

AXL F DI16/1 DO16/1 2H - Digital module



2702106

<https://www.phoenixcontact.com/us/products/2702106>

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Axioline F, Digital I/O module, Digital inputs: 16, 24 V DC, connection technology: 1-conductor, Digital outputs: 16, 24 V DC, 500 mA, connection technology: 1-conductor, transmission speed in the local bus: 100 Mbps, degree of protection: IP20, including bus base module and Axioline F connectors

Product description

The module is designed for use within an Axioline F station. It is used to acquire and output digital signals. The filter times of the inputs can be adjusted to increase noise immunity. Filter times of 100 μ s enable the user to implement a counting function with a maximum input frequency of 5 kHz in the application. The outputs are protected against short circuit and overload.

Your advantages

- 16 digital inputs in accordance with EN 61131-2 type 1 and type 3
- 24 V DC, 2.4 mA
- Connection of sensors in 1-conductor technology
- Filter times can be adjusted in three increments: < 100 μ s, 1000 μ s or 3000 μ s
- Maximum input frequency: 5 kHz
- 16 digital outputs
- 24 V DC, 500 mA
- Connection of actuators in 1-conductor technology
- Minimum update time of < 100 μ s
- Device rating plate stored

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2702106 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DR02 |
| Product key | DRI233 |
| GTIN | 4046356960441 |
| Weight per piece (including packing) | 198.9 g |
| Weight per piece (excluding packing) | 210 g |
| Customs tariff number | 85389091 |
| Country of origin | DE |

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Technical data

Dimensions

| | |
|---------------------|--|
| Dimensional drawing | |
| Width | 35 mm |
| Height | 129.9 mm |
| Depth | 54 mm |
| Note on dimensions | The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715). |

Notes

Note on application

| | |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

Material specifications

| | |
|-----------------|-----------------|
| Color (Housing) | gray (RAL 7042) |
|-----------------|-----------------|

Interfaces

Axioline F local bus

| | |
|----------------------|-----------------|
| Number of interfaces | 2 |
| Connection method | Bus base module |
| Transmission speed | 100 Mbps |

System properties

Programming data (LocalbusSlave)

| | |
|---------------------|--------|
| Input address area | 2 Byte |
| Output address area | 2 Byte |

Fieldbus data telegram (PROFIBUS)

| | |
|-----------------------------|--------|
| Required parameter data | 3 Byte |
| Required configuration data | 7 Byte |

Input data

Digital:

| | |
|--------------------------|--------------------------|
| Input name | Digital inputs |
| Description of the input | EN 61131-2 types 1 and 3 |
| Number of inputs | 16 |

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| | |
|-----------------------------------|---|
| Connection method | Push-in connection |
| Connection technology | 1-conductor |
| Input voltage range "0" signal | -3 V DC ... 5 V DC |
| Input voltage range "1" signal | 11 V DC ... 30 V DC |
| Nominal input voltage U_{IN} | 24 V DC |
| Nominal input current at U_{IN} | 2.4 mA |
| Current flow | linear until nominal current is reached, then constantly approx. 2.4 mA |
| Input filter time | 3000 μ s (Default) |
| | 1000 μ s |
| | < 100 μ s |
| Process data update | < 100 μ s |
| Protective circuit | Polarity reversal protection of the inputs; parallel diode (30 V, 5 s) |

Output data

Digital:

| | |
|---|--|
| Output name | Digital outputs |
| Connection method | Push-in connection |
| Connection technology | 1-conductor |
| Number of outputs | 16 |
| Protective circuit | Short-circuit protection, overload protection of the outputs; electronic |
| Output voltage | 24 V DC |
| Limitation of the voltage induced on circuit interruption | -25.8 V ... -15 V |
| Max. current carrying capacity per output | max. 500 mA |
| Maximum output current per module | 8 A (provide external protection) |
| Nominal output voltage | 24 V DC |
| Load min. | 10 k Ω |
| Output voltage when switched off | max. 1 V |
| Output current when switched off | max. 300 μ A |
| Nominal load, inductive | max. 12 VA (1.2 H, 48 Ω , with nominal voltage) |
| Nominal load, lamp | max. 12 W (at nominal voltage) |
| Nominal load, ohmic | max. 12 W (48 Ω , with nominal voltage) |
| Switching frequency | max. 10000 per second (with at least 50 mA load current) |
| | max. 1 per second (with inductive load) |
| | max. 16 per second (with nominal lamp load) |
| Reverse voltage resistance to short pulses | limited protection up to 0.5 A for 1 s |
| Behavior with overload | Shutdown with automatic restart |
| Behavior with inductive overload | Output can be destroyed |
| Signal delay | max. 100 μ s (when switched on) |
| | max. 100 μ s (when switched off, with at least 50 mA load current) |
| Overcurrent shut-down | as of 0.7 A |
| Output current with ground connection interrupt when switched off | < 1 mA |

