

# IL PN BK DI8 DO4 2TX-PAC - Bus coupler



2703994

<https://www.phoenixcontact.com/be/products/2703994>

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Inline, Bus coupler, PROFINET, RJ45 jack, Digital inputs: 8, 24 V DC, connection technology: 3-conductor, Digital outputs: 4, 24 V DC, 500 mA, connection technology: 3-conductor, transmission speed in the local bus: 500 kbps / 2 Mbps, degree of protection: IP20

## Product description

The bus coupler with integrated I/Os is intended for use within a PROFINET 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

- 2x Ethernet twisted pair according to 802.3 with auto negotiation and auto crossover
- Transmission speeds 100 Mbps
- IP parameter setting via PROFINET controller
- Connection to the PROFINET network via 8-pos. RJ45 jack
- Electrical isolation between Ethernet interface and logic
- Ethernet TCP/IP (100 Base-TX, management via SNMP)
- Connection of up to 61 other Inline devices
- Connection of a maximum of 16 PCP devices
- Supported protocols: SNMPv1, TFTP, PROFINET, LLDP, ICMP, and MRP (from firmware 3.21)
- PROFINET IRT (firmware 4.00 or later)
- Conformance with PROFINET specification V2.3 (firmware 4.00 or later)
- PROFINET Netload Class III (from firmware 4.00)
- 8 digital inputs, 4 digital outputs (on-board)
- Automatic detection of the transmission speed in the local bus (500 kbps or 2 Mbps)
- Approved for PROFI-safe applications

## Commercial data

Item number	2703994
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DRI11A
Product key	DRI11A
Catalog page	Page 105 (C-6-2019)
GTIN	4046356041164
Weight per piece (including packing)	347,3 g
Weight per piece (excluding packing)	335,7 g

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Customs tariff number	85176200
Country of origin	DE

# IL PN BK DI8 DO4 2TX-PAC - Bus coupler

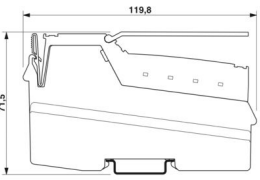


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## Technical data

### Dimensions

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

### Notes

#### Utilization restriction

CCCEX note	Use in potentially explosive areas is not permitted in China.
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### Interfaces

#### PROFINET

Number of interfaces	2
Connection method	RJ45 jack
Note on the connection method	Auto negotiation and autocrossing
Transmission speed	100 Mbps (acc. to PROFINET standard)
Transmission physics	Ethernet in RJ45 twisted pair

#### Inline local bus

Connection method	Inline data jumper
Transmission speed	500 kbps / 2 Mbps (automatic detection, no combined system)

### 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

#### PROFINET

Device function	PROFINET device
Update rate	min. 1 ms (depending on the size of the bus system)

#### Module

ID code (hex)	none
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Input address area	8 bit
Output address area	4 bit
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
Filter time	3 ms
Delay at signal change from 0 to 1	5 ms
Delay at signal change from 1 to 0	5 ms

## 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

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## Product properties

Product type	I/O component
Product family	Inline
Type	modular
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

## 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	max. 3.3 W
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## 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. 0.91 A (with max. number of connected I/O terminal blocks)
	typ. 138 mA

## Potentials: Communications power ( $U_L$ )

Supply voltage	7.5 V DC
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## 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
	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

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	min. 3 mA (without connected peripherals)
Electrical isolation/isolation of the voltage ranges	
Test voltage: PROFINET interface 1 / PROFINET interface 2	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 1 / communications power ( $U_{BK}$ , $U_L$ , $U_{ANA}$ )	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 1 / I/O ( $U_M$ , $U_S$ )	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 1 / functional ground	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 2 / communications power ( $U_{BK}$ , $U_L$ , $U_{ANA}$ )	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 2 / I/O ( $U_M$ , $U_S$ )	500 V AC, 50 Hz, 1 min.
Test voltage: PROFINET interface 2 / functional ground	500 V AC, 50 Hz, 1 min.
Test voltage: Communications power ( $U_{BK}$ , $U_L$ , $U_{ANA}$ ) / I/O ( $U_M$ , $U_S$ )	500 V AC, 50 Hz, 1 min.
Test voltage: Communications power ( $U_{BK}$ , $U_L$ , $U_{ANA}$ ) / functional ground	500 V AC, 50 Hz, 1 min.
Test voltage: I/O ( $U_M$ , $U_S$ ) / functional ground	500 V AC, 50 Hz, 1 min.

