



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

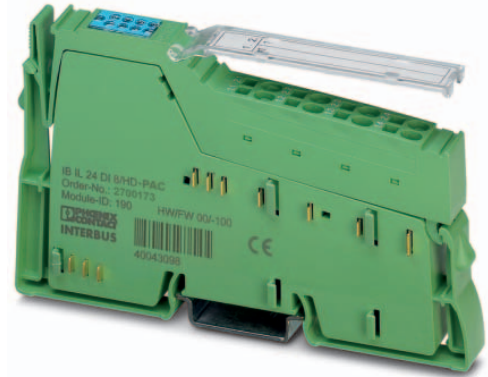


# IB IL 24 DI8/HD-PAC

Inline, digital input terminal,  
digital inputs: 8, 24 V DC

Data sheet  
7984\_en\_03

© PHOENIX CONTACT 2016-11-15



## 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 single-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 [phoenixcontact.net/products](http://phoenixcontact.net/products).

---

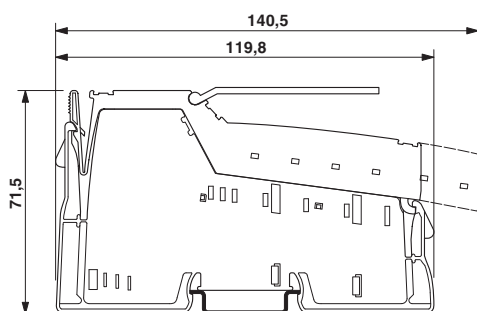
<b>2</b>	<b>Table of contents</b>	
1	Description .....	1
2	Table of contents .....	2
3	Ordering data .....	3
4	Technical data .....	3
5	Additional tables .....	6
6	Internal circuit diagram .....	7
7	Terminal point assignment.....	7
8	Connection notes and examples .....	8
9	Application examples .....	9
10	Local diagnostic and status indicators .....	10
11	Process data.....	10

### 3 Ordering data

Description	Type	Order No.	Pcs./Pkt.
Inline, Digital input terminal, Digital inputs: 8, 24 V DC, Connection method: 1-wire, Transmission speed in the local bus 500 kbps, Degree of protection IP20, including Inline connector and labeling field	IB IL 24 DI8/HD-PAC	2700173	1
Accessories	Type	Order No.	Pcs./Pkt.
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
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 Inline HD modules, for transferring 8 digital signals. (Connector/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

<b>General data</b>	
Color	green
Weight	60 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 % (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
<b>Connection data</b>	
Designation	Inline connector
Connection method	Spring-cage connection
Conductor cross section solid / stranded	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section [AWG]	28 ... 16
Stripping length	8 mm
<b>Connection data for UL approvals</b>	
Designation	Inline connector
Connection method	Spring-cage connection
Conductor cross section solid / stranded	0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section [AWG]	24 ... 16
<b>Interface Inline local bus</b>	
Connection method	Inline data jumper
Transmission speed	500 kbps
<b>Power consumption</b>	
Segment circuit supply $U_S$	24 V DC (nominal value)
Current consumption from $U_S$	max. 5.5 mA DC
Communications power $U_L$	7.5 V DC (via voltage jumper)
Current consumption from $U_L$	max. 30 mA DC
Power consumption	max. 0.25 W (at $U_L$ )
<b>Digital inputs</b>	
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

**Digital inputs**

Input voltage range "1" signal	11 V DC ... 30 V DC
Delay at signal change from 0 to 1	typ. 1 ms
Delay at signal change from 1 to 0	typ. 1 ms
Permissible conductor length to the sensor	30 m

**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 of other bus systems, please 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
Need for configuration data	4 Byte

**Error messages to the higher level control or computer system**

None

**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 logics) / functional earth ground	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 IL SYS INST UM E user manual).

**Approvals**

For the latest approvals, please visit [phoenixcontact.net/products](http://phoenixcontact.net/products).

## 5 Additional tables

Input characteristic curve	
Input voltage U [V]	Typical input current I [mA]
$-30 < U \leq 0.7$	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

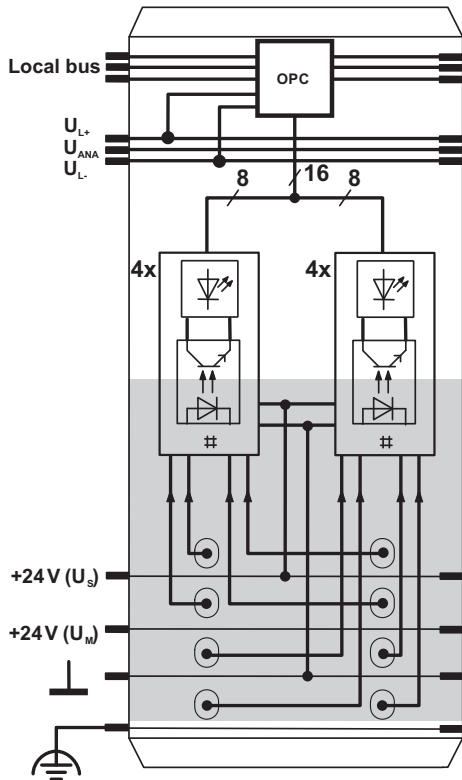

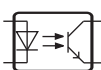



Figure 1 Internal wiring of the terminal points


Key:


 Protocol chip  
(Bus logic including voltage conditioning)

 LED (status indicator)