Product properties

| | |
|-------------------|---|
| Product type | I/O component |
| Product family | Axioline F |
| Type | block modular |
| Mounting position | any (no temperature derating) |
| Scope of supply | including bus base module and Axioline F connectors |

Insulation characteristics

| | |
|----------------------|------------------------------|
| Overvoltage category | II (IEC 60664-1, EN 60664-1) |
| Pollution degree | 2 (IEC 60664-1, EN 60664-1) |

Electrical properties

| | |
|---|-------|
| Maximum power dissipation for nominal condition | 2.8 W |
|---|-------|

Potentials: Axioline F local bus supply (U_{BUS})

| | |
|----------------|--|
| Supply voltage | 5 V DC (via bus base module) |
| Current draw | max. 120 mA (up to HW 01) max. 60 mA (from HW 02) |

Potentials: Supply for digital input and output modules (U_{IO})

| | |
|----------------------|--|
| Supply voltage | 24 V DC |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
| Current draw | max. 8 A (provide external protection) |
| Current consumption | typ. 15 mA (without connected peripherals) |
| Protective circuit | Surge protection; electronic (35 V, 0.5 s) Reverse polarity protection; parallel diode; with external 5 A fuse (only for commissioning) |
| Protection | max. 8 A (polarity reversal protection up to 5 A) |

Electrical isolation/isolation of the voltage ranges

| | |
|--|------------------------|
| Test voltage: 5 V supply of the local bus (U_{BUS}) / 24 V supply (I/Os) | 500 V AC, 50 Hz, 1 min |
| Test voltage: 5 V supply of the local bus (U_{BUS}) / functional ground | 500 V AC, 50 Hz, 1 min |
| Test voltage: 24 V supply (I/O) / functional ground | 500 V AC, 50 Hz, 1 min |

Connection data

Connection technology

| | |
|-------------------------------|---|
| Connection name | Axioline F connector |
| Note on the connection method | Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual. |

Axioline F connector

| | |
|--------------------------------|---|
| Connection method | Push-in connection |
| Note on the connection method | Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual. |
| Conductor cross-section, rigid | 0.2 mm ² ... 1.5 mm ² |

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| | |
|-----------------------------------|---|
| Conductor cross-section, flexible | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 24 ... 16 |
| Stripping length | 8 mm |

Environmental and real-life conditions

Ambient conditions

| | |
|--|---|
| Ambient temperature (operation) | -25 °C ... 60 °C |
| Degree of protection | IP20 |
| Air pressure (operation) | 70 kPa ... 106 kPa (up to 3000 m above sea level) |
| Air pressure (storage/transport) | 70 kPa ... 106 kPa (up to 3000 m above sea level) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |
| Permissible humidity (storage/transport) | 5 % ... 95 % (non-condensing) |

Mechanical test

| | |
|--|-----|
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | 5g |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | 30g |
| Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27 | 10g |

Standards and regulations

| | |
|------------------|---------------------------------------|
| Protection class | III (IEC 61140, EN 61140, VDE 0140-1) |
|------------------|---------------------------------------|

Mounting

| | |
|-------------------|-------------------------------|
| Mounting type | DIN rail mounting |
| Mounting position | any (no temperature derating) |

