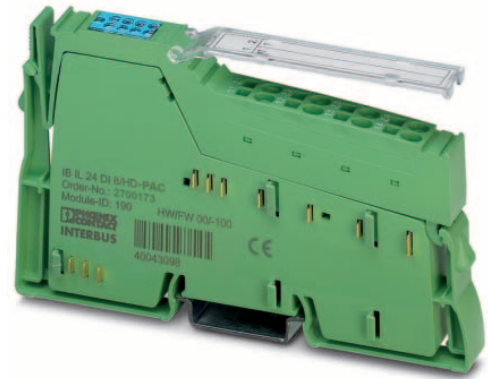


IB IL 24 DI8/HD (2MBD)-PAC

Inline digital input terminal, 8 inputs, 24 V DC



Data sheet
7984_en_02

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1 Description

The terminal block has been developed for use in an Inline station. It is used to acquire digital signals.

Features

- Connections for eight digital sensors
- Connection of sensors in 1-wire technology
- Diagnostic and status indicators



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 from the product at www.phoenixcontact.net/catalog.

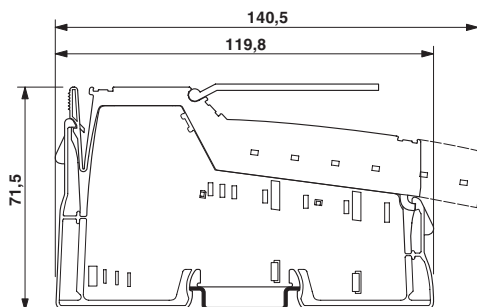
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3 Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Inline digital input terminal, complete with accessories (connector and labeling field), 8 inputs, 24 V DC, single-wire connection method	IB IL 24 DI8/HD-PAC	2700173	1
Inline digital input terminal, complete with accessories (connector and labeling field), 8 inputs, 24 V DC, transmission speed 2 MBaud , 1-wire connection technology	IB IL 24 DI8/HD-2MBD-PAC	2700875	1
Accessories	Type	Order No.	Pcs. / Pkt.
Connector, for digital 1, 2 or 8-channel Inline terminals (Plug/Adapter)	IB IL SCN-8	2726337	10
Labeling field, width: 12.2 mm (Marking)	IB IL FIELD 2	2727501	10
Inline terminal for power distribution (24 V), complete with accessories, (connector and labeling field) 24 V supply voltage is fed out from the segment circuit (US)	IB IL PD 24V-PAC	2862987	1
Inline terminal for power distribution (GND), complete with accessories, (connector and labeling field) connections for GND	IB IL PD GND-PAC	2862990	1
VARIOFACE front adapter for 8-channel Inline HD modules (Plug/Adapter)	FLKM 14-PA-INLINE/DIO8	2900889	1
Documentation	Type	Order 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	12.2 mm
Height	119.8 mm
Depth	71.5 mm
Note on dimensions	Housing dimensions

General data

Color	green
Weight	60 g (With connector)
Operating mode	Process data mode with one byte

General data

Ambient temperature (operation)	-25 °C ... 55 °C
Ambient temperature (storage/transport)	-25 °C ... 85 °C
Permissible humidity (operation)	10 % ... 95 % (according to DIN EN 61131-2)
Permissible humidity (storage/transport)	10 % ... 95 % (according to DIN EN 61131-2)
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

Connection data

Name	Inline connectors
Connection method	Spring-cage connection
Conductor cross section solid / stranded	0.08 mm ² ... 1.5 mm ²
Conductor cross section [AWG]	28 ... 16

Interface Inline local bus

Connection method	Inline data jumper
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Transmission speed Inline local bus

IB IL 24 DI8/HD-PAC	500 kBit/s
IB IL 24 DI8/HD-2MBD-PAC	2 MBit/s

Power consumption

Main circuit supply U_M	24 V DC
Current consumption from U_M	max. 8 A DC
Segment supply voltage U_S	24 V DC (nominal value)
Current consumption from U_S	max. 5.5 mA DC
Communications power U_L	7.5 V DC
Current consumption from U_L	max. 30 mA DC
Power consumption	max. 0.25 W (at U_L)
Power loss	max. 0.72 W

Digital inputs

Number of inputs	8
Connection method	Spring-cage connection
Connection method	1-wire
Description of the input	EN 61131-2 types 1 and 3
Nominal input voltage	24 V DC
Nominal input current	Typ. 2.4 mA
Input voltage range "0" signal	-3 V DC ... 5 V DC
Input voltage range "1" signal	11 V DC ... 30 V DC
Delay at signal change from 0 to 1	1 ms
Delay at signal change from 1 to 0	1 ms
Permissible conductor length to the sensor	30 m

Programming Data

ID code (hex)	BE
ID code (dec.)	190
Length code (hex)	81
Length code (dec.)	129
Process data channel	8 Bit

Programming Data

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 of other bus systems, please refer to the corresponding electronic device data sheet (e.g., GSD, EDS).

