# ELR H5-IES-SC- 24DC/500AC-2 - Hybrid motor starter

2900414

https://www.phoenixcontact.com/pc/products/2900414

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Hybrid motor starter for reversing 3~ AC motors up to 500 V AC and 2.4 A output current, with 24 V DC control voltage, adjustable overload shutdown and emergency stop function to SIL 3 / PL e and screw connection

## Your advantages

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

## Commercial Data

| | |
|---|---|
| Item number | 2900414 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Product Key | CK7412 |
| Catalog Page | Page 28 (C-5-2019) |
| GTIN | 4046356504058 |
| Weight per Piece (including packing) | 321.9 g |
| Weight per Piece (excluding packing) | 269.6 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 |
| Maximum power dissipation for nominal condition | 2.2 W |
| Switching frequency | ≤ 2 Hz (Load-dependent) |
| Maximum power dissipation | 3.3 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 |

## 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 (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

| | |
|---|---|
| Rated operating voltage $U_e$ | 500 V AC |
| 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 |
| 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 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross section AWG | 24 ... 14 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |

Load circuit

| | |
|---|---|
| Connection method | Screw connection |
| Stripping length | 8 mm |
| Screw thread | M3 |
| 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 |
| Tightening torque | 0.5 Nm ... 0.6 Nm |
| | 5 $lb_f$-in. ... 7 $lb_f$-in. |

## Signaling

| | |
|---|---|
| Status display | Yellow LED |

| | |
|---|---|
| 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) | -25 °C ... 70 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C |
| Altitude | ≤ 2000 m |

## Approvals

### UKCA

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

### 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 | 2.4 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

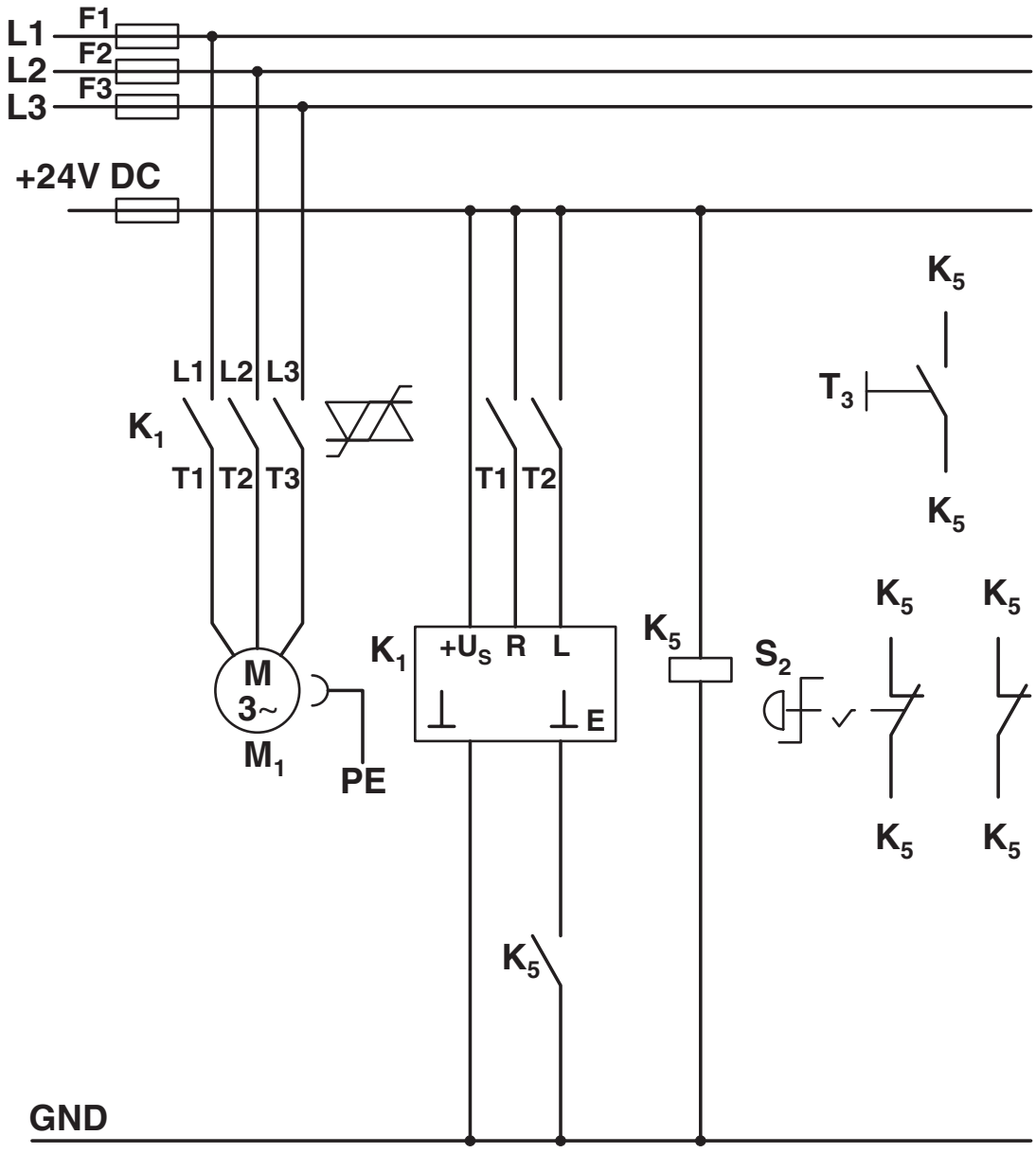
| | |
|---|---|
| Standards/regulations | IEC 60947-1 |
| | IEC 60947-4-2 |
| | IEC 61508 |
| | ISO 13849 |