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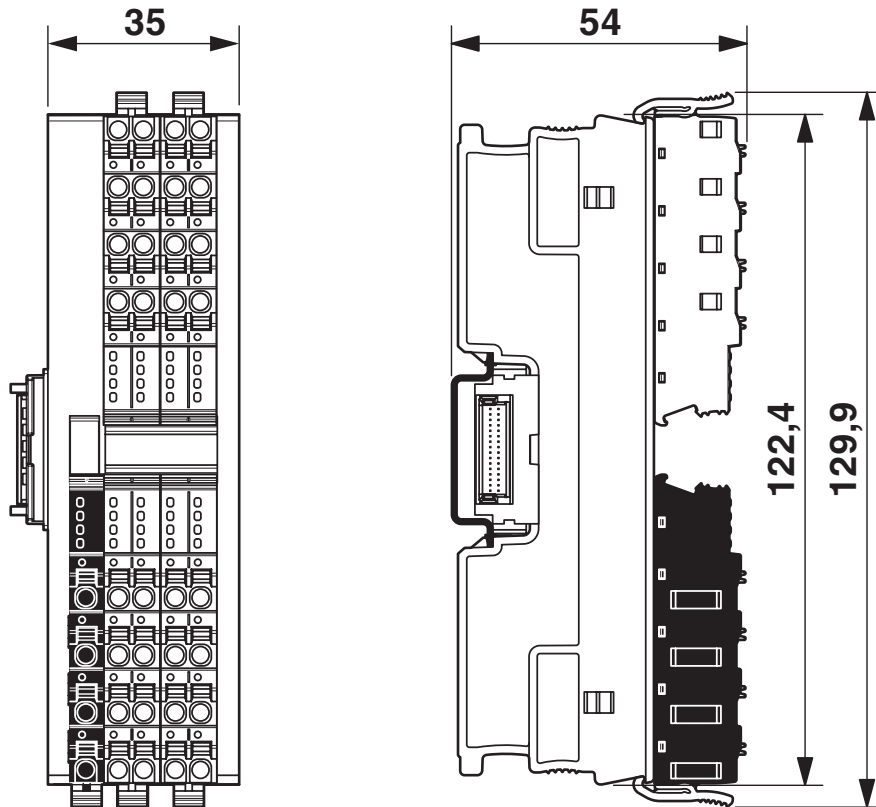


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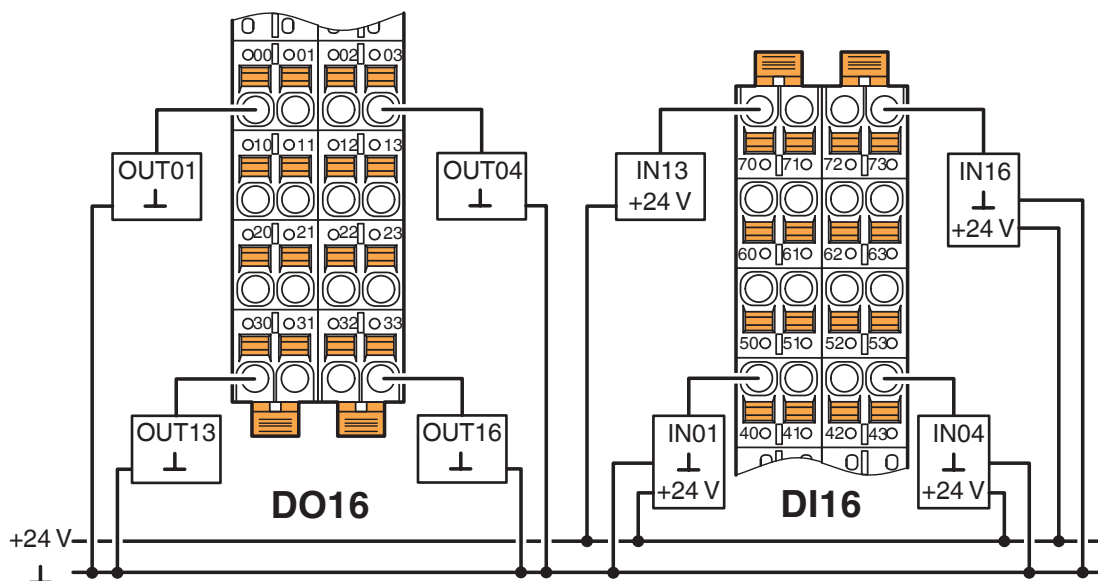
Drawings

Dimensional drawing



Dimensions (in mm)

