

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

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 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 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	2900421
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C470
Product key	CK7414
Catalog page	Page 28 (C-5-2019)
GTIN	4046356504676
Weight per piece (including packing)	322.6 g
Weight per piece (excluding packing)	304.3 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	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

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)

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

	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 ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
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 mm ² ... 2.5 mm ²
Conductor cross section flexible	0.2 mm ² ... 2.5 mm ²
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	⊕ 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

Safety Integrity Level (SIL, IEC 61508)

Identification	2
Note	Motor protection

Performance Level (ISO 13849)

Identification	≤ e
Note	Safe shutdown

Category (ISO 13849)

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

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	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

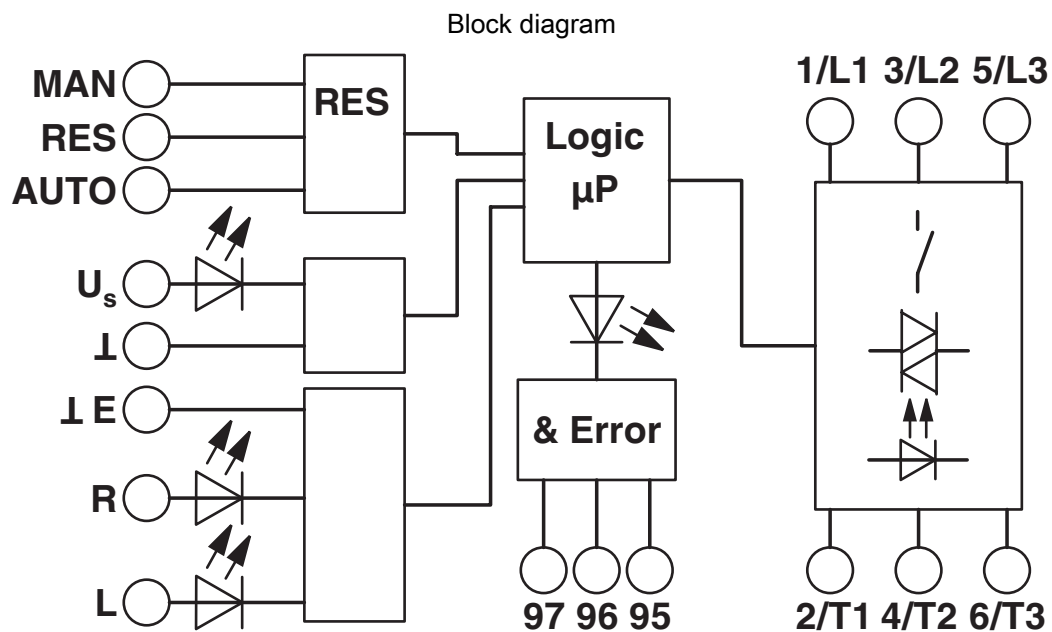
Standards/regulations

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

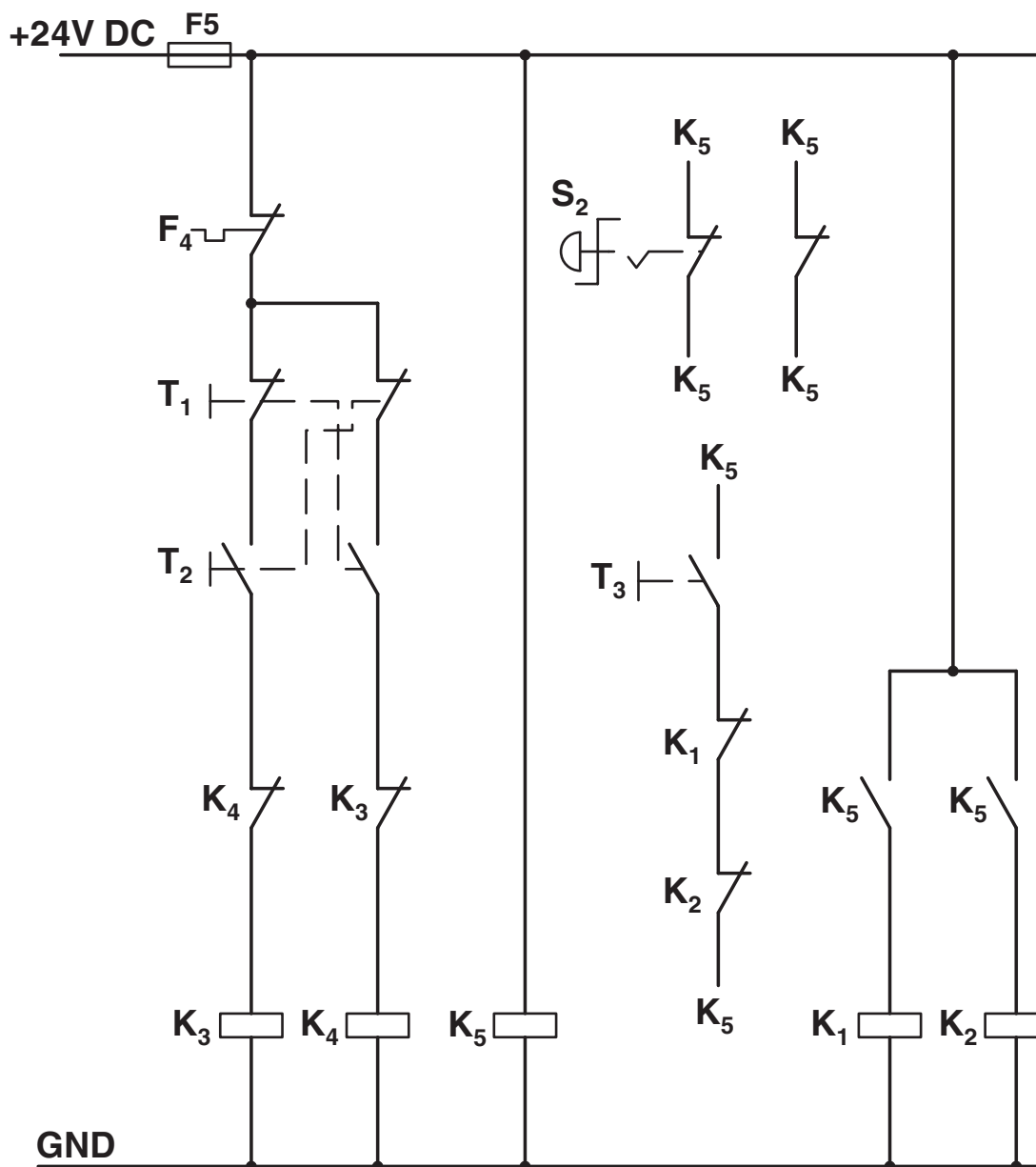
Mounting

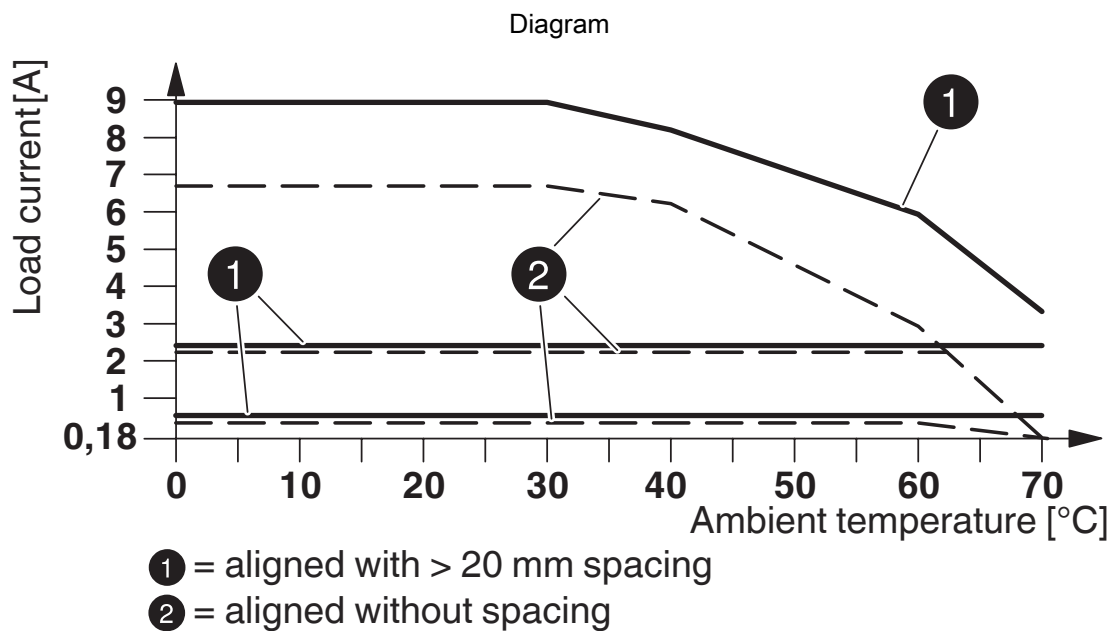
Mounting type	DIN rail mounting
Assembly instructions	alignable, for spacing see derating
Mounting position	vertical (horizontal DIN rail, motor output below)

