

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

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Hybrid motor starter for reversing 3~ AC motors up to 500 V AC and 2.4 A output current, with 230 V AC control voltage, adjustable overload shutdown and emergency stop function to SIL 3/PL e

### Your advantages

- ✓ 22.5 mm wide
- ✓ Safety level according to 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



### Key Commercial Data

|              |                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------|
| Packing unit | 1 pc                                                                                                    |
| GTIN         | <br>4 046356 504065 |
| GTIN         | 4046356504065                                                                                           |

### Technical data

#### Dimensions

|        |         |
|--------|---------|
| Width  | 22.5 mm |
| Height | 107 mm  |
| Depth  | 114 mm  |

#### Ambient conditions

|                                         |                                     |
|-----------------------------------------|-------------------------------------|
| Ambient temperature (operation)         | -25 °C ... 70 °C (observe derating) |
| Ambient temperature (storage/transport) | -40 °C ... 80 °C                    |
| Maximum altitude                        | ≤ 2000 m                            |
| Degree of protection                    | IP20                                |

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## Technical data

### Device supply

|                                            |                      |
|--------------------------------------------|----------------------|
| Rated control circuit supply voltage $U_s$ | 230 V AC             |
| Control supply voltage range               | 85 V AC ... 253 V AC |
| Rated control supply current $I_s$         | 4 mA                 |
| Mains frequency                            | 50/60 Hz             |
| Type of protection                         | Surge protection     |

### Input data

|                               |                               |
|-------------------------------|-------------------------------|
| Input name                    | Control input right/left      |
| Rated actuating voltage $U_c$ | 230 V AC                      |
| Triggering voltage range      | 85 V AC ... 253 V AC          |
| Rated actuating current $I_c$ | 7 mA (Input type 1)           |
| Mains frequency               | 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 load output

|                                                   |                                    |
|---------------------------------------------------|------------------------------------|
| Output name                                       | 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                               |
| Type of protection                                | Surge protection                   |

### Output data reply output

|                                               |                                                            |
|-----------------------------------------------|------------------------------------------------------------|
| Output name                                   | Acknowledge output                                         |
| Note                                          | Confirmation: floating change-over contact, signal contact |
| Contact type                                  | 1 PDT                                                      |
| Switching capacity according to IEC 60947-5-1 | 3 A (230 V, AC15)                                          |
|                                               | 2 A (24 V, DC13)                                           |

### General

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| Motor starter type    | Reversing starter                                  |
| Switching frequency   | $\leq 2$ Hz (Load-dependent)                       |
| Mounting position     | vertical (horizontal DIN rail, motor output below) |
| Mounting type         | DIN rail mounting                                  |
| Assembly instructions | alignable, for spacing see derating                |

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## Technical data

### General

|                           |                       |
|---------------------------|-----------------------|
| Operating mode            | 100% operating factor |
| Maximum power dissipation | 4.7 W                 |
| Minimum power dissipation | 2.6 W                 |
| Operating voltage display | Green LED             |
| Status display            | Yellow LED            |
| Indication                | Red LED               |

### Connection data

|                                  |                                                   |
|----------------------------------|---------------------------------------------------|
| Connection name                  | Control circuits                                  |
| Connection method                | Screw connection                                  |
| Stripping length                 | 8 mm                                              |
| Screw thread                     | M3                                                |
| Conductor cross section solid    | 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                                         |
| Torque                           | 0.5 Nm ... 0.6 Nm                                 |
|                                  | 5 lb <sub>f</sub> -in. ... 7 lb <sub>f</sub> -in. |

### Connection data 2

|                                  |                                                   |
|----------------------------------|---------------------------------------------------|
| Connection name                  | Load circuit                                      |
| Connection method                | Screw connection                                  |
| Stripping length                 | 8 mm                                              |
| Screw thread                     | M3                                                |
| Conductor cross section solid    | 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                                         |
| Torque                           | 0.5 Nm ... 0.6 Nm                                 |
|                                  | 5 lb <sub>f</sub> -in. ... 7 lb <sub>f</sub> -in. |

