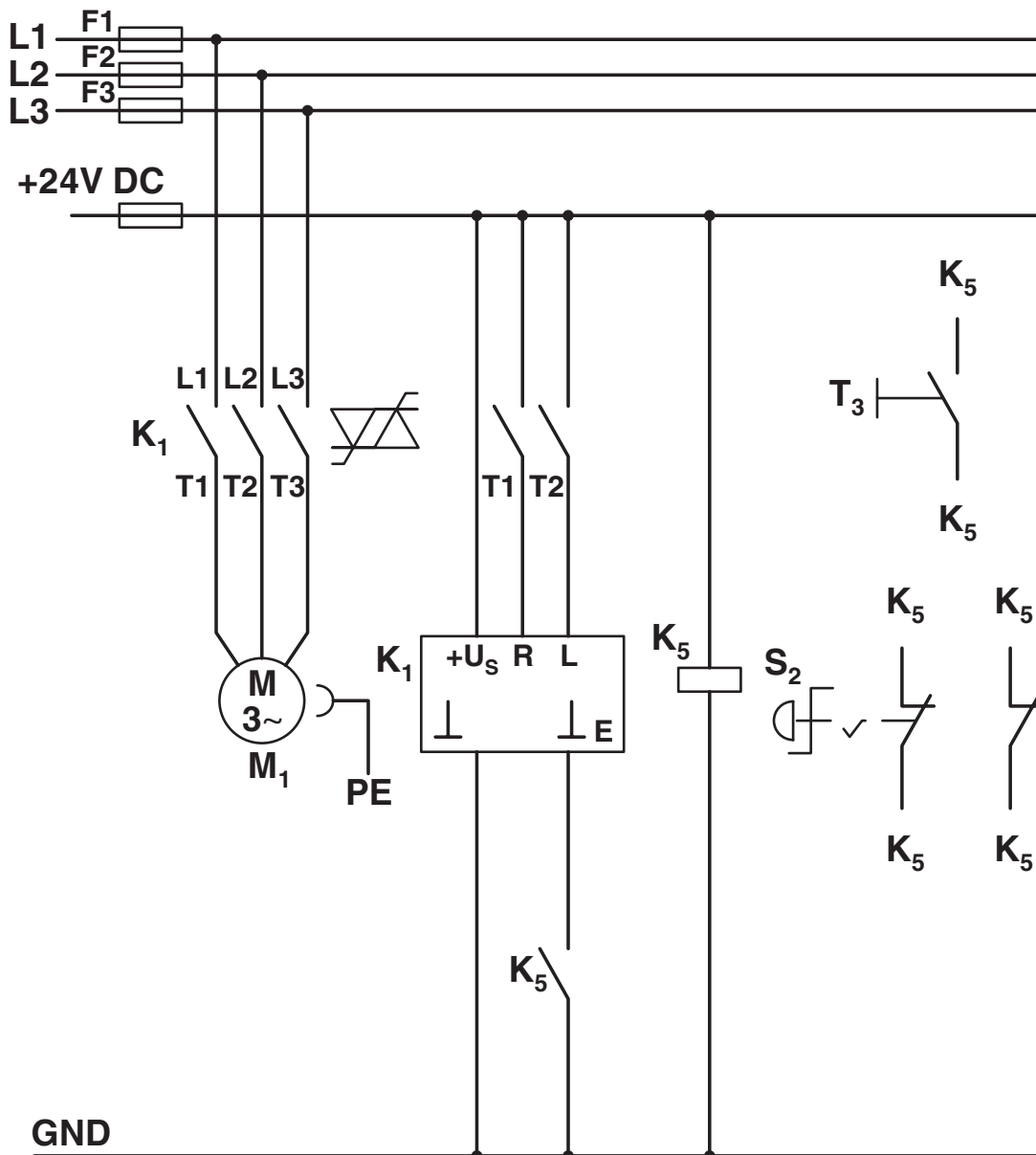


### Conventional structure

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

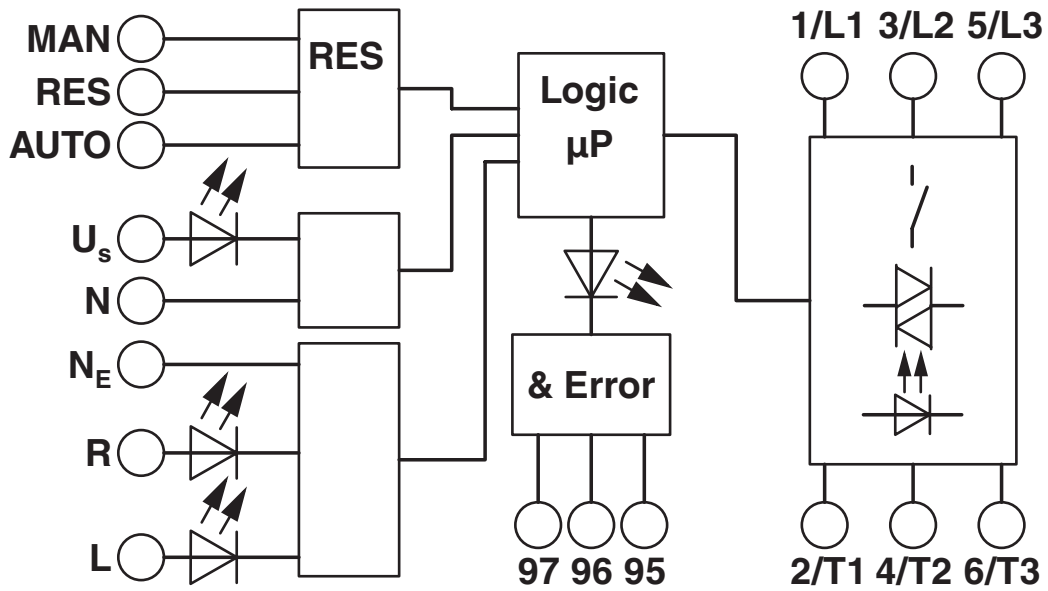
K1 = '3 in 1' hybrid motor starter with reversing function

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

T1 = Right, T2 = Left, T3 = Reset

S2 = Emergency stop

Block diagram



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## Environmental product compliance

### 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.)	No substance above 0.1 wt%
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