

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



2701388

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

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.



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                            | DR01                |
| 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                | 85176200            |
| Country of origin                    | DE                  |

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

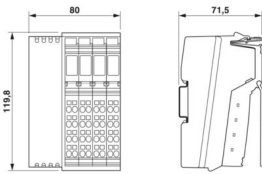


2701388

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

## Technical data

### Dimensions

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

### 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  |
| Register length     | 16 bit |

## Input data

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



2701388

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

## 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   |
| Signal delay                               | typ. 1.2 ms   |
| Overcurrent shut-down                      | min. 0.7 A  |
| Output name                                | Digital outputs   |
| Connection method                          | Inline connector  |
| Connection technology                      | 3-conductor   |
| Number of outputs                          | 4   |

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



2701388

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

|  |  |
|--|--|
| 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 µA (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 Ω)  |
| 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  |
| Signal delay                               | typ. 1.2 ms  |
| Overcurrent shut-down                      | min. 0.7 A   |

## Product properties

|                      |  |
|----------------------|--|
| Type                 | modular  |
| Product type         | I/O component  |
| Product family       | Inline   |
| Scope of delivery    | including Inline connectors and marking fields       |
| No. of channels      | 12   |
| Special properties   | Extreme conditions version                           |
| Diagnostics messages | Short-circuit or overload of the digital outputs yes |
|                      | Sensor supply failure yes                            |
|                      | Failure of the actuator supply yes                   |

## Electrical properties

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

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



2701388

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

## 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) |

## 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) |
| Current draw         | max. 8 A DC<br>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) |
| Current draw         | max. 8 A DC<br>min. 3 mA (without connected peripherals)           |

## Connection data

### Connection technology

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

### Conductor connection

|                                  |  |
|----------------------------------|--|
| 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   |

### 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)   |

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



2701388

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

## Standards and regulations

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

## Mounting

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

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](mailto:info@phoenixcon.com)