Connection diagram



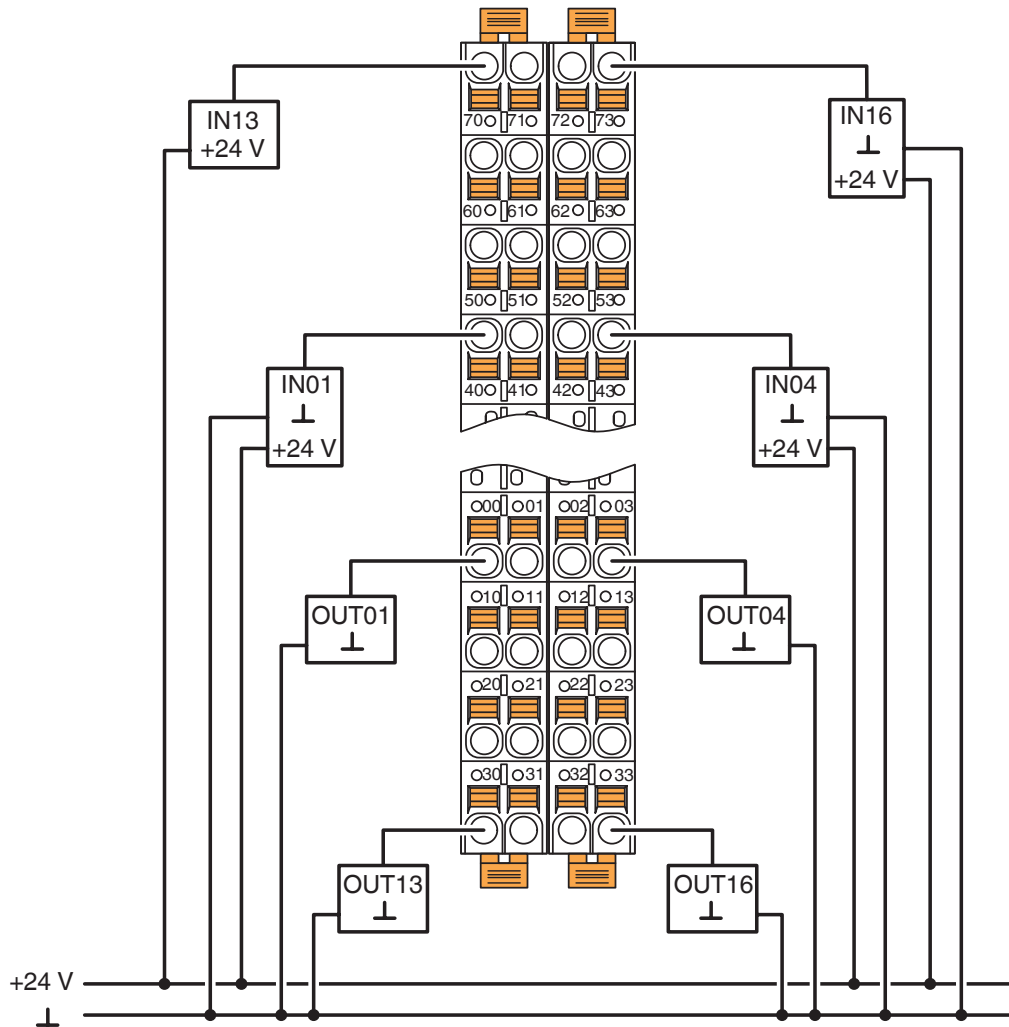
Typical connection of sensors and actuators when using external busbars

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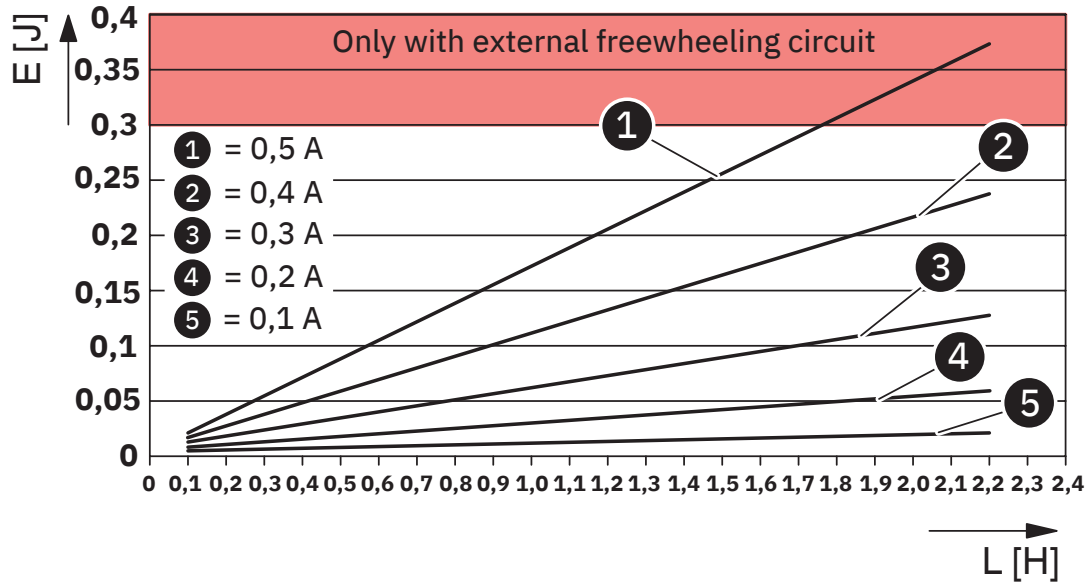
<https://www.phoenixcontact.com/us/products/2702106>