## Mounting

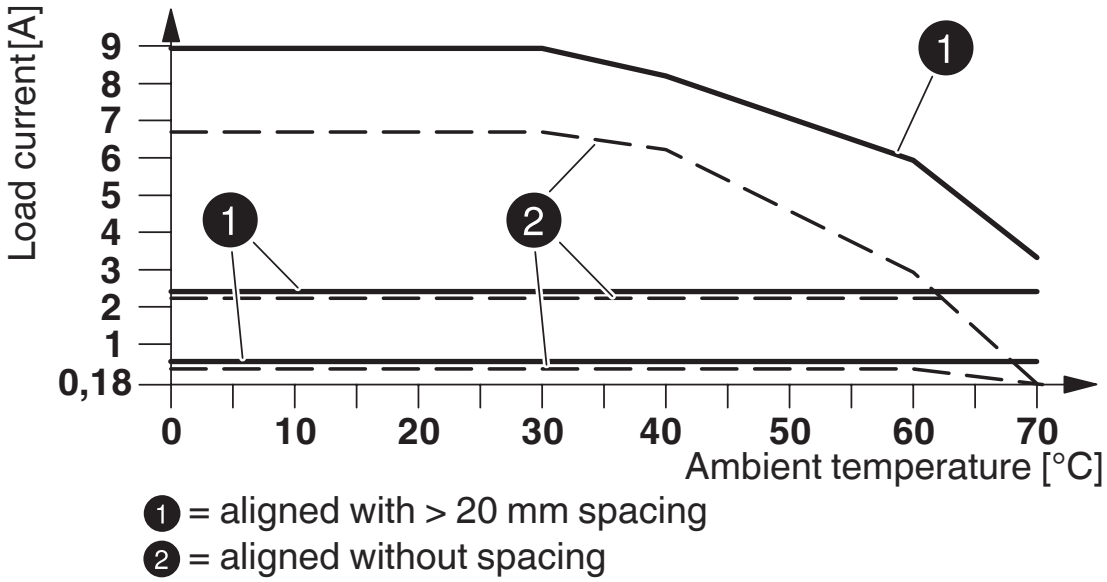
| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly instructions | alignable, for spacing see derating |
| Mounting position | vertical (horizontal DIN rail, motor output below) |