PROFIBUS telegram data

Required parameter data	1 Byte
Need for configuration data	4 Byte

Electrical isolation/isolation of the voltage areas

5 V supply incoming remote bus/7.5 V supply (bus logic)	500 V AC , 50 Hz , 1 min
5 V supply outgoing remote bus/7.5 V supply (bus logic)	500 V AC , 50 Hz , 1 min
7.5 V supply (bus logics)/24 V supply (I/O)	500 V AC , 50 Hz , 1 min
24 V supply (I/O) / functional earth 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 also user manual).

Approvals

For the latest approvals, please visit www.phoenixcontact.net/catalog.

5 Additional tables

Input characteristic curve

Input voltage U [V]	Typical input current I [mA]
-30 < U ≤ 0.7	0
3	0.12
6	1.32
9	2.32
12	2.36
15	2.36
18	2.36
21	2.36
24	2.40
27	2.40
30	2.40

6 Internal circuit diagram

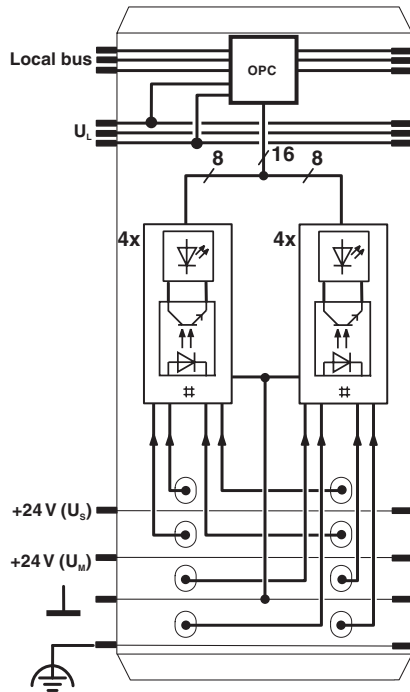







Figure 1 Internal wiring of the terminal points

-  Protocol chip
(Bus logic including voltage conditioning)
-  LED (status indicator)
-  Optocoupler
-  Digital input

 Explanation for other used symbols has been provided in the IL SYS INST UM E user manual.

7 Local status and diagnostic indicators

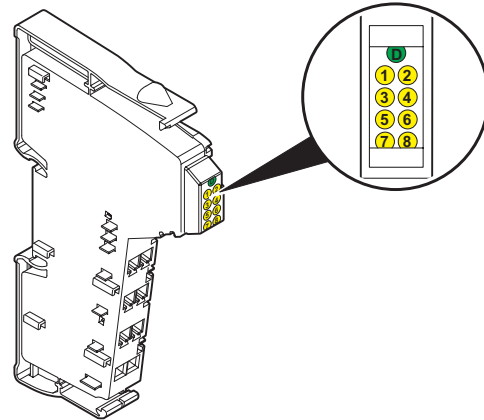


Figure 2 Local status and diagnostic indicators

Designation	Color	Meaning
D	Green	Diagnostics (bus and logic voltage)
1 to 8	Yellow	Status of the inputs

Function identification

Light blue

8 Terminal point assignment

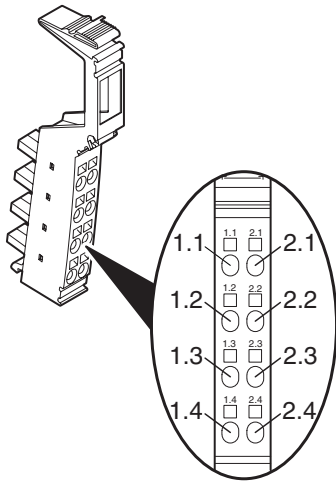


Figure 3 Terminal point assignment

Terminal point	Assignment
1.1 / 2.1	Signal input (IN 1 / IN 2)
1.2 / 2.2	Signal input (IN 3 / IN 4)
1.3 / 2.3	Signal input (IN 5 / IN 6)
1.4 / 2.4	Signal input (IN 7 / IN 8)

9 Connection notes and examples



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



NOTE: Malfunction

The sensors and U_S must be supplied from the same voltage supply.

The simplest way to meet this requirement is to use the IB IL PD 24V-PAC terminal. Wire the 24 V sensor connections to this terminal. In this way, they are supplied from the potential jumper U_S of the Inline station.

