

# ELR H3-IES-PT- 24DC/500AC-9 - Hybrid motor starter



2903918

<https://www.phoenixcontact.com/us/products/2903918>

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Hybrid motor starter for starting 3~ AC motors up to 500 V AC and 9 A output current, with 24 V DC control voltage, adjustable overload shutdown, emergency stop function to SIL 3/PL e, and 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	2903918
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C470
Product key	DK7413
GTIN	4046356771412
Weight per piece (including packing)	287.2 g
Weight per piece (excluding packing)	278.7 g
Customs tariff number	85371098
Country of origin	DE

## Technical data

### Notes

Notes on operation	If this device is to be used in combination with the CrossPowerSystem power distribution board, the device mount for the 16 A fuse (order designation: EM-CPS-DA-22,5F/16A; order number: 1002668) is required in order to attach the hybrid motor starter to the power distribution board.
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### Product properties

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

### Electrical properties

Number of phases	3
Motor starter type	Direct 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) at operating voltage ≤ 300 V AC Basic insulation (IEC 60947-1) at operating voltage 300 V AC ... 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

### Emergency tripping

Operate threshold	> 45 A
Response time	2 s

### Input data

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2903918

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## Control

Input name	Control input
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 (Input type 1)
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

Note	800 V semiconductor
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	Push-in connection
Stripping length	10 mm
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	Push-in connection
Stripping length	10 mm
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>

2903918

<https://www.phoenixcontact.com/us/products/2903918>

Conductor cross-section AWG	24 ... 14
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## 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)
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## 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
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### 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

2903918

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## 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

## Standards and regulations

### Standards/regulations

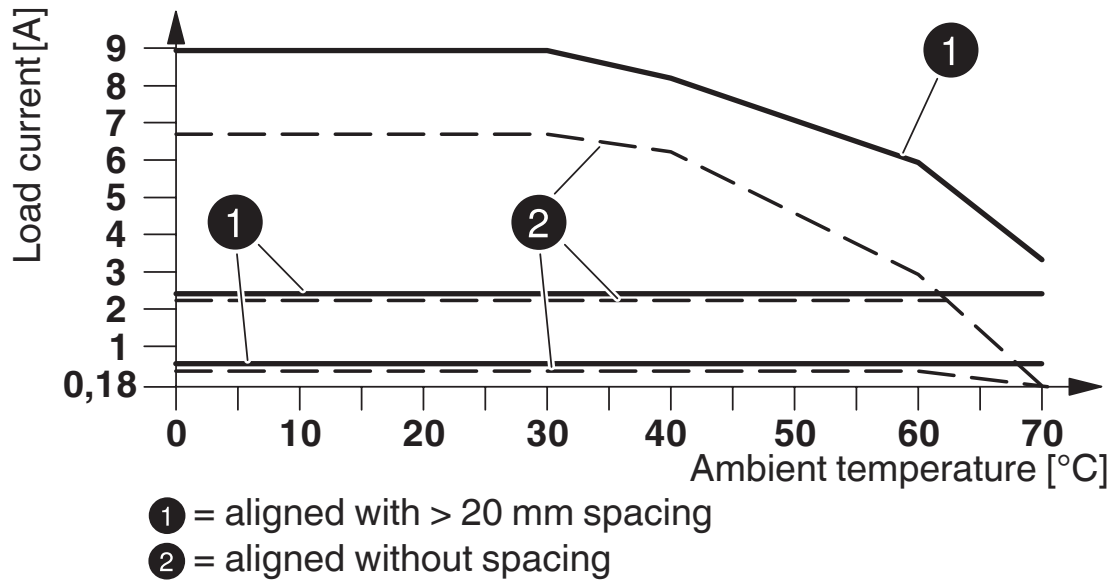
Standards/regulations	IEC 60947-1
	IEC 60947-4-2
	IEC 61508
	ISO 13849

