

# ELR H5-I-SC-24DC/500AC-9-SP - Hybrid motor starter



2904678

<https://www.phoenixcontact.com/nl/products/2904678>

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Hybrid motor starter for reversing 3~ AC motors up to 550 V AC, with 24 V DC input, 9 A output current, adjustable overload shutdown, and with no underload detection.

## Your advantages

- 22.5 mm wide
- Reduction in wiring
- Space saving
- Long service life
- 3-phase loop bridges
- Adjustable current for bimetal function
- Low-wear switching

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2904678       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DK7424        |
| Product key                          | DK7424        |
| GTIN                                 | 4046356871792 |
| Weight per piece (including packing) | 255 g         |
| Weight per piece (excluding packing) | 217,18 g      |
| Customs tariff number                | 85371098      |
| Country of origin                    | DE            |

## Technical data

### Product properties

|                |                       |
|----------------|-----------------------|
| Product family | CONTACTRON            |
| Operating mode | 100% operating factor |

### Electrical properties

|                           |                         |
|---------------------------|-------------------------|
| Number of phases          | 3                       |
| Motor starter type        | Reversing starter       |
| Switching frequency       | ≤ 2 Hz (Load-dependent) |
| 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; Parallel polarity protection diode |

### 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                     |
| Switching threshold           | 9.6 V ("0" signal)       |
|                               | 19.2 V ("1" signal)      |

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|                       |                             |
|-----------------------|-----------------------------|
| 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; Varistor      |

### Acknowledge output

|                                                     |                                                            |
|-----------------------------------------------------|------------------------------------------------------------|
| Note                                                | Confirmation: floating change-over contact, signal 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 <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                                         |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                                 |
|                                  | 5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in. |

### 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                                         |
| Tightening torque                | 0.5 Nm ... 0.6 Nm                                 |
|                                  | 5 lb <sub>F</sub> -in. ... 7 lb <sub>F</sub> -in. |

## Signaling

|                |              |
|----------------|--------------|
| Status display | LED (yellow) |
|----------------|--------------|

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|                           |           |
|---------------------------|-----------|
| 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) |
|--------------------------------------------------|--------------|

## 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 |
|-------------|----------------|

### UL approval

|             |              |
|-------------|--------------|
| Certificate | NLDX.E228652 |
|-------------|--------------|

### 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 / NRNT                                                            |

## Standards and regulations

### Standards/regulations

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

## Mounting

|               |                                     |
|---------------|-------------------------------------|
| Mounting type | DIN rail mounting                   |
| Assembly note | alignable, for spacing see derating |