Drawings



Circuit diagram





Derating diagram

The diagram illustrates a three-phase motor control circuit. At the top, three horizontal lines represent the main power supply phases: L1, L2, and L3. Each phase line is equipped with a fuse, labeled F1, F2, and F3 respectively. The circuit then passes through four circuit breakers, labeled K1, K2, K3, and K4, which are arranged in a vertical column. K1, K2, and K3 are connected in series to the three phase lines. K4 is connected to the neutral line. The output of the circuit breakers is connected to a three-phase motor, represented by a circle with 'M' and '3~' inside. The motor is also connected to a protective earth (PE) line. The motor is labeled M1. The circuit is designed to ensure that the motor cannot be started if any of the phase breakers (K1, K2, K3) are open, providing a safety interlocking feature.

The diagram illustrates a three-phase motor control system. The main power supply consists of three phases (L1, L2, L3) and a neutral line (N), each protected by a fuse (F1, F2, F3). A +24V DC supply is also shown. The motor (M) is a three-phase motor (3~) with terminals L1, L2, L3 and a protective earth (PE) terminal. The control circuit includes a thermal relay (K1) with terminals T1, T2, T3 and a stop button (S1). The DC control circuit features a fuse (K5), a stop button (S2), a normally closed interlocking contact (K5), and a normally open contact (K5). The motor is connected to the three-phase supply through the thermal relay (K1) and the stop button (S1). The DC control circuit is connected to the +24V DC supply through the fuse (K5) and the stop button (S2).

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2900421>

	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

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

Classifications

ECLASS

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

ETIM

ETIM 9.0	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"

2900421

<https://www.phoenixcontact.com/us/products/2900421>

Accessories

BRIDGE- 2 - Bridge

2900746

<https://www.phoenixcontact.com/us/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/us/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.



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 4 - Bridge

2900748

<https://www.phoenixcontact.com/us/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/us/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.



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 6 - Bridge

2900750

<https://www.phoenixcontact.com/us/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/us/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.



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 8 - Bridge

2900752

<https://www.phoenixcontact.com/us/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/us/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.



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE-10 - Bridge

2900754

<https://www.phoenixcontact.com/us/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/us/products/2901542>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 3-1M - Bridge

2901655

<https://www.phoenixcontact.com/us/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/us/products/2901658>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 5-1M - Bridge

2901544

<https://www.phoenixcontact.com/us/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/us/products/2901649>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 2-3M - Bridge

2901543

<https://www.phoenixcontact.com/us/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/us/products/2901656>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 4-3M - Bridge

2901659

<https://www.phoenixcontact.com/us/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/us/products/2901545>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 6-3M - Bridge

2901697

<https://www.phoenixcontact.com/us/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/us/products/2901698>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE- 8-3M - Bridge

2901700

<https://www.phoenixcontact.com/us/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/us/products/2901701>

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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

BRIDGE-10-3M - Bridge

2901702

<https://www.phoenixcontact.com/us/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/us/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



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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

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

2909898

<https://www.phoenixcontact.com/us/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/us/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

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

US-EMLP (15X5) - Plastic label

0828790

<https://www.phoenixcontact.com/us/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/us/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

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

EM-CPS-225 - Power distribution board

1002634

<https://www.phoenixcontact.com/us/products/1002634>

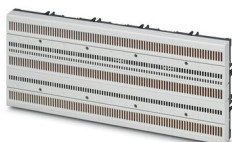


Modular power distribution board with CrossLink[®] interface, 125 A, 3-pos., touch-proof and protection against polarity reversal, width: 225 mm

EM-CPS-405 - Power distribution board

1002635

<https://www.phoenixcontact.com/us/products/1002635>



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

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



2900421

<https://www.phoenixcontact.com/us/products/2900421>

EM-CPS-TB3/63A - Connection module

1002633

<https://www.phoenixcontact.com/us/products/1002633>



Connection module with integrated spring-loaded terminals for cables from 1.5 to 16 mm², 3-pos., maximum 63 A

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

1002668

<https://www.phoenixcontact.com/us/products/1002668>



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

Phoenix Contact 2024 © - all rights reserved
<https://www.phoenixcontact.com>

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