## Drawings

Circuit diagram

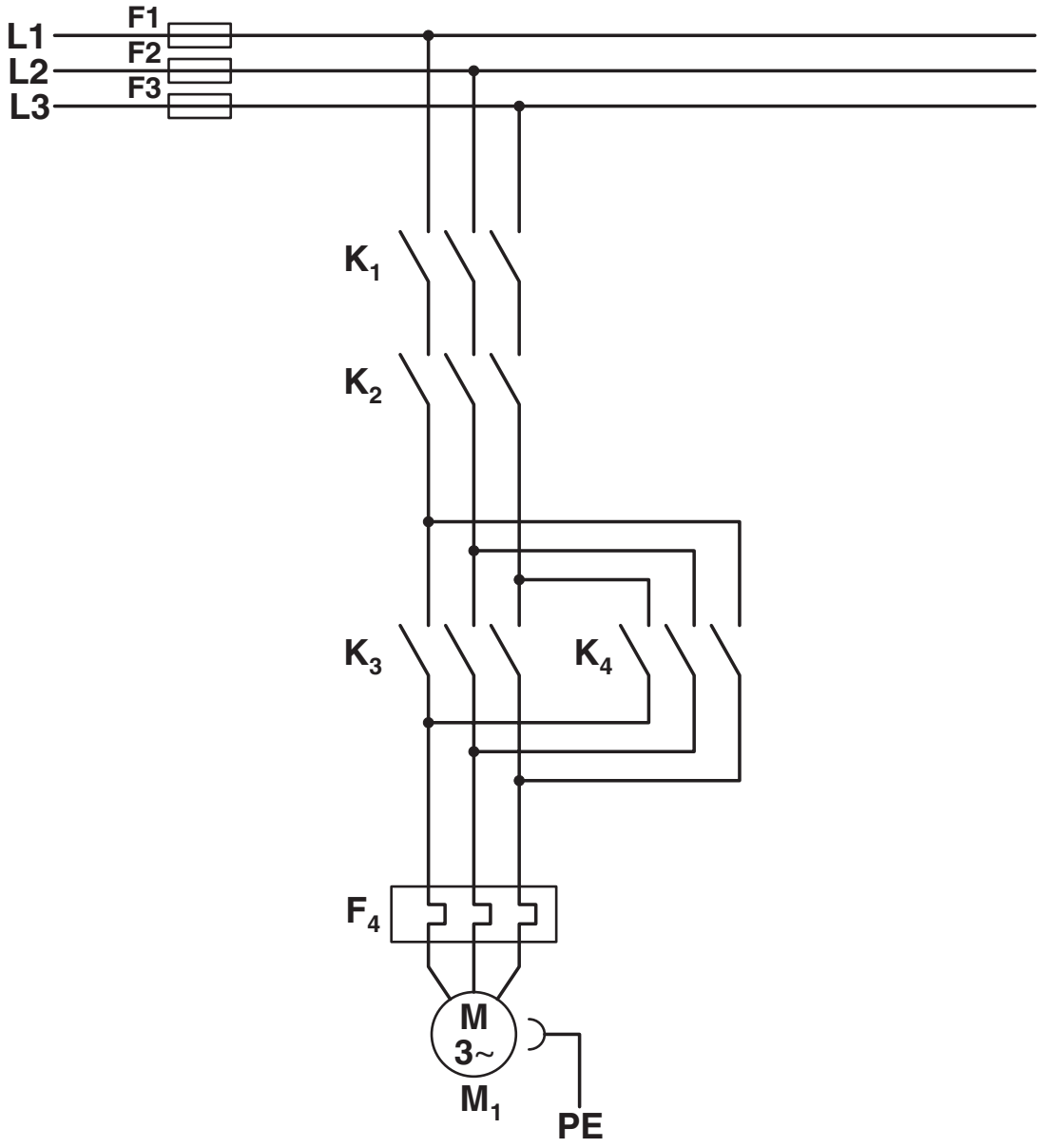


Diagram

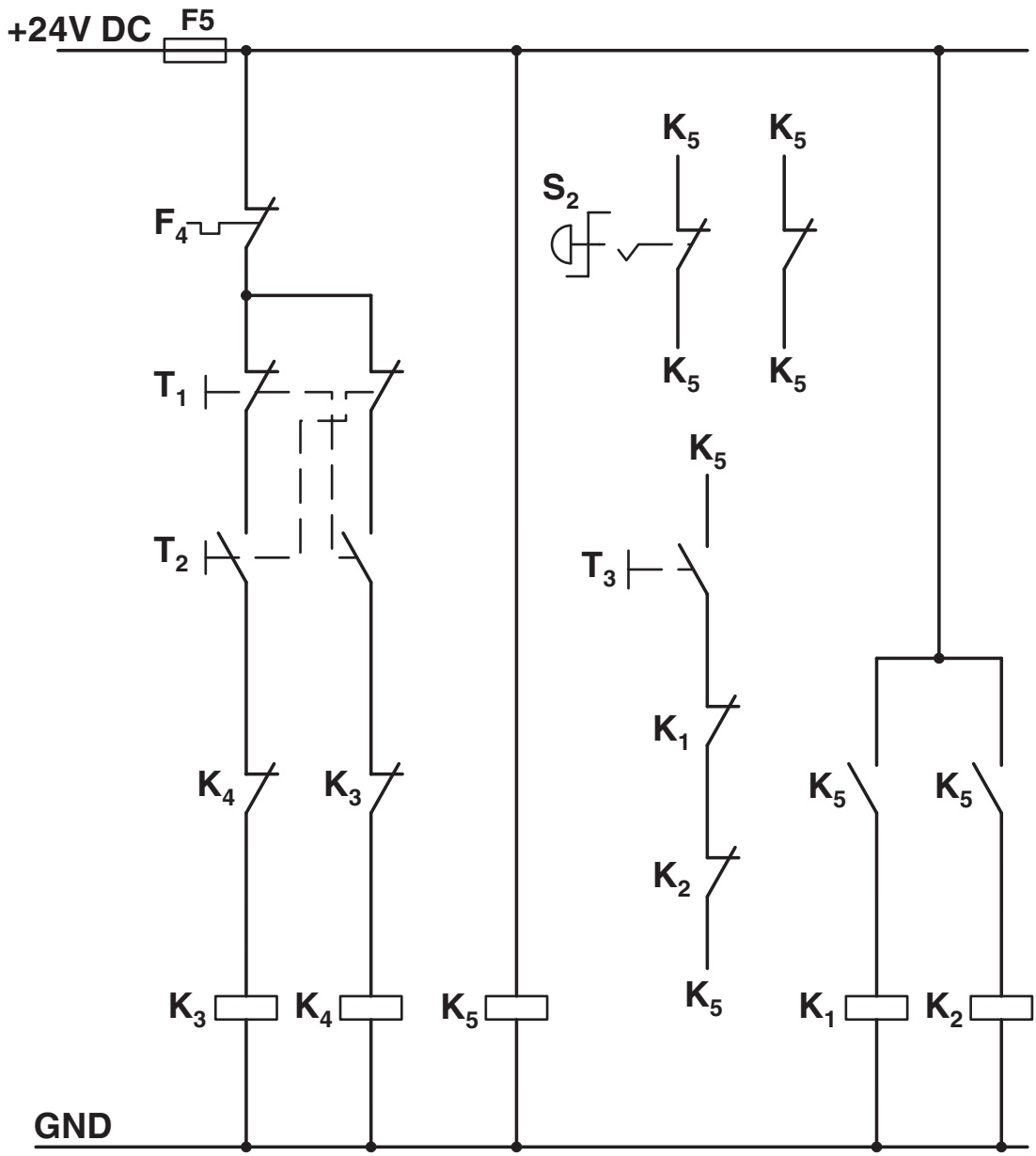



Derating diagram

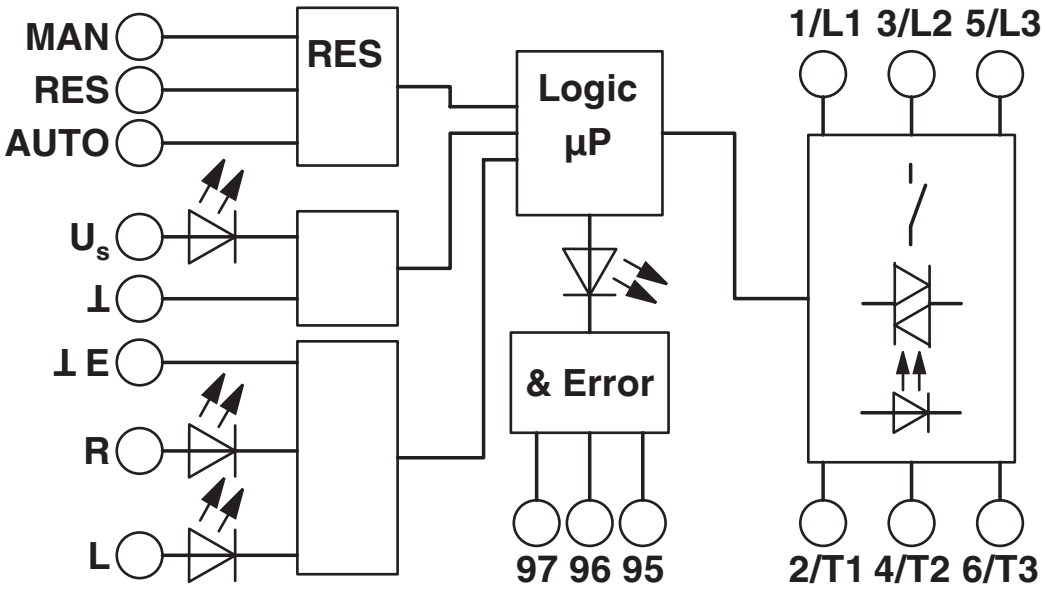
Circuit diagram



Circuit diagram



Block diagram



## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/pc/products/2900414

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

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

**DNV GL**
Approval ID: TAA00002HK

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

**CCC**
Approval ID: 2016010304871315

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

**cUL Listed**
Approval ID: FILE E 228652

**UL Listed**
Approval ID: FILE E 228652

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

## Classifications

### ECLASS

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

### ETIM

| | |
|---|---|
| ETIM 8.0 | EC001037 |

### UNSPSC

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

## Environmental Product Compliance

| | |
|---|---|