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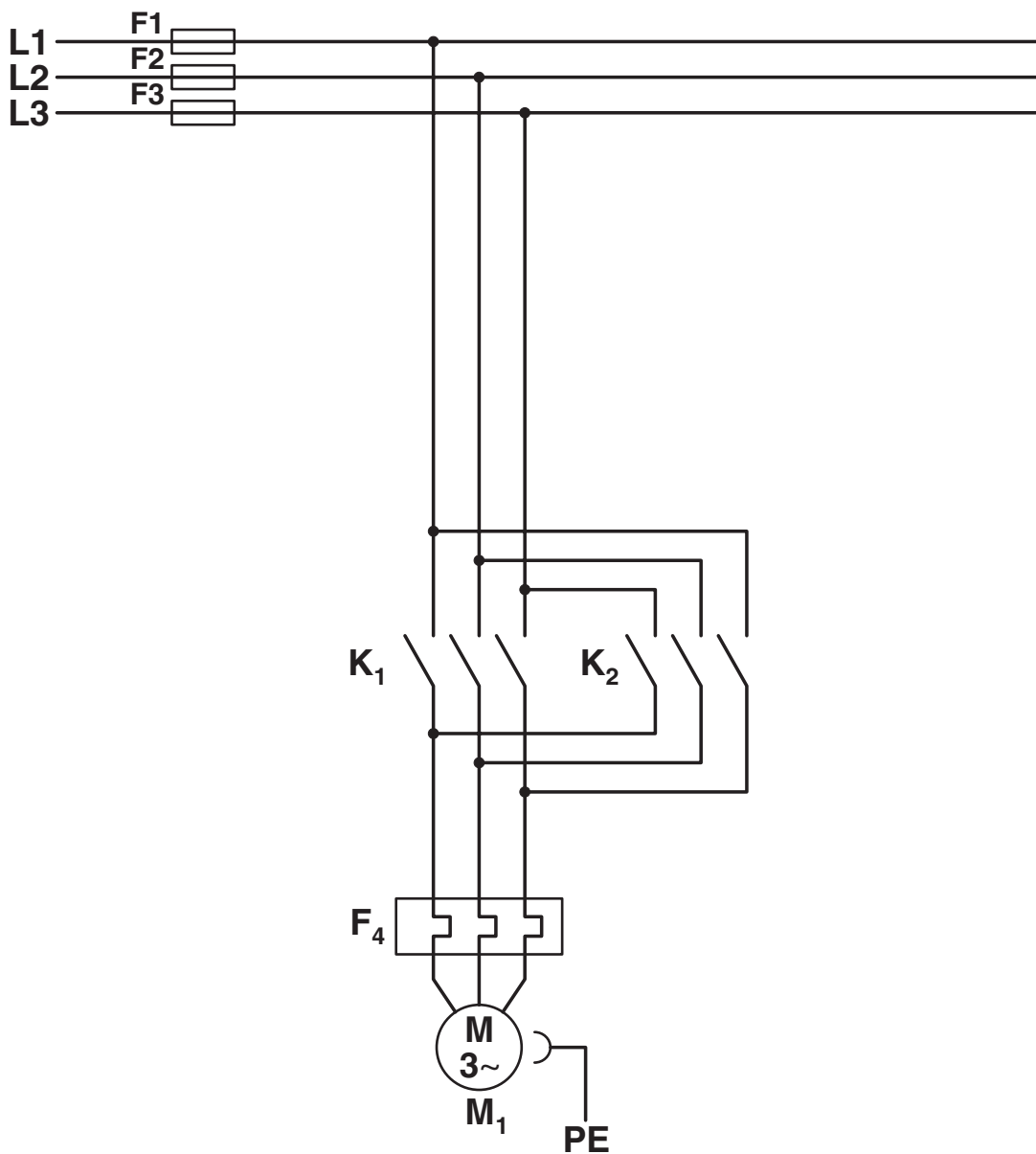
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|                   |                                                    |
|-------------------|----------------------------------------------------|
| Mounting position | vertical (horizontal DIN rail, motor output below) |
|-------------------|----------------------------------------------------|