### Insulation characteristics

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Rated insulation voltage | 500 V                                                                                                                      |
| Rated surge voltage      | 4 kV                                                                                                                       |
| Overvoltage category     | III                                                                                                                        |
| Degree of pollution      | 2                                                                                                                          |
| Designation              | Insulation characteristics between the control input and control supply voltage, and auxiliary circuit to the main circuit |
| Insulation               | Safe isolation (IEC 60947-1/EN 50178) at operating voltage ≤ 300 V AC                                                      |
|                          | Basic isolation (IEC 60947-1) at operating voltage 300 ... 500 V AC                                                        |
|                          | Safe isolation (EN 50178) at operating voltage 300 ... 500 V AC                                                            |
| Designation              | Isolation characteristics between the control input and control supply voltage to auxiliary circuit                        |
| Insulation               | Safe isolation (IEC 60947-1) in the auxiliary circuit ≤ 300 V AC                                                           |
|                          | Safe isolation (EN 50178) in the auxiliary circuit ≤ 300 V AC                                                              |

# Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

## Technical data

### Standards and Regulations

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

### Conformance/approvals

|                 |                                         |
|-----------------|-----------------------------------------|
| Designation     | ATEX                                    |
| Identification  | # II (2) G [Ex e] [Ex d] [Ex px]        |
|                 | # II (2) D [Ex t] [Ex p]                |
| Certificate     | PTB 07 ATEX 3145                        |
| Designation     | UL approval                             |
| Certificate     | NLDX.E228652                            |
| Designation     | Safety Integrity Level (SIL, IEC 61508) |
| Identification  | ≤ 3                                     |
| Additional text | Safe shutdown                           |
| Designation     | Safety Integrity Level (SIL, IEC 61508) |
| Identification  | 2                                       |
| Additional text | Motor protection                        |
| Designation     | Performance Level (ISO 13849)           |
| Identification  | ≤ e                                     |
| Additional text | Safe shutdown                           |
| Designation     | Category (ISO 13849)                    |
| Identification  | ≤ 3                                     |
| Additional text | 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                                                                   |