 Optocoupler

 Digital input

 Electrically isolated area

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

## 7 Terminal point assignment

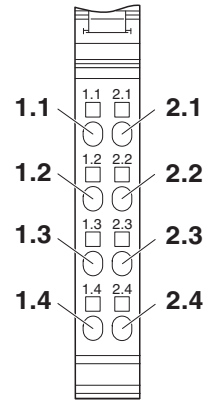


Figure 2 Terminal point assignment

Terminal point	Assignment
1.1 / 2.1	Signal input (IN01 / IN02)
1.2 / 2.2	Signal input (IN03 / IN04)
1.3 / 2.3	Signal input (IN05 / IN06)
1.4 / 2.4	Signal input (IN07 / IN08)



## 8 Connection notes and examples



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



**NOTE: Malfunction**

The supply voltage  $U_S$  is used internally as the auxiliary supply. If it is not present, the terminal will not operate properly. Make sure that the supply voltage  $U_S$  is available.



**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.

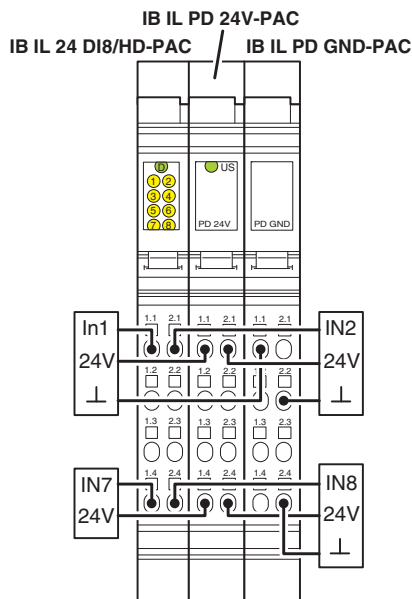


Figure 3 Typical connection of sensors when terminals for potential distribution are used

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

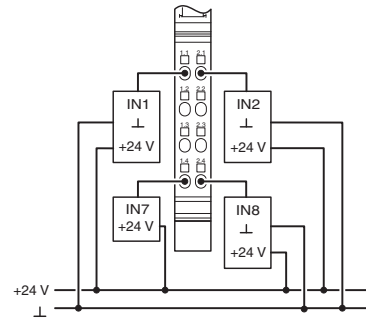


Figure 4 Example of a connection of sensors when using external busbars

## 9 Application examples

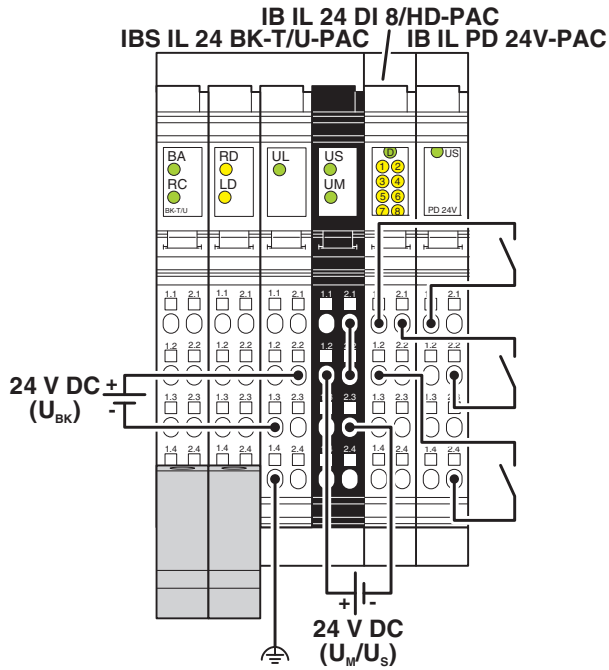


Figure 5 Connection of sensors when using the IB IL PD 24V-PAC terminal

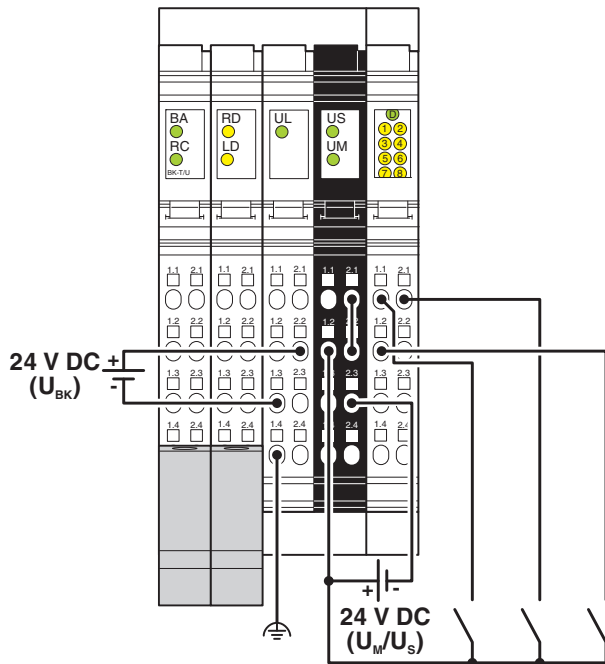


Figure 6 Connection of sensors when using external busbars

## 10 Local diagnostic and status indicators

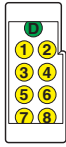


Figure 7 Local diagnostic and status indicators

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

### Function identification

Light blue

2 Mbps: White stripe in the vicinity of the D LED

## 11 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	Signal	IN08	IN07	IN06	IN05	IN04	IN03	IN02	IN01
	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.