## Drawings

Circuit diagram



## Conventional structure

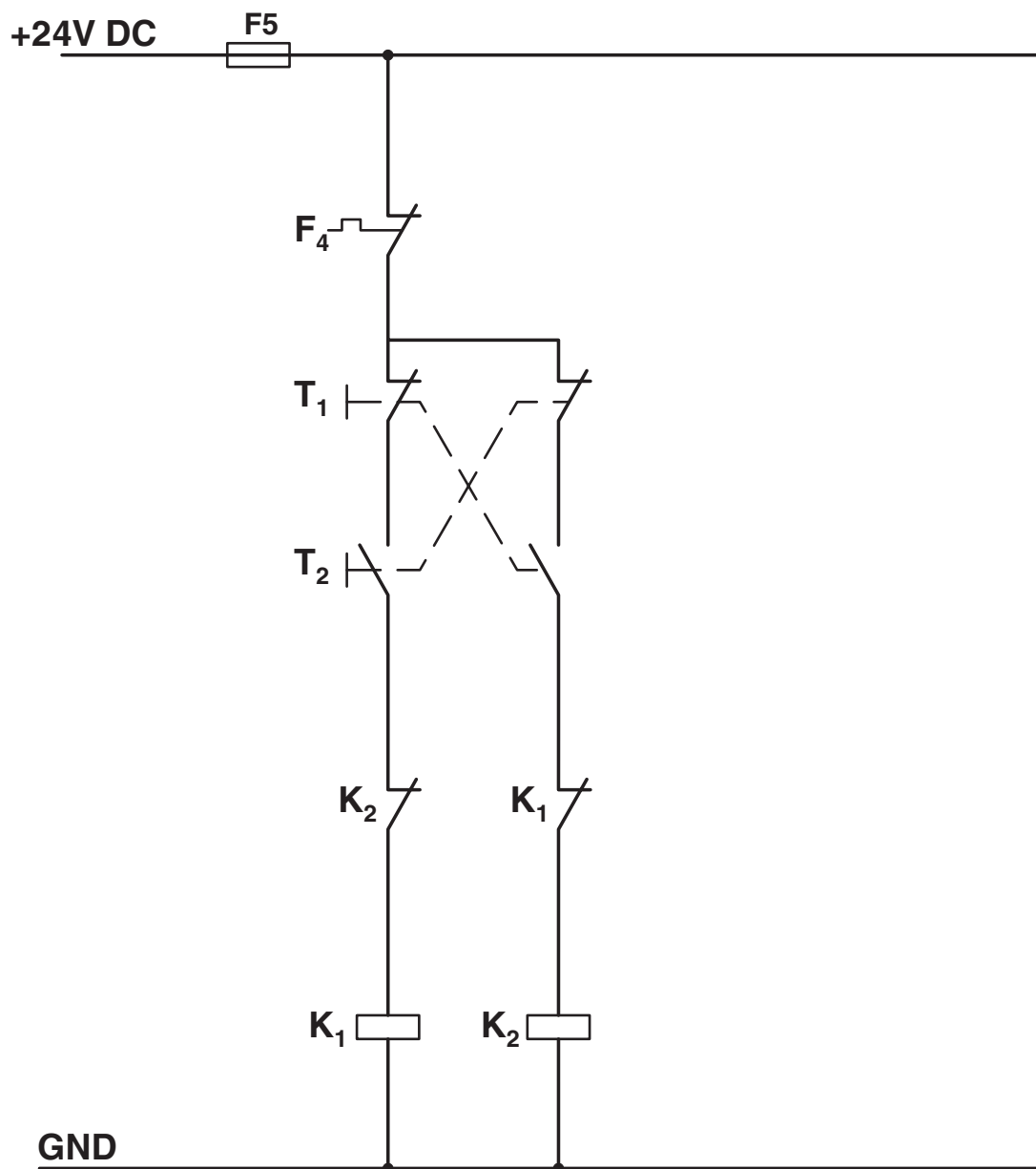
Main current path contactor

K1 = Left contactor

K2 = Right contactor

F4 = Motor protection relay

Circuit diagram



## Conventional structure

Control current path contactor

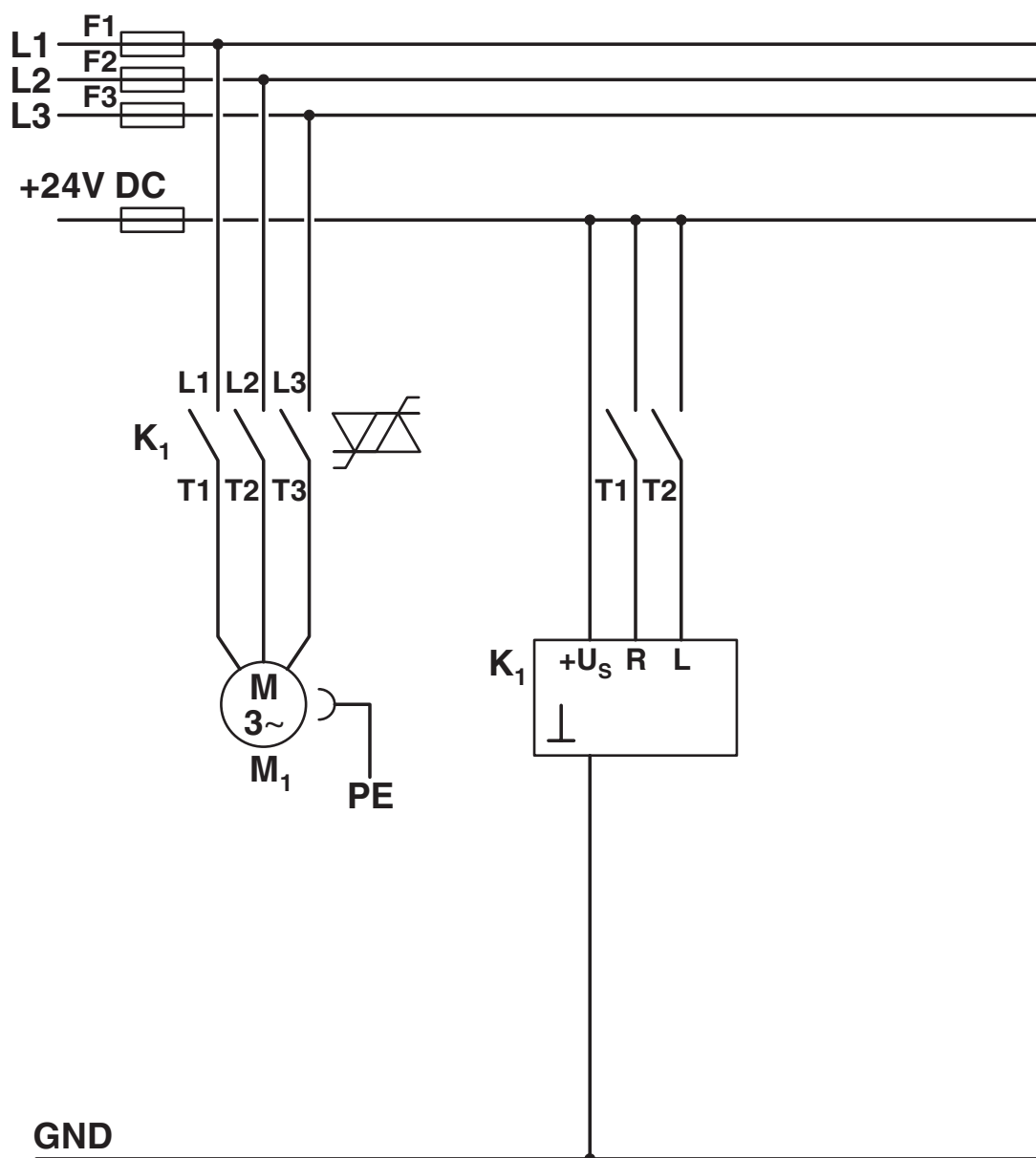
K1 = Left contactor

K2 = Right contactor

T1 = Left, T2 = Right

F4 = Motor protection relay

Circuit diagram

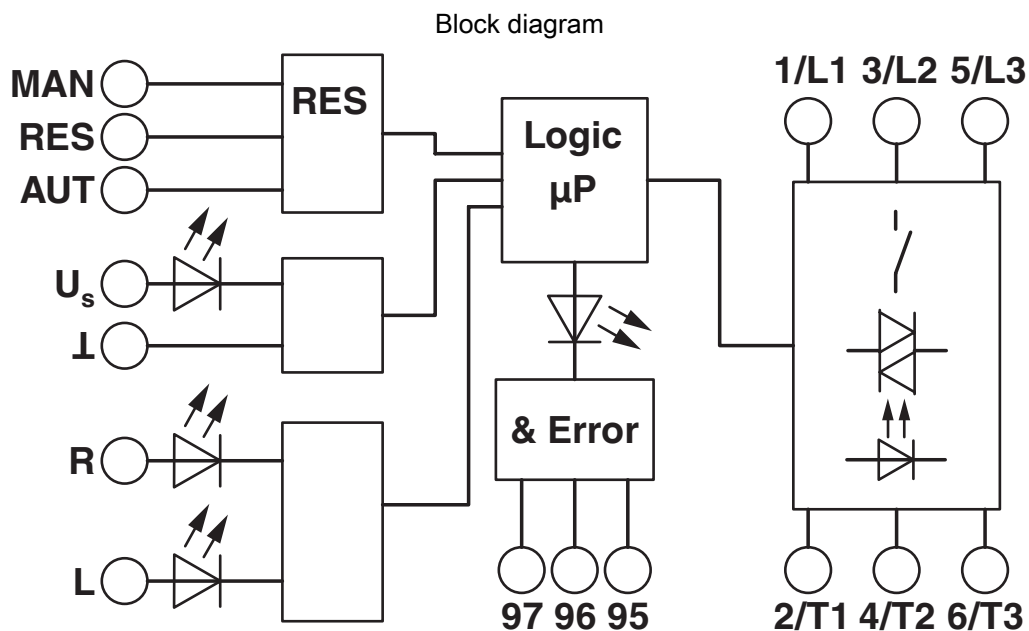


## Structure with CONTACTRON

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

K1 = '3 in 1' hybrid motor starter

T1 = Right, T2 = Left



Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/nl/products/2904678>



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



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



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



**cUL Listed**  
Approval ID: E228652



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27370905 |
| ECLASS-15.0 | 27370905 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC001037 |
|-----------|----------|

### UNSPSC

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

## 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)                                           |
|                                     | 2,2',6,6'-tetrabromo-4,4'-isopropylidenediphenol(CAS: 79-94-7) |
| SCIP                                | bb654abd-ef3a-4bf5-b09a-73536b9e5f38                           |