## 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 diagram

Circuit diagram



## Conventional structure

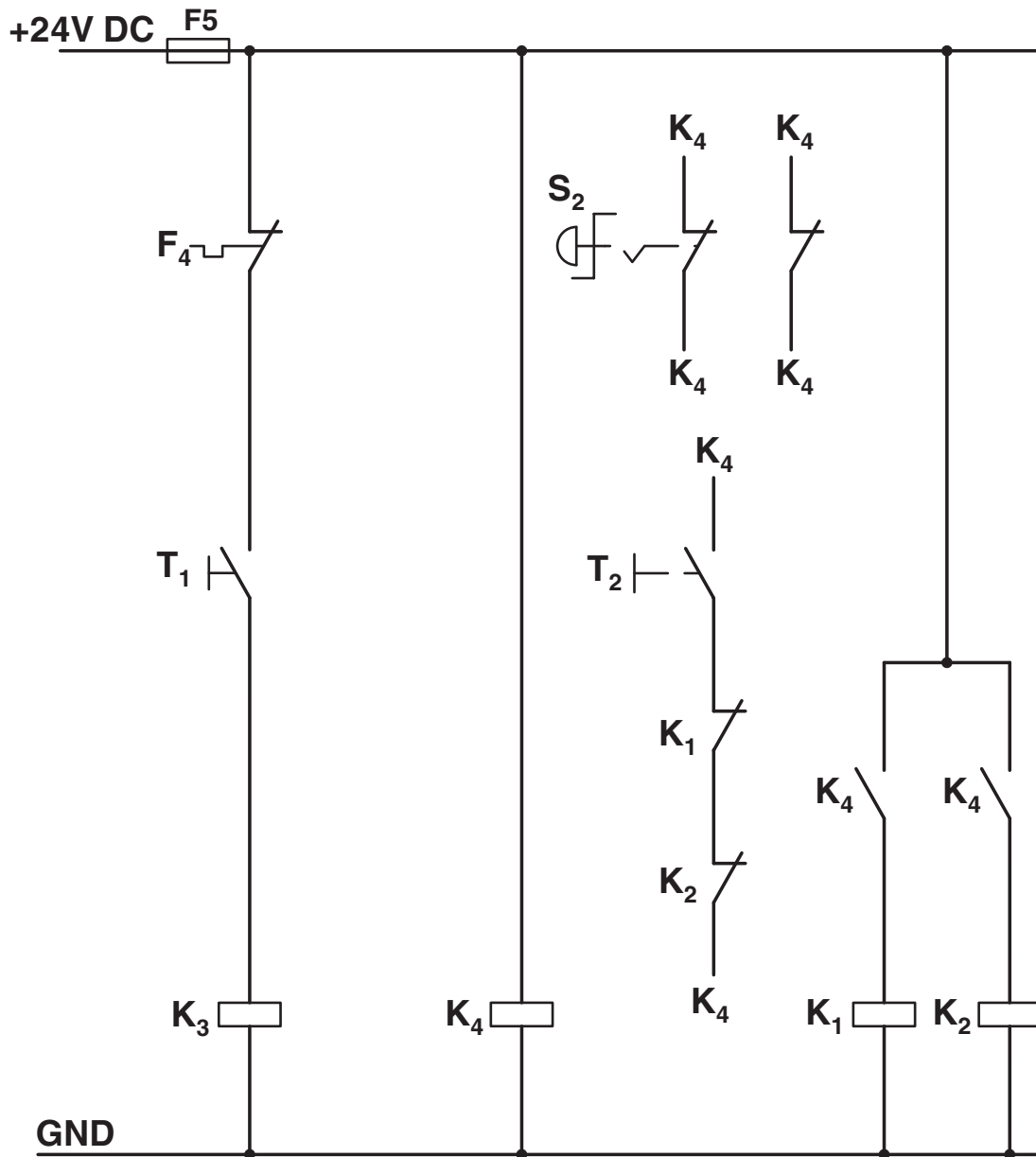
Main current path for contactor according to category 3