| REACh SVHC | Lead 7439-92-1 |

| | |
|---|---|
| China RoHS | Environmentally Friendly Use Period = 50 years |
| | For information on hazardous substances, refer to the manufacturer’s declaration available under “Downloads” |

## Accessories

### US-EMLP (15X5) - Plastic label

0828790

https://www.phoenixcontact.com/pc/products/0828790



Plastic label, Card, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 189

### UC-EMLP (15X5) - Plastic label

0819301

https://www.phoenixcontact.com/pc/products/0819301



Plastic label, Sheet, white, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, PLOTMARK, CMS-P1-PLOTTER, mounting type: adhesive, lettering field size: 15 x 5 mm, Number of individual labels: 10

## EM-CPS-225 - Power distribution board

1002634

https://www.phoenixcontact.com/pc/products/1002634

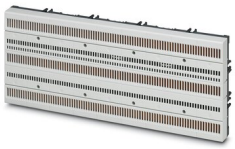


Modular power distribution board with CrossLink® interface, 125 A, 3-pos., touch-proof and protection against polarity reversal, width: 225 mm

## EM-CPS-405 - Power distribution board

1002635

https://www.phoenixcontact.com/pc/products/1002635



Modular power distribution board with CrossLink® interface, 125 A, 3-pos., touch-proof and protection against polarity reversal, width: 405 mm

## EM-CPS-TB3/63A - Connection module

1002633

https://www.phoenixcontact.com/pc/products/1002633



Connection module with integrated spring-loaded terminals for cables from 1.5 to 16 $mm^2$, 3-pos., maximum 63 A

## EM-CPS-DA-22,5F/16A - Adapter

1002668

https://www.phoenixcontact.com/pc/products/1002668



Device adapter with fuse holder for 16 A fuse (10x38/Class CC), CrossLink® interface and fixed DIN rail

## BRIDGE- 2 - Bridge

2900746

https://www.phoenixcontact.com/pc/products/2900746

3-phase loop bridge for CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 3 - Bridge

2900747

https://www.phoenixcontact.com/pc/products/2900747

3-phase loop bridge for 3 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 4 - Bridge