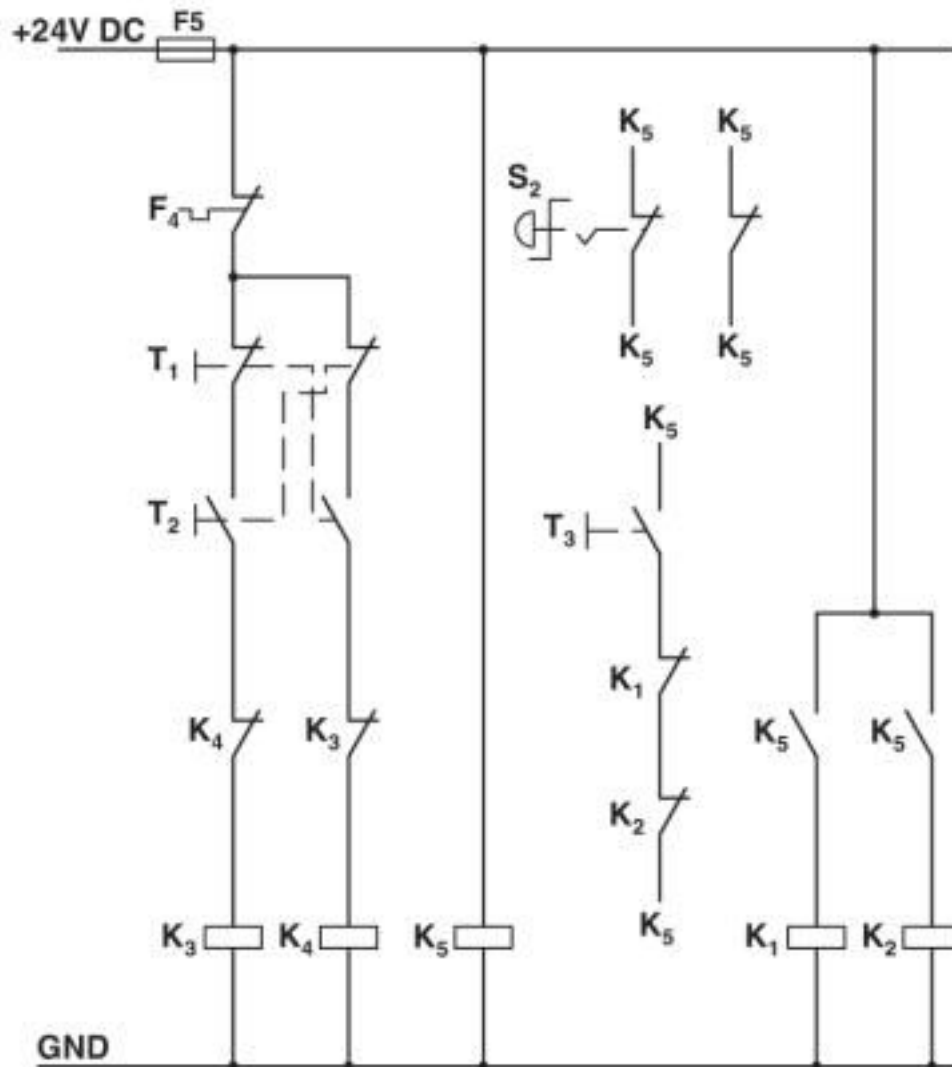
### Environmental Product Compliance

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| REACH SVHC | Lead 7439-92-1                                                                                      |
| China RoHS | Environmentally Friendly Use Period = 50 years                                                      |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

## Drawings

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

Circuit diagram

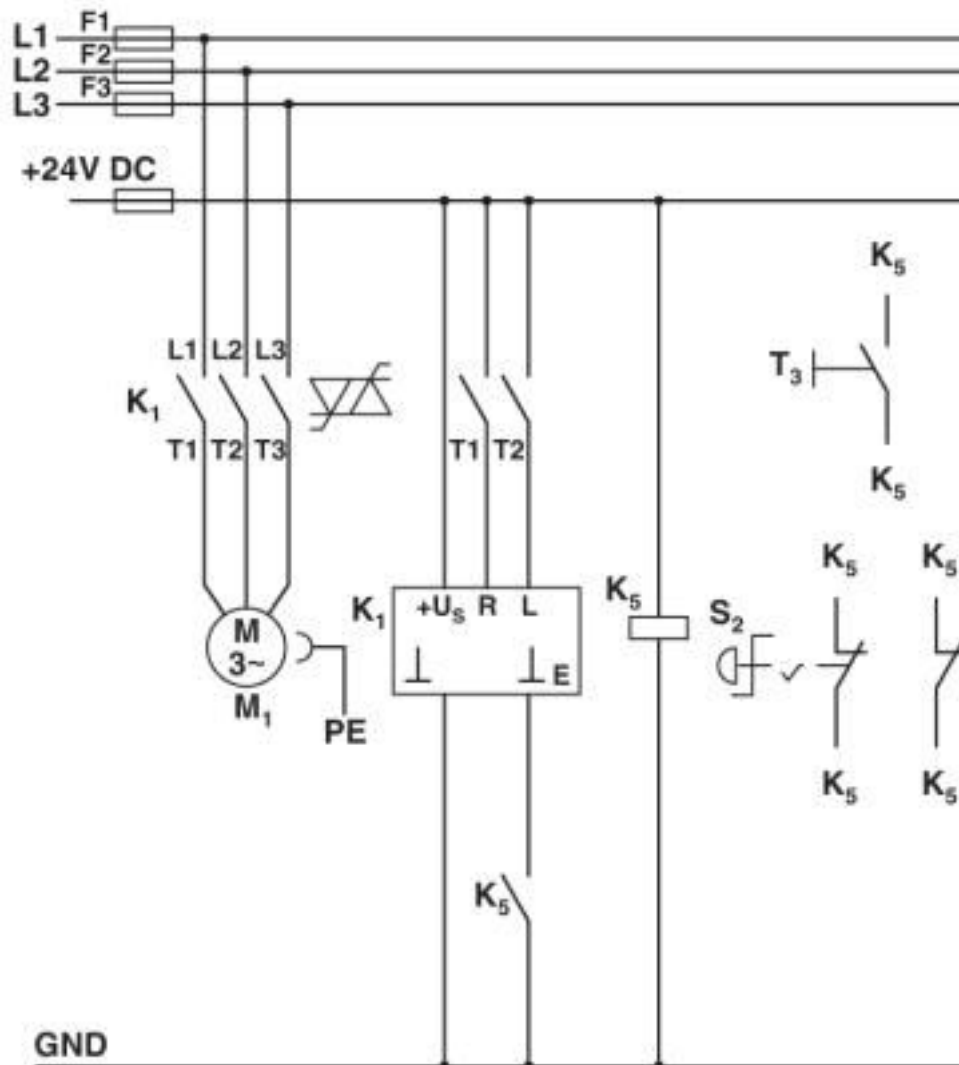


Conventional structure  
Control current path reversing contactor according to category 3

