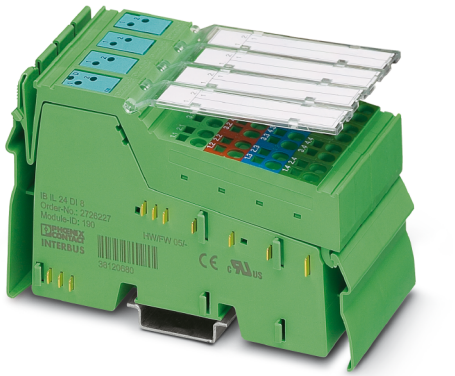
IB IL 24 DI 8-PAC



**Inline, digital input terminal,
digital inputs: 8, 24 V DC,
connection technology: 4-conductor**

Data sheet
5552_en_06

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1 Description

The terminal is designed for use within an Inline station.
It is used to acquire digital signals.

Features

- 8 digital inputs
- Connection of sensors in 2-, 3-, and 4-conductor technology
- Maximum permissible load current per sensor: 250 mA
- Maximum permissible load current from the terminal: 2 A

This data sheet is only valid in association with the IL SYS INST UM E user manual.

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/2861247

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3 Ordering data

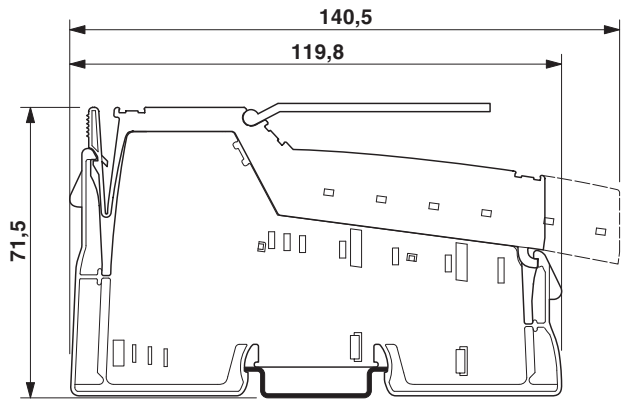
Description	Type	Item no.	Pcs./Pkt.
Inline, Digital input terminal, Digital inputs: 8, 24 V DC, connection technology: 4-conductor, transmission speed in the local bus: 500 kbps, degree of protection: IP20, including Inline connectors and marking fields	IB IL 24 DI 8-PAC	2861247	1

Accessories	Type	Item no.	Pcs./Pkt.
Connector set	IB IL DI/DO 8-PLSET	2860950	1
Inline connector, colored (Connector/Adapter)	IB IL SCN-8-CP	2727608	10
Connector, for digital 1, 2 or 8-channel Inline terminals (Connector/Adapter)	IB IL SCN-8	2726337	10
Labeling field, width: 12.2 mm (Marking)	IB IL FIELD 2	2727501	10
Labeling field, width: 48.8 mm (Marking)	IB IL FIELD 8	2727515	10
Insert strip, Sheet, white, unlabeled, can be labeled with: Office printing systems: Laser printer, mounting type: insert, lettering field size: 62 x 10 mm, Number of individual labels: 72 (Marking)	ESL 62X10	0809492	1
Insert strip, Sheet, white, unlabeled, can be labeled with: Office printing systems: Laser printer, mounting type: insert, lettering field size: 62 x 46 mm, Number of individual labels: 15 (Marking)	ESL 62X46	0809502	5

Documentation	Type	Item no.	Pcs./Pkt.
User manual, English, Automation terminals of the Inline product range	IL SYS INST UM E	-	-
Data sheet, English, INTERBUS addressing	DB GB IBS SYS ADDRESS	-	-

4 Technical data

Dimensions (nominal sizes in mm)	



Width	48.8 mm
Height	119.8 mm
Depth	71.5 mm
Note on dimensions	Housing dimensions

General data	
Color	green
Weight	118 g (with connector)
Operating mode	Process data mode with one byte
Ambient temperature (operation)	-25 °C ... 55 °C
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)
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)
Degree of protection	IP20
Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
Overvoltage category	II (IEC 60664-1, EN 60664-1)
Degree of pollution	2 (IEC 60664-1, EN 60664-1)
Mounting type	DIN rail mounting

Connection data: Inline connector	
Connection method	Spring-cage connection
Conductor cross section, rigid	0.08 mm² ... 1.5 mm²
Conductor cross section, flexible	0.08 mm² ... 1.5 mm²
Conductor cross section [AWG]	28 ... 16
Stripping length	8 mm

Connection data for UL approvals: Inline connector	
Connection method	Spring-cage connection
Conductor cross section, rigid	0.2 mm² ... 1.5 mm²
Conductor cross section, flexible	0.2 mm² ... 1.5 mm²
Conductor cross section [AWG]	24 ... 16
Stripping length	8 mm