2900748

https://www.phoenixcontact.com/pc/products/2900748

3-phase loop bridge for 4 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 5 - Bridge

2900749

https://www.phoenixcontact.com/pc/products/2900749

3-phase loop bridge for 5 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 6 - Bridge

2900750

https://www.phoenixcontact.com/pc/products/2900750

3-phase loop bridge for 6 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 7 - Bridge

2900751

https://www.phoenixcontact.com/pc/products/2900751

3-phase loop bridge for 7 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 8 - Bridge

2900752

https://www.phoenixcontact.com/pc/products/2900752

3-phase loop bridge for 8 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 9 - Bridge

2900753

https://www.phoenixcontact.com/pc/products/2900753

3-phase loop bridge for 9 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE-10 - Bridge

2900754

https://www.phoenixcontact.com/pc/products/2900754

3-phase loop bridge for 10 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 0.3 m, with ferrules.



## BRIDGE- 2-1M - Bridge

2901542

https://www.phoenixcontact.com/pc/products/2901542

3-phase loop bridge for 2 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 1 m



## BRIDGE- 3-1M - Bridge

2901655

https://www.phoenixcontact.com/pc/products/2901655



3-phase loop bridge for 3 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 1 m

## BRIDGE- 4-1M - Bridge

2901658

https://www.phoenixcontact.com/pc/products/2901658



3-phase loop bridge for 4 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 1 m

## BRIDGE- 5-1M - Bridge

2901544

https://www.phoenixcontact.com/pc/products/2901544



3-phase loop bridge for 5 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 1 m

## BRIDGE- 6-1M - Bridge

2901649

https://www.phoenixcontact.com/pc/products/2901649



3-phase loop bridge for 6 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 1 m

## BRIDGE- 2-3M - Bridge

2901543

https://www.phoenixcontact.com/pc/products/2901543



3-phase loop bridge for 2 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 3-3M - Bridge

2901656

https://www.phoenixcontact.com/pc/products/2901656



3-phase loop bridge for 3 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 4-3M - Bridge

2901659

https://www.phoenixcontact.com/pc/products/2901659



3-phase loop bridge for 4 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 5-3M - Bridge

2901545

https://www.phoenixcontact.com/pc/products/2901545



3-phase loop bridge for 5 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 6-3M - Bridge

2901697

https://www.phoenixcontact.com/pc/products/2901697



3-phase loop bridge for 6 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 7-3M - Bridge

2901698

https://www.phoenixcontact.com/pc/products/2901698



3-phase loop bridge for 7 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 8-3M - Bridge

2901700

https://www.phoenixcontact.com/pc/products/2901700



3-phase loop bridge for 8 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 9-3M - Bridge

2901701

https://www.phoenixcontact.com/pc/products/2901701



3-phase loop bridge for 9 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE-10-3M - Bridge

2901702

https://www.phoenixcontact.com/pc/products/2901702



3-phase loop bridge for 10 CONTACTRON modules, with screw connection and 22.5 mm housing width, connecting cable: 3 m

## BRIDGE- 2- 2M/0,3M - Bridge

2909897

https://www.phoenixcontact.com/pc/products/2909897



3-phase loop bridge for 2 CONTACTRON modules, with screw connection and 22.5 mm housing width, cable length between the modules: 0.3 m, connecting cable: 2 m

## BRIDGE- 3- 2M/0,3M - Bridge

2909898

https://www.phoenixcontact.com/pc/products/2909898



3-phase loop bridge for 3 CONTACTRON modules, with screw connection and 22.5 mm housing width, cable length between the modules: 0.3 m, connecting cable: 2 m

## BRIDGE- 4- 2M/0,3M - Bridge

2909899

https://www.phoenixcontact.com/pc/products/2909899



3-phase loop bridge for 4 CONTACTRON modules, with screw connection and 22.5 mm housing width, cable length between the modules: 0.3 m, connecting cable: 2 m

## BRIDGE COVER - Covering hood

2906240

https://www.phoenixcontact.com/pc/products/2906240



The BRIDGE COVER covering hood is used to cover unused plugs on the CONTACTRON bridge that may subsequently be used to extend the system. The hood can be used with the screw and Push-in version of the bridge.


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