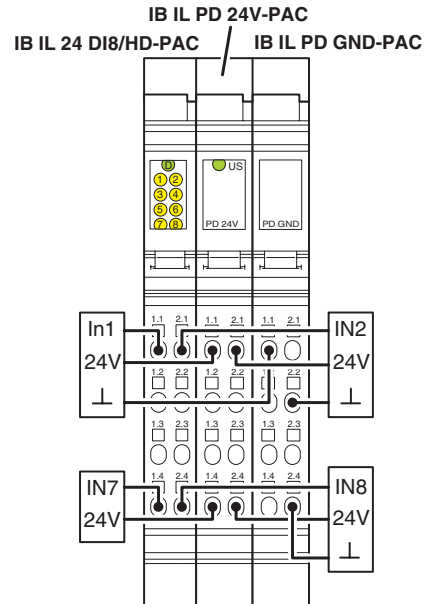


Figure 4 Typical connection of sensors when terminals for potential distribution are used

The sensors can also be connected via external busbars. Ensure that the sensors and U_S are supplied from the same voltage supply.

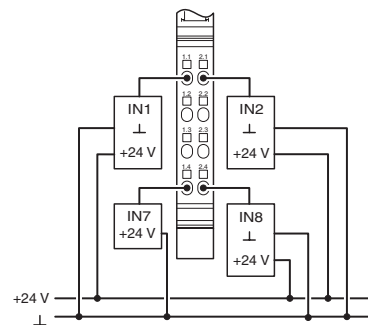


Figure 5 Example of a connection of sensors when using external busbars

10 Application examples

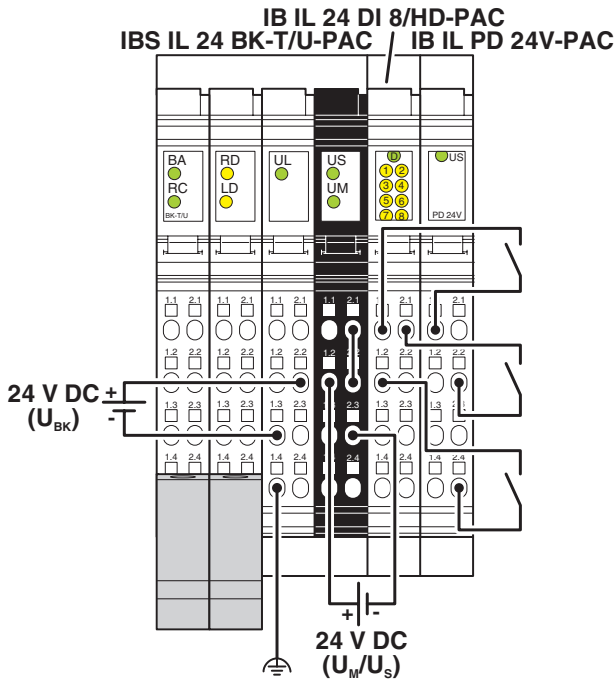


Figure 6 Connection of sensors when using the IB IL PD 24V-PAC terminal

11 Process data

Assignment of the terminal points to IN process data

(Byte. Bit) view	Byte Bit	Byte 0							
		7	6	5	4	3	2	1	0
Assignment	Terminal point (signal)	2.4	1.4	2.3	1.3	2.2	1.2	2.1	1.1
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.

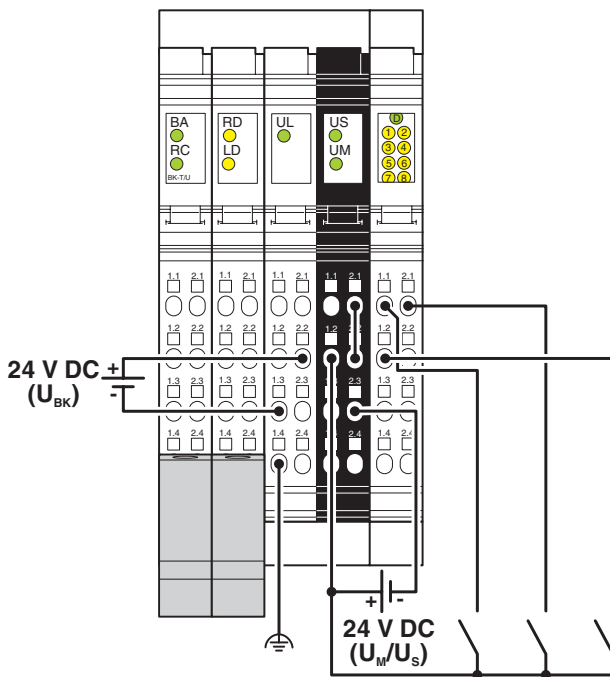


Figure 7 Connection of sensors when using external bus-bars