K1 + K2 = Emergency stop contactor

K3 = Right contactor

F4 = Motor protection relay

Circuit diagram



### Conventional structure

Control current path for contactor according to category 3

K1 + K2 = Emergency stop contactor

K3 = Right contactor

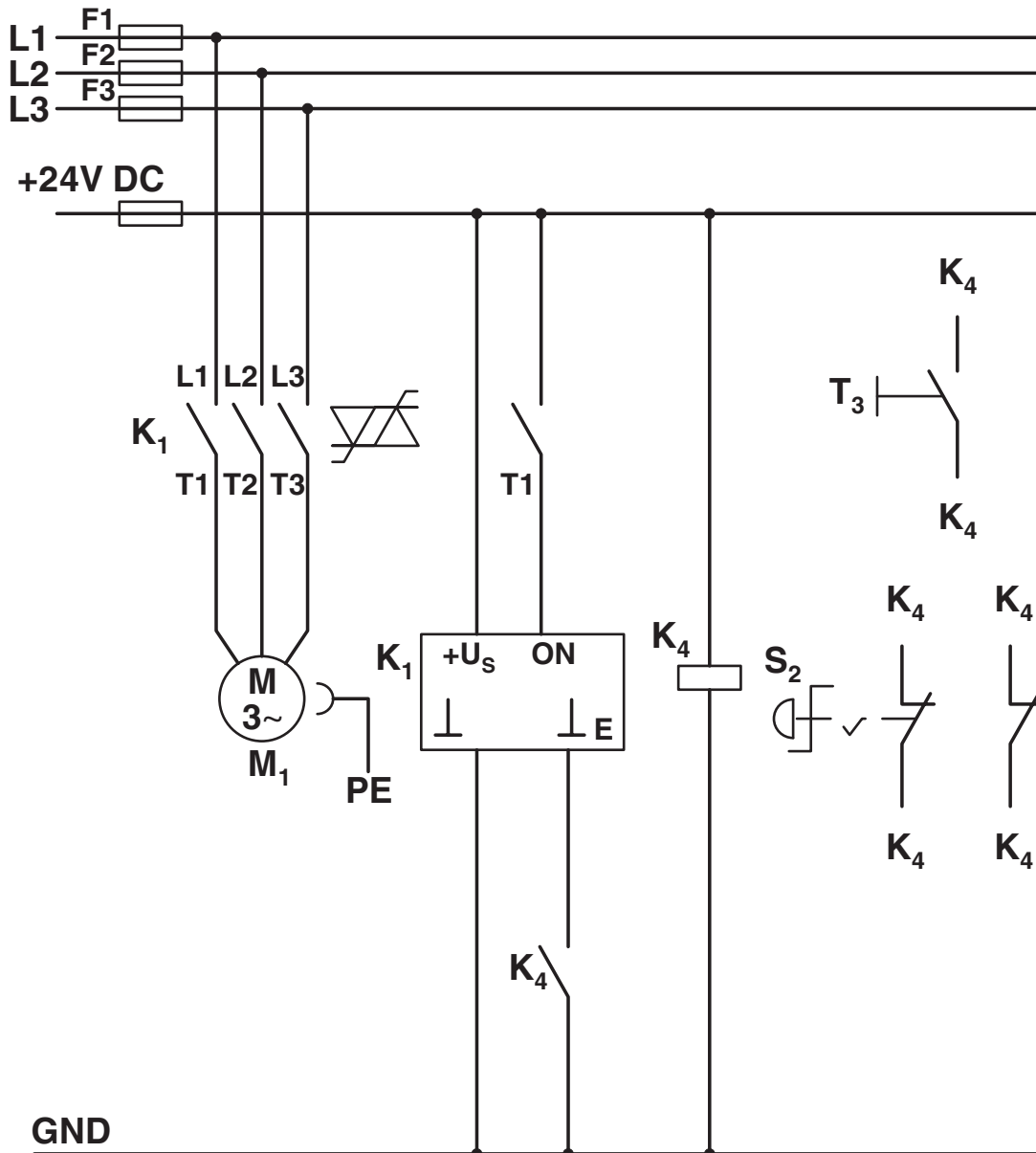
K4 = PSR SCP-24DC.../safety relay

T1 = Right, T3 = Reset

S2 = Emergency stop

F4 = Motor protection relay

Circuit diagram



Structure with CONTACTRON

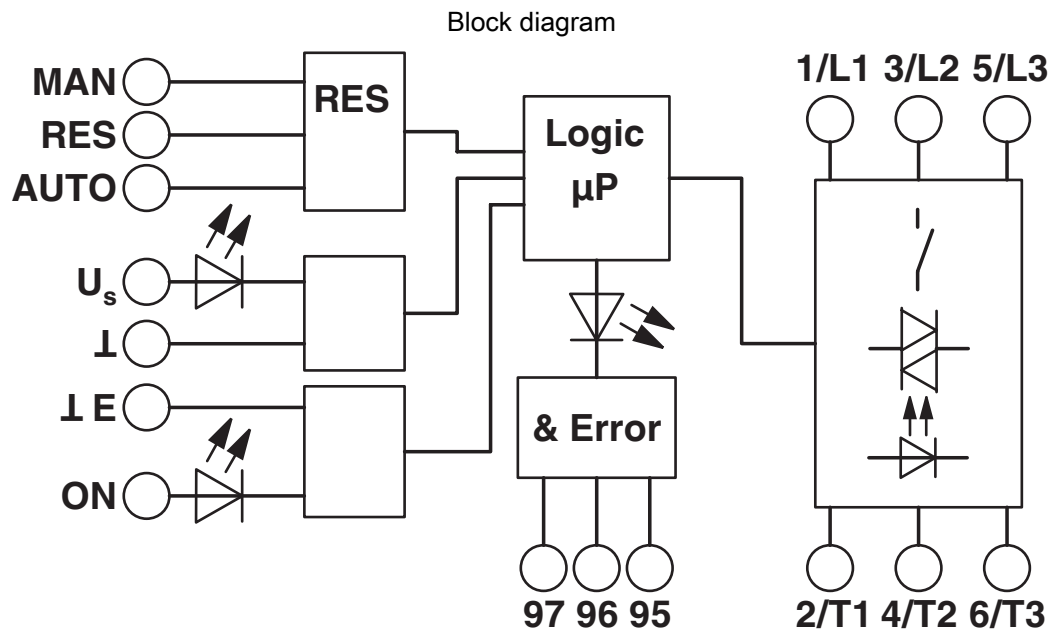
Main and control current path for '3 in 1' hybrid motor starter according to category 3

K1 = '3 in 1' hybrid motor starter

K4 = PSR SCP-24DC.../safety relay

T1 = Right, T3 = Reset

S2 = Emergency stop



2903918

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2903918>



**IECEE CB Scheme**  
Approval ID: DE1-55728



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



**UL Listed**  
Approval ID: FILE E 323771



**CCC**  
Approval ID: 2016010304871315



**cUL Listed**  
Approval ID: FILE E 323771



**cUL Listed**  
Approval ID: E228652



**UL Listed**  
Approval ID: E228652



**CCC**  
Approval ID: 2024010304672817



**ATEX**  
Approval ID: PTB 07 ATEX 3145

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## Classifications

### ECLASS

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

### ETIM

ETIM 10.0	EC001037
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### UNSPSC

UNSPSC 21.0	25173900
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2903918

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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.)	1-Methyl-2-pyrrolidone (NMP)(CAS: 872-50-4)
	Lead(CAS: 7439-92-1)
SCIP	3701e030-5e8c-47c0-bf72-0ce349c47780

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Phoenix Contact USA  
 586 Fulling Mill Road  
 Middletown, PA 17057, United States  
 (+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)