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  
F4 = Motor protection relay

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

Circuit diagram



Structure with CONTACTRON

Main and control current path for '4 in 1' hybrid motor starter with reversing function according to category 3

K1 = '4 in 1' hybrid motor starter with reversing function

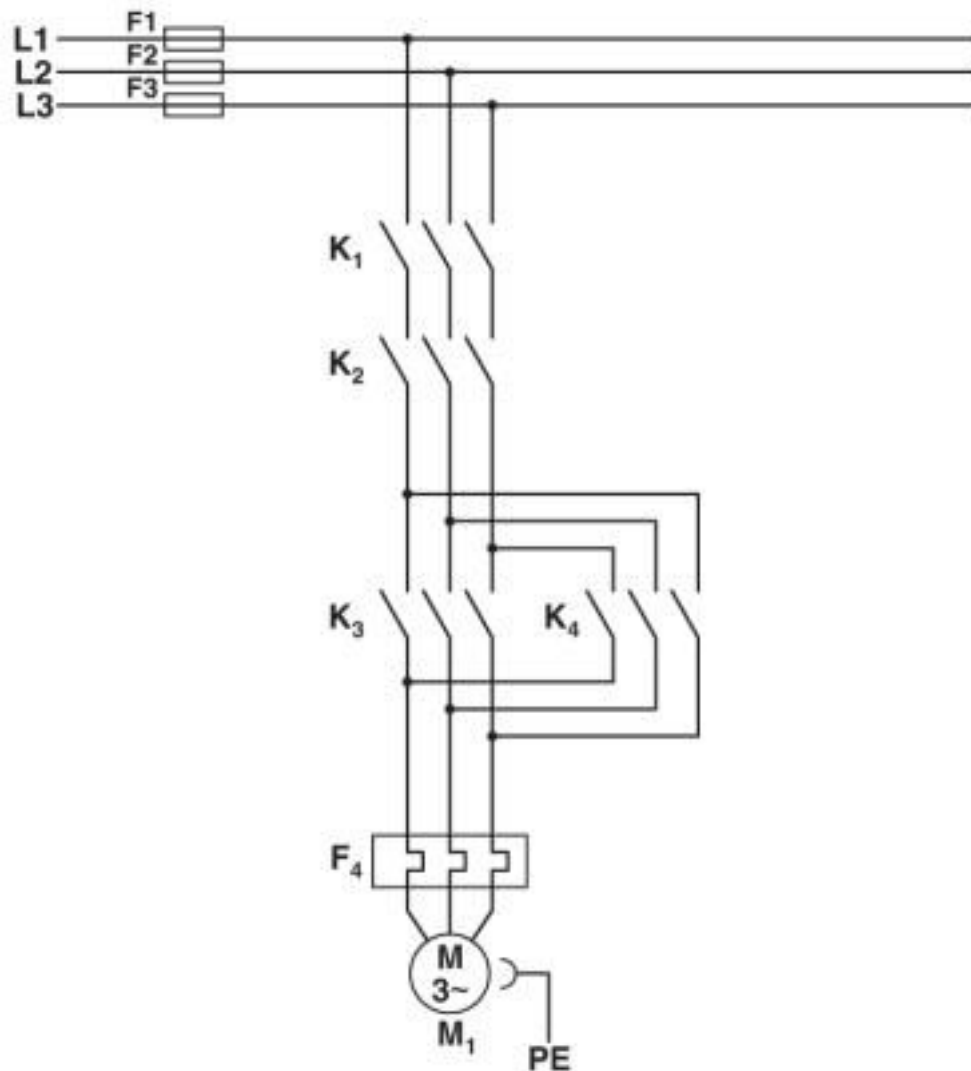
K5 = PSR SCP-24DC.../Safety relay

T1 = Right, T2 = Left, T3 = Reset

S2 = Emergency stop

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

