

# Bus coupler - IL ETH BK DI8 DO4 2TX-XC-PAC



2701388

<https://www.phoenixcontact.com/gb/products/2701388>

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Inline, Bus coupler, Modbus/TCP(UDP), RJ45 jack, Digital inputs: 8, 24 V DC, connection technology: 3-conductor, Digital outputs: 4, 24 V DC, 500 mA, connection technology: 3-conductor, Extreme conditions version, transmission speed in the local bus: 500 kbps / 2 Mbps, degree of protection: IP20, including Inline connectors and marking fields

## Product Description

The bus coupler with integrated I/Os is intended for use within a Modbus/TCP (UDP) network and represents the link to the Inline I/O system. Up to 61 Inline devices can be connected to the bus coupler. The bus coupler supports a maximum of 16 PCP devices.

## Your advantages

- 2 Ethernet ports (with integrated switch)
- Auto negotiation
- Autocrossing
- Transmission speed of 10 Mbps and 100 Mbps
- Automatic detection of the transmission speed in the local bus (500 kbps or 2 Mbps)
- 8 digital inputs, 4 digital outputs (on-board)
- Data exchange via OPC server supported
- Software interfaces for access via TCP/IP: Device Driver Interface (DDI) and High-Level Language Fieldbus Interface (HFI)
- Web-based management
- Can be used under extreme ambient conditions
- Extended temperature range of -40 °C ... +70 °C (see "Tested successfully: use under extreme ambient conditions" in the data sheet)
- Coated PCBs

## Commercial Data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2701388             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales Key                            | DRI11B              |
| Product Key                          | DRI11B              |
| Catalog Page                         | Page 103 (C-6-2019) |
| GTIN                                 | 4046356743709       |
| Weight per Piece (including packing) | 349 g               |
| Weight per Piece (excluding packing) | 349 g               |
| Customs tariff number                | 85389091            |
| Country of origin                    | DE                  |

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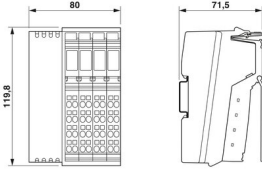


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## Technical Data

### Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Width               | 80 mm  |
| Height              | 119.8 mm   |
| Depth               | 71.5 mm  |
| Note on dimensions  | Specifications with connectors   |

### Material specifications

|       |       |
|-------|-------|
| Color | green |
|-------|-------|

### Interfaces

#### Modbus/TCP (UDP)

|                               |                                   |
|-------------------------------|-----------------------------------|
| Number of interfaces          | 2                                 |
| Connection method             | RJ45 jack                         |
| Note on the connection method | Auto negotiation and autocrossing |
| Transmission speed            | 10/100 Mbps                       |
| Transmission physics          | Ethernet in RJ45 twisted pair     |

#### Inline local bus

|                      |   |
|----------------------|---|
| Number of interfaces | 1   |
| Connection method    | Inline data jumper  |
| Transmission speed   | 500 kbps / 2 Mbps (automatic detection, no combined system) |

#### Fieldbus: Local bus gateway

|                                  |  |
|----------------------------------|--|
| Max. number of local bus devices | 61 (The on-board I/Os are two devices) |
|----------------------------------|--|

### System properties

#### System limits

|   |   |
|---|---|
| Number of supported devices                                 | max. 63 (per station)                       |
| Number of local bus devices that can be connected           | max. 61 (The on-board I/Os are two devices) |
| Number of devices with parameter channel                    | max. 16                                     |
| Number of supported branch terminals with remote bus branch | 0   |

#### Module

|                     |       |
|---------------------|-------|
| ID code (hex)       | none  |
| Input address area  | 8 Bit |
| Output address area | 4 Bit |

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|                 |        |
|-----------------|--------|
| Register length | 16 Bit |
|-----------------|--------|

## Input data

### Digital

|                                    |   |
|------------------------------------|---|
| Input name                         | Digital inputs                                |
| Description of the input           | EN 61131-2 type 1                             |
| Number of inputs                   | 8   |
| Connection method                  | Inline connector                              |
| Connection technology              | 3-conductor                                   |
| Input voltage                      | 24 V DC                                       |
| Input voltage range "0" signal     | -30 V DC ... 5 V DC                           |
| Input voltage range "1" signal     | 15 V DC ... 30 V DC                           |
| Nominal input voltage $U_{IN}$     | 24 V DC                                       |
| Nominal input current at $U_{IN}$  | typ. 3 mA                                     |
| Typical input current per channel  | typ. 3 mA                                     |
| Typical response time              | approx. 500 $\mu$ s                           |
| Delay at signal change from 0 to 1 | 1.2 ms  |
| Delay at signal change from 1 to 0 | 1.2 ms  |
| Protective circuit                 | Reverse polarity protection; Suppressor diode |