Connection diagram



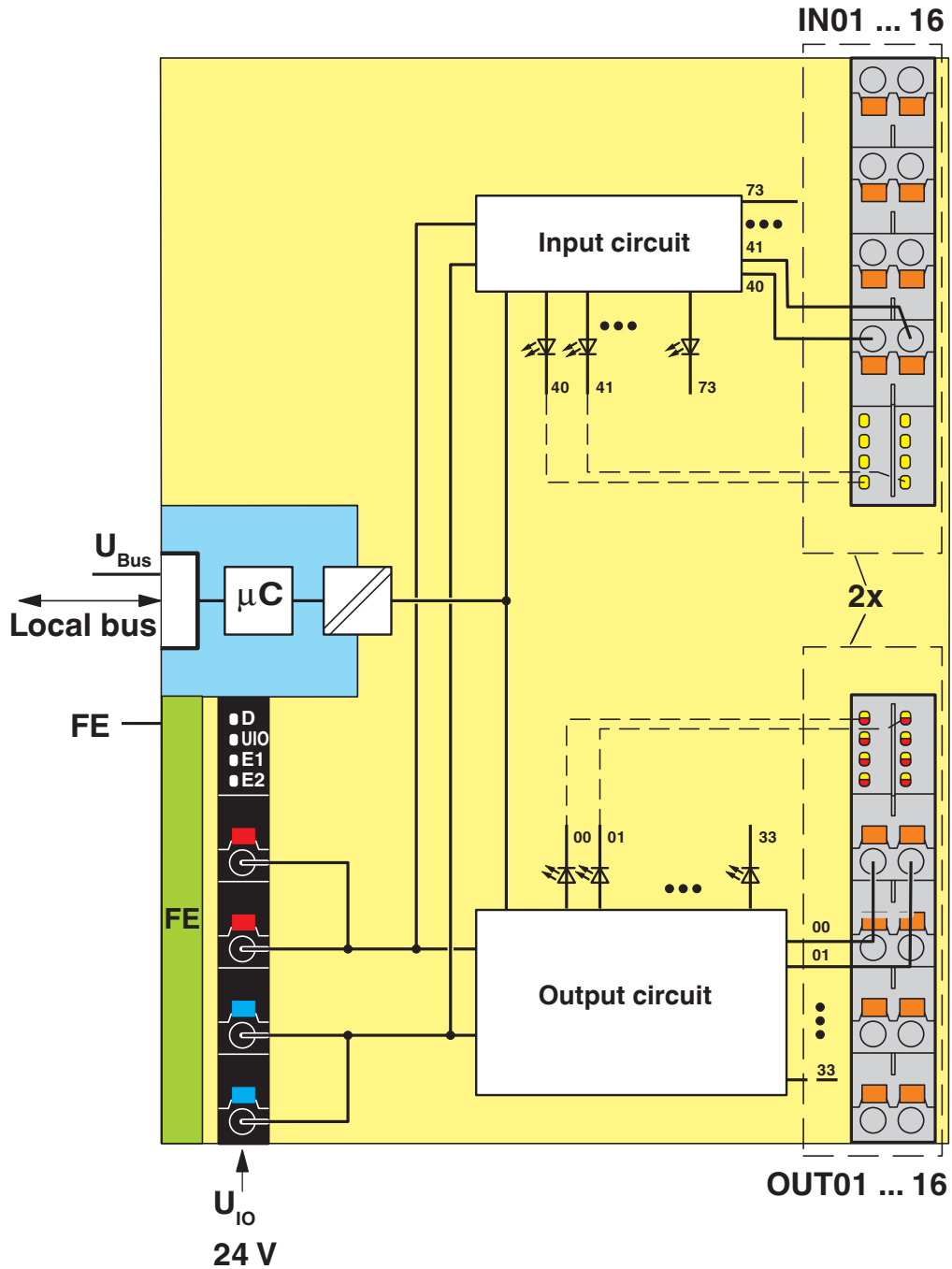
Connection in 1-conductor technology

Diagram



Maximum outputs power consumption when inductive loads are switched off

Block diagram



Internal wiring of the terminal points

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Approvals

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DNV GL

Approval ID: TAA00000DF



LR

Approval ID: LR2480202TA-02



PRS

Approval ID: TE/1020/880590/21

BSH

Approval ID: 840



RINA

Approval ID: ELE008423XG001



cULus Listed

Approval ID: E238705

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27242604 |
| ECLASS-15.0 | 27242604 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001599 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 32151600 |
|-------------|----------|

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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.) | Lead(CAS: 7439-92-1) |
| SCIP | 2e4298c5-c789-4f49-a7f3-0a074d414a97 |

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