Circuit diagram



Conventional structure

Main current path for reversing contactor according to category 3

K1 + K2 = Emergency stop contactor

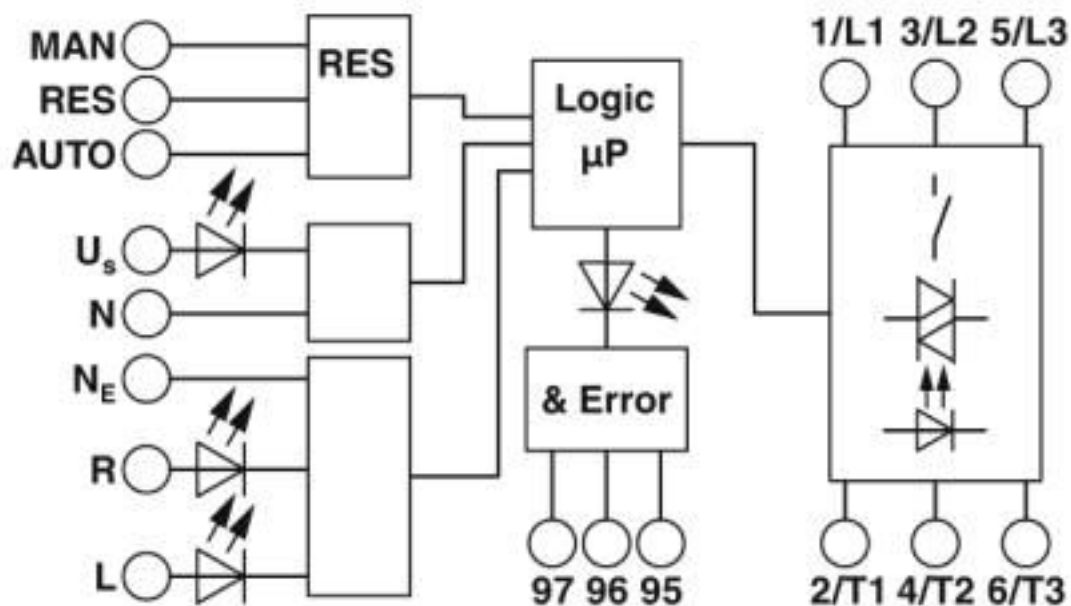
K3 = Left contactor

K4 = Right contactor

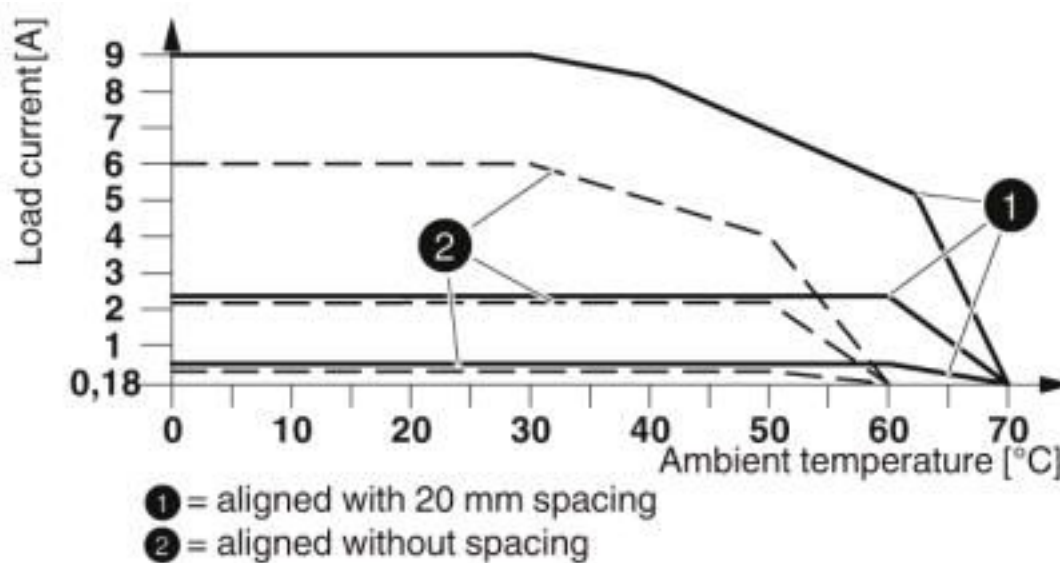
F4 = Motor protection relay

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

Block diagram



Diagram



Derating diagram

### Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27370905 |
| eCl@ss 4.0    | 27021100 |
| eCl@ss 4.1    | 27021100 |
| eCl@ss 5.0    | 27024000 |



## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Classifications

#### eCl@ss

|            |          |
|------------|----------|
| eCl@ss 5.1 | 27024000 |
| eCl@ss 6.0 | 27024000 |
| eCl@ss 7.0 | 27024002 |
| eCl@ss 8.0 | 27024002 |
| eCl@ss 9.0 | 27370905 |

#### ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001037 |
| ETIM 3.0 | EC001037 |
| ETIM 4.0 | EC001037 |
| ETIM 5.0 | EC001037 |
| ETIM 6.0 | EC001037 |
| ETIM 7.0 | EC001037 |

#### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211915 |
| UNSPSC 7.0901 | 39121514 |
| UNSPSC 11     | 39121514 |
| UNSPSC 12.01  | 39121514 |
| UNSPSC 13.2   | 25173902 |
| UNSPSC 18.0   | 25173902 |
| UNSPSC 19.0   | 25173902 |
| UNSPSC 20.0   | 25173902 |
| UNSPSC 21.0   | 25173902 |

### Approvals

#### Approvals

#### Approvals

UL Listed / cUL Listed / GL / GL-SW / UL Listed / IEC CB Scheme / cUL Listed / CCC / EAC / GL

#### Ex Approvals

#### ATEX

#### Approval details

UL Listed



<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm>

FILE E 228652

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Approvals

|                 |                                                                                     |                                                                                                                                                       |                          |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| cUL Listed      |    | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 228652            |
| GL              |    | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a>                                                                     | 54757-08 HH              |
| GL-SW           |                                                                                     |                                                                                                                                                       | 54757-08 HH              |
| UL Listed       |    | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 323771            |
| IECEE CB Scheme |   | <a href="http://www.iecee.org/">http://www.iecee.org/</a>                                                                                             | DE1-55728                |
| cUL Listed      |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 323771            |
| CCC             |  |                                                                                                                                                       | 2016010304871315         |
| EAC             |  |                                                                                                                                                       | RU*C-<br>DE.*08.B.00520* |
| GL              |  |                                                                                                                                                       |                          |

### Accessories

Accessories

Adapter

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

Adapter - EM-CPS-DA-22,5F/16A - 1002668



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

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### Assembly adapter

Power distribution board - EM-CPS-225 - 1002634



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

Power distribution board - EM-CPS-405 - 1002635



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

Connection module - EM-CPS-TB3/63A - 1002633



Connection module with integrated spring-loaded terminals for cables from 1.5 to 16 mm<sup>2</sup>, 3-pos., maximum 63 A

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### Bridge

Jumper - BRIDGE- 4-3M - 2901659



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

---

### Cover

# Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

## Accessories

Covering hood - BRIDGE COVER - 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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## Device marking

Plastic label - US-EMLP (15X5) - 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

Plastic label - UC-EMLP (15X5) - 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

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## Loop bridge

Jumper - BRIDGE- 2 - 2900746



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

Jumper - BRIDGE- 3 - 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.

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

#### Jumper - BRIDGE- 4 - 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.

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#### Jumper - BRIDGE- 5 - 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.

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#### Jumper - BRIDGE- 6 - 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.

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#### Jumper - BRIDGE- 7 - 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.

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#### Jumper - BRIDGE- 8 - 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.

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

#### Jumper - BRIDGE- 9 - 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.

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#### Jumper - BRIDGE-10 - 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.

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#### Jumper - BRIDGE- 2-1M - 2901542



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

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#### Jumper - BRIDGE- 3-1M - 2901655



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

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#### Jumper - BRIDGE- 4-1M - 2901658



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

## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

Jumper - BRIDGE- 5-1M - 2901544



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

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Jumper - BRIDGE- 6-1M - 2901649



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

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Jumper - BRIDGE- 2-3M - 2901543



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

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Jumper - BRIDGE- 3-3M - 2901656



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

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Jumper - BRIDGE- 5-3M - 2901545



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

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## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

Jumper - BRIDGE- 6-3M - 2901697



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

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Jumper - BRIDGE- 7-3M - 2901698



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

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Jumper - BRIDGE- 8-3M - 2901700



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

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Jumper - BRIDGE- 9-3M - 2901701



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

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Jumper - BRIDGE-10-3M - 2901702



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

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## Hybrid motor starter - ELR H5-IES-SC-230AC/500AC-2 - 2900420

### Accessories

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

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

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Jumper - BRIDGE- 4- 2M/0,3M - 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

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