## Output data

### Digital

|  |   |
|--|---|
| Output name                                | Digital outputs   |
| Connection method                          | Inline connector  |
| Connection technology                      | 3-conductor   |
| Number of outputs                          | 4   |
| Protective circuit                         | Short-circuit and overload protection; Freewheeling circuit in the output driver                |
| Output voltage                             | 24 V DC -1 V (At nominal current)   |
| Maximum output current per module          | max. 2 A  |
| Nominal output voltage                     | 24 V DC   |
| Output current when switched off           | max. 10 $\mu$ A (When not loaded, a voltage can be measured even at an output that is not set.) |
| Nominal load, inductive                    | 12 VA (1.2 H, 48 $\Omega$ )   |
| Nominal load, lamp                         | 12 W  |
| Nominal load, ohmic                        | 12 W  |
| Reverse voltage resistance to short pulses | Reverse voltage proof   |
| Behavior with overload                     | Auto restart  |
| Behavior with inductive overload           | Output can be destroyed   |
| Behavior at voltage switch-off             | The output follows the power supply without delay   |

## Product properties

|              |               |
|--------------|---------------|
| Type         | modular       |
| Product type | I/O component |

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|                      |  |
|----------------------|--|
| Scope of delivery    | including Inline connectors and marking fields       |
| No. of channels      | 12   |
| Diagnostics messages | Short-circuit or overload of the digital outputs Yes |
|                      | Sensor supply failure Yes                            |
|                      | Failure of the actuator supply Yes                   |

## Electrical properties

|                 |    |
|-----------------|----|
| No. of channels | 12 |
|-----------------|----|

### Potentials

|                    |  |
|--------------------|--|
| Power consumption  | typ. 3 W (entire device)   |
| Protective circuit | Surge protection (segment supply, main supply, bus coupler supply); Suppressor diode, 35 V DC            |
|                    | Reverse polarity protection (segment supply, main supply, bus coupler supply); Suppressor diode, 35 V DC |

Potentials: Bus coupler supply  $U_{BK}$ ; Communications power  $U_L$  (7.5 V) and the analog supply  $U_{ANA}$  (24 V) are generated from the bus coupler supply.

|                      |  |
|----------------------|--|
| Supply voltage       | 24 V DC (via Inline connector)                                     |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
| Current draw         | max. 0.98 A (with max. number of connected I/O terminal blocks)    |
|                      | min. 80 mA (without connected I/O terminal blocks)                 |

### Potentials: Communications power ( $U_L$ )

|                |               |
|----------------|---------------|
| Supply voltage | 7.5 V DC      |
|                | max. 0.8 A DC |

### Potentials: Supply of analog modules ( $U_{ANA}$ )

|                      |  |
|----------------------|--|
| Supply voltage       | 24 V DC  |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
|                      | max. 0.5 A DC  |

### Potentials: Main circuit supply ( $U_M$ )

|                      |  |
|----------------------|--|
| Supply voltage       | 24 V DC (via Inline connector)                                     |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
|                      | max. 8 A DC (sum of $U_M + U_S$ )                                  |
| Current draw         | max. 8 A DC  |
|                      | min. 3 mA (without connected peripherals)                          |

### Potentials: Segment circuit supply ( $U_S$ )

|                      |  |
|----------------------|--|
| Supply voltage       | 24 V DC (via Inline connector)                                     |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
|                      | max. 8 A DC (sum of $U_M + U_S$ )                                  |
| Current draw         | max. 8 A DC  |
|                      | min. 3 mA (without connected peripherals)                          |

## Connection data

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## Connection technology

|                 |                  |
|-----------------|------------------|
| Connection name | Inline connector |
|-----------------|------------------|

## Conductor connection

|                                  |  |
|----------------------------------|--|
| Connection method                | Spring-cage connection                       |
| Conductor cross section solid    | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section flexible | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section AWG      | 28 ... 16                                    |
| Stripping length                 | 8 mm   |

## Inline connector

|                                   |  |
|-----------------------------------|--|
| Connection method                 | Spring-cage connection                       |
| Conductor cross section, rigid    | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section, flexible | 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section AWG       | 28 ... 16                                    |
| Stripping length                  | 8 mm   |

## Environmental and real-life conditions

### Ambient conditions

|  |  |
|--|--|
| Ambient temperature (operation)          | -25 °C ... 55 °C (Standard)<br>-40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.) |
| 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)         | 10 % ... 95 % (non-condensing)   |
| Permissible humidity (storage/transport) | 10 % ... 95 % (non-condensing)   |

## Standards and regulations

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

## Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

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## Classifications

### ECLASS

|               |          |
|---------------|----------|
| ECLASS-9.0    | 27242608 |
| ECLASS-10.0.1 | 27242608 |
| ECLASS-11.0   | 27242608 |

### ETIM

|          |          |
|----------|----------|
| ETIM 8.0 | EC001604 |
|----------|----------|

### UNSPSC

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

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