## Connection data

### Connection technology

Connection name	Inline connector
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### 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 (observe derating)
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)

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## Standards and regulations

Protection class

III (IEC 61140, EN 61140, VDE 0140-1)

## Mounting

Mounting type

DIN rail mounting

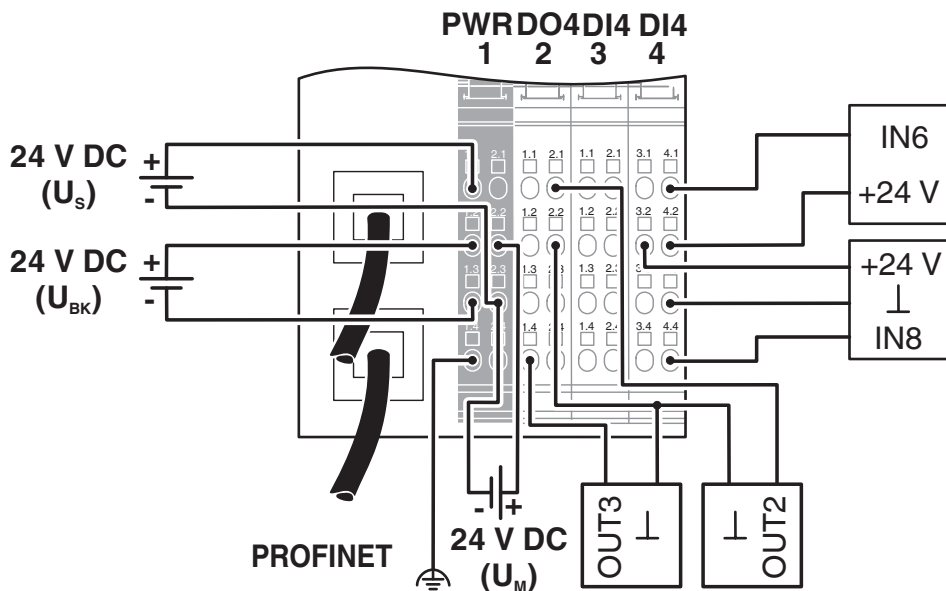
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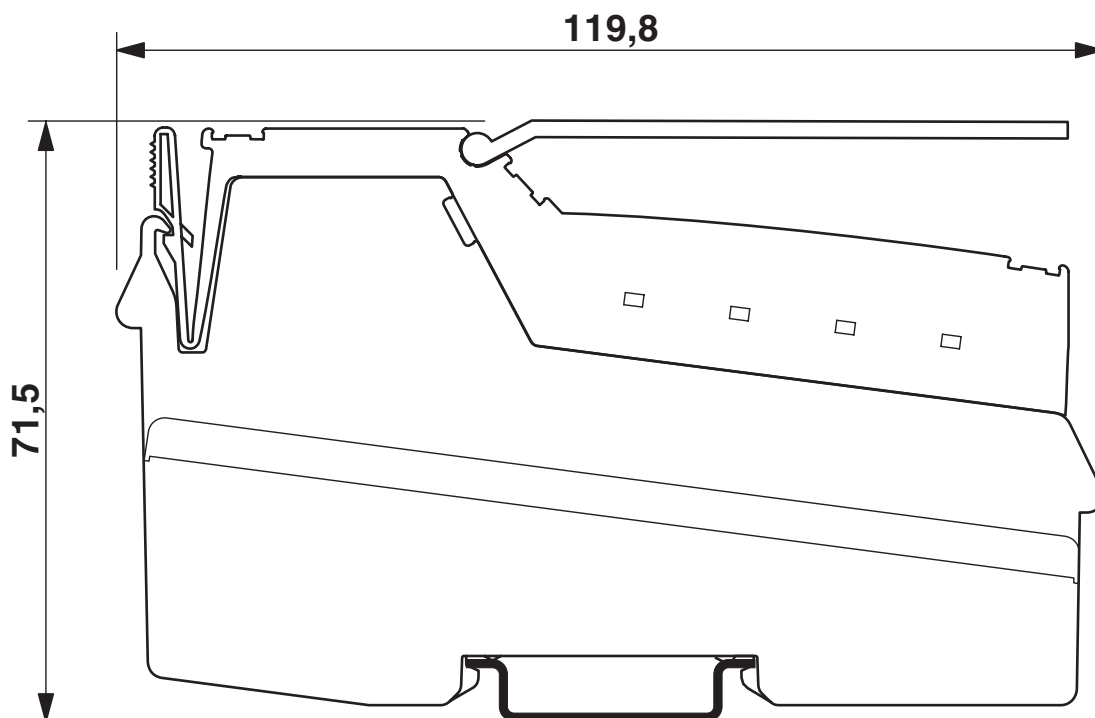
<https://www.phoenixcontact.com/be/products/2703994>