Interface: Inline local bus	
Number of interfaces	2
Connection method	Inline data jumper
Transmission speed	500 kbps

Communications power (U_L)	
Supply voltage	7.5 V DC (via voltage jumper)
Current consumption	max. 50 mA
Power consumption	max. 0.375 W

Segment circuit supply (U_S)	
Supply voltage	24 V DC (via voltage jumper)
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	0 A (without sensors) max. 2 A

Digital inputs	
Number of inputs	8
Connection method	Spring-cage connection
Connection technology	4-conductor
Description of the input	EN 61131-2 type 1
Nominal input voltage	24 V DC
Nominal input current	min. 5 mA (at nominal voltage)
Sensor current per channel	max. 250 mA
Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	15 V DC ... 30 V DC
Cable length	max. 30 m (to the sensor)
Short-circuit and overload protection	yes

Programming data (INTERBUS, local bus)	
ID code (hex)	BE
ID code (dec.)	190
Length code (hex)	81
Length code (dec)	129
Process data channel	8 Bit
Input address area	1 Byte
Output address area	0 Byte
Parameter channel (PCP)	0 Byte
Register length (bus)	8 Bit

For the programming data/configuration data for other bus systems, refer to the corresponding electronic device data sheet (e.g., GSD, EDS).

Configuration and parameter data in a PROFIBUS system	
Required parameter data	1 Byte
Required configuration data	4 Byte

Electrical isolation/isolation of the voltage areas	
Test section	**Test voltage**
7.5 V supply (bus logics)/24 V supply (I/O)	500 V AC, 50 Hz, 1 min.
7.5 V supply (bus logic)/functional ground	500 V AC, 50 Hz, 1 min.
24 V supply (I/O) / functional ground	500 V AC, 50 Hz, 1 min.

To achieve electrical isolation between the logic level and the I/O area, supply these areas from separate power supply units. Interconnection of the power supply units in the 24 V area is not permitted (see IL SYS INST UM E user manual).

Approvals	
For the current approvals, go to:	www.phoenixcontact.net/product/2861247

Manufacturer's declarations	
For the current manufacturer’s declarations, go to:	www.phoenixcontact.net/product/2861247

5 Additional tables

5.1 Input characteristic curve

Input characteristic curve	
Input voltage (V)	**Typical input current (mA)**
-30 < U ≤ 0.7	0
3	0.4
6	1.0
9	1.7
12	2.3
15	3.0
18	3.7
21	4.4
24	5.0
27	5.7
30	6.4

5.2 Power dissipation

Formula for calculating the power dissipation of the electronics

$$P_{EL} = 0{,}375\ W + \sum_{i=1}^{n} \left[U_{INi} \times \frac{U_{INi} - 1{,}8\ V}{4400\ \Omega} \right]$$

Where:

P_{EL}	Total power dissipation in the terminal
i	Continuous index
n	Number of set inputs (n = 1 ... 8)
U_{INi}	Input voltage of input i

Power dissipation of the housing

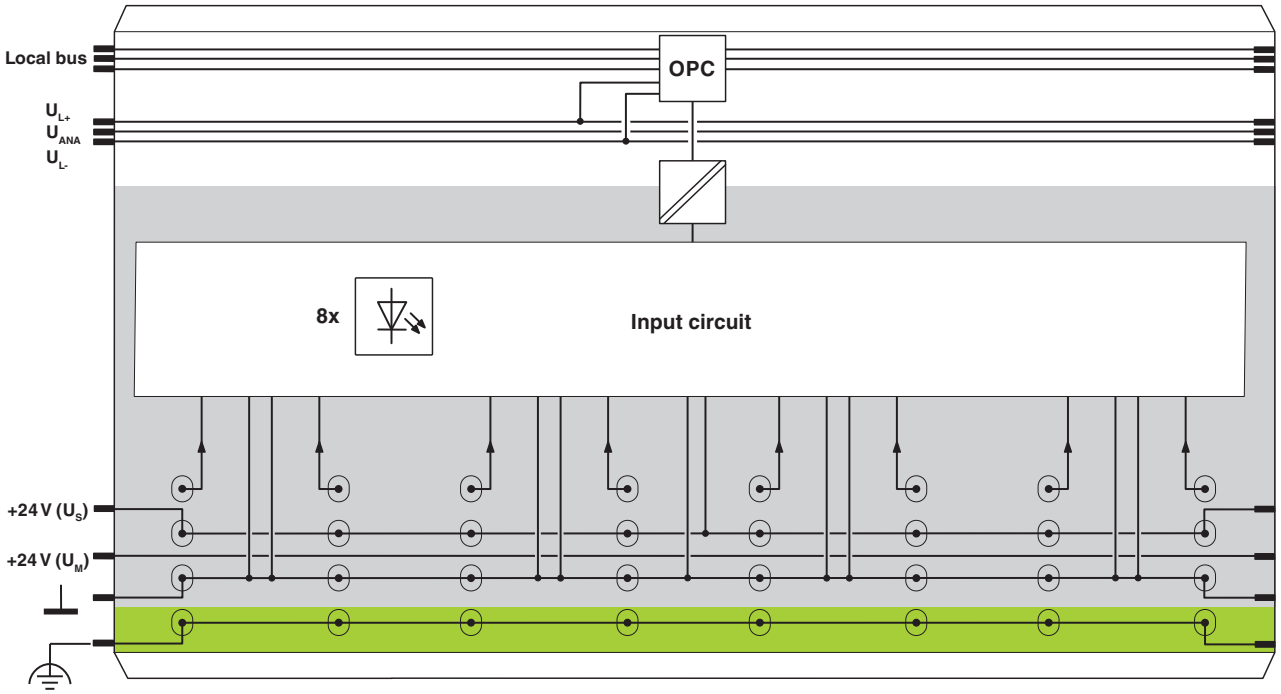
2.8 W, maximum (within the permissible operating temperature)