## Drawings

Connection diagram



Dimensional drawing



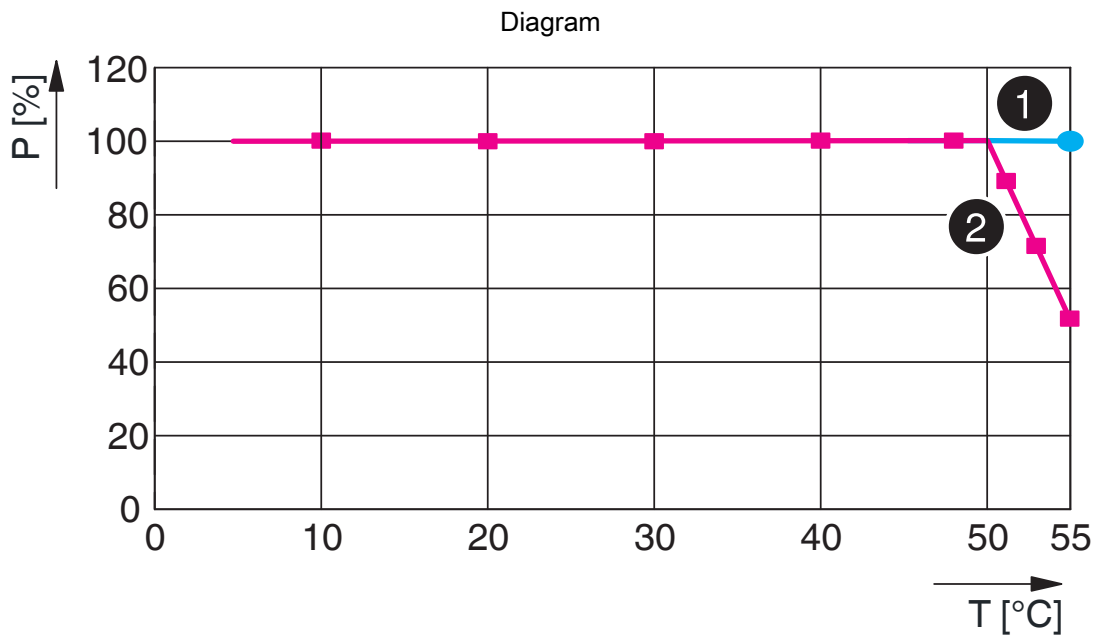


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Derating for different mounting positions

1 - Mounting on a horizontal DIN rail

2 - Other mounting positions

P [%] Power dissipation as a percentage

T [°C] Temperature in °C

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/be/products/2703994>



**DNV GL**

Approval ID: TAA00000BN



**UL Listed**

Approval ID: FILE E 140324



**cUL Listed**

Approval ID: FILE E 140324



**RINA**

Approval ID: ELE121121XG

**ABS**

Approval ID: 22-2226444-PDA

**PROFINET**

Approval ID: Z10506

**UAE-RoHS**

Approval ID: 22-04-13087



**cUL Listed**

Approval ID: FILE E 199827



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Approval ID: FILE E 199827

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## Classifications

### ECLASS

ECLASS-11.0	27242608
ECLASS-12.0	27242608
ECLASS-13.0	27242608

### ETIM

ETIM 9.0	EC001604
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### 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-25
	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	ad0c7e4a-f3b0-4bbf-9667-399c1f5acb09

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## Accessories

### CLIPFIX 35 - End bracket

3022218

<https://www.phoenixcontact.com/be/products/3022218>

Quick mounting end clamp for NS 35/7,5 DIN rail or NS 35/15 DIN rail, with marking option, width: 9.5 mm, color: gray



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### E/UK - End bracket

1201442

<https://www.phoenixcontact.com/be/products/1201442>

End bracket, Mounting on a DIN rail NS 32 or NS 35, material: PA, color: gray



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## ESL 62X46 - Insert strip

0809502

<https://www.phoenixcontact.com/be/products/0809502>

Insert strip, Sheet, white, unlabeled, can be labeled with: Office printing systems, CMS-P1-PLOTTER, mounting type: insert, lettering field size: 62 x 46 mm, Number of individual labels: 15



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## IB IL FIELD 8 - Marking field

2727515

<https://www.phoenixcontact.com/be/products/2727515>

Marking field, width: 48.8 mm



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## ESL 62X10 - Insert strip

0809492

<https://www.phoenixcontact.com/be/products/0809492>

Insert strip, Sheet, white, unlabeled, can be labeled with: Office printing systems, CMS-P1-PLOTTER, mounting type: insert, lettering field size: 62 x 10 mm, Number of individual labels: 72



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## IB IL FIELD 2 - Marking field

2727501

<https://www.phoenixcontact.com/be/products/2727501>

Marking field, width: 12.2 mm



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## FL PLUG RJ45 GR/2 - RJ45 connector

2744856

<https://www.phoenixcontact.com/be/products/2744856>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: Crimp connection, connection cross section: AWG 26- 24, cable outlet: straight, color: gray, Ethernet

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## FL PLUG RJ45 GN/2 - RJ45 connector

2744571

<https://www.phoenixcontact.com/be/products/2744571>



RJ45 connector, design: RJ45, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: Plastic, connection method: Crimp connection, connection cross section: AWG 26- 24, cable outlet: straight, color: green, Ethernet



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## FL CAT5 HEAVY - Data cable

2744814

<https://www.phoenixcontact.com/be/products/2744814>



CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable, 2 x 2 x 0.22 mm<sup>2</sup>, solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0.15 mm diameter

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## FL CAT5 FLEX - Installation cable

2744830

<https://www.phoenixcontact.com/be/products/2744830>



By the meter, Installation cable, Ethernet CAT5 (100 Mbps), shielded, PUR halogen-free, water blue RAL 5021, 4-wire (2x2xAWG26/7, SF/UTP), color single wire: white/orange-orange, white/green-green, cable length: Free entry (1.0 ... 1000.0 m)

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### FL CRIMPTOOL - Assembly tool

2744869

<https://www.phoenixcontact.com/be/products/2744869>

Crimping pliers, for assembling the RJ45 plugs FL PLUG RJ45..., for assembly on site



### IL BKDIO-PLSET - Connector set

2878599

<https://www.phoenixcontact.com/be/products/2878599>

Connector set, for Inline bus coupler with I/Os mounted in rows



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PHOENIX CONTACT nv/sa  
Minervastraat 10-12  
1930 Zaventem-Keiberg II  
+32 (0)2/723 98 11  
[info@phoenixcontact.be](mailto:info@phoenixcontact.be)