5.3 Limitation of simultaneity, derating

No limitation of simultaneity, no derating

6 Internal circuit diagram

Figure 1 Internal wiring of the terminal points



Key:

OPC — Protocol chip
(Bus logic including voltage conditioning)

Electrical isolation for data or power supply

LED (status indicator)

Input circuit — Input circuit

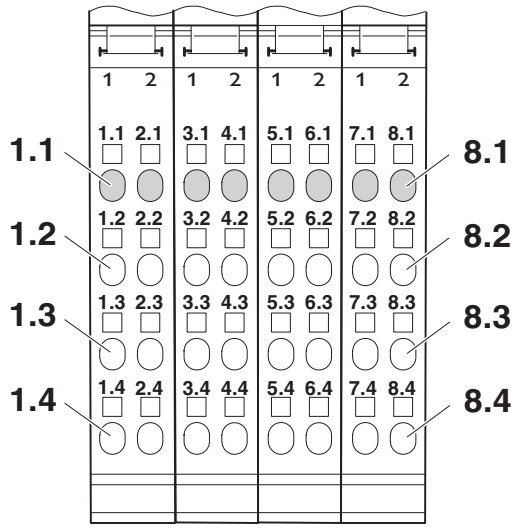
Digital input

Electrically isolated areas

Other symbols used are explained in the IL SYS INST UM E user manual.

7 Terminal point assignment

Figure 2 Terminal point assignment

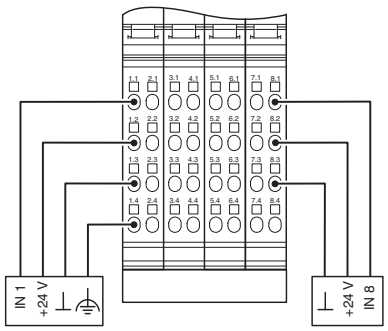


Terminal point	Assignment
x.1	Signal input (IN01 ... IN08)
x.2	Segment voltage U_S for 2-, 3-, and 4-conductor connection
x.3	Ground contact (GND) for 3-, and 4-conductor connection
x.4	FE connection for 4-conductor connection

8 Connection example

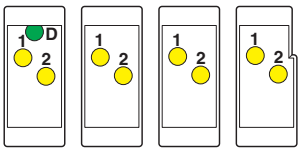
When connecting the sensors observe the assignment of the terminal points to the process data.

Figure 3 Typical connection of sensors



9 Local diagnostic and status indicators

Figure 4 Local diagnostic and status indicators



Designation	Color	Meaning
D	Green	Diagnostics (bus and logic voltage)
For each connector		
1, 2	Yellow	Status of the inputs

For detailed information on diagnostics, please refer to the IL SYS INST UM E user manual.

Function identification

Light blue

10 Process data

Assignment of the terminal points to IN process data

(Byte.Bit) view	Byte	Byte 0							
	Bit	7	6	5	4	3	2	1	0
Assignment	Slot	4		3		2		1	
	Signal	IN08	IN07	IN06	IN05	IN04	IN03	IN02	IN01
	Terminal point (signal)	8.1	7.1	6.1	5.1	4.1	3.1	2.1	1.1
	Terminal point (24 V)	8.2	7.2	6.2	5.2	4.2	3.2	2.2	1.2
	Terminal point (GND)	8.3	7.3	6.3	5.3	4.3	3.3	2.3	1.3
	Terminal point (FE)	8.4	7.4	6.4	5.4	4.4	3.4	2.4	1.4
Status indicator	LED	8	7	6	5	4	3	2	1

For the assignment of the illustrated (byte.bit) view to your INTERBUS control or computer system, please refer to the DB GB IBS SYS ADDRESS data sheet.