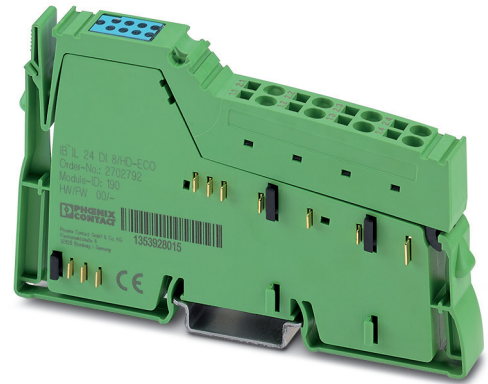


IB IL 24 DI 8/HD-ECO

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



Data sheet
107134_en_01

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1 Description

The terminal is designed for use within an Inline station. It is used to acquire digital signals. Inline ECO terminals are approved for the temperature range from 0°C to +55°C. The electronics base and Inline connector are supplied as standard.

Features

- 8 digital inputs
- Connection of sensors in 1-conductor technology



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/2702792

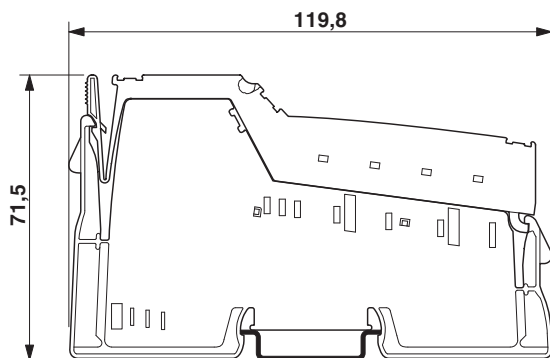
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3 Ordering data

Description	Type	Order No.	Pcs./Pkt.
Inline ECO, Digital input terminal, Digital inputs: 8, 24 V DC, connection method: 1-conductor, transmission speed in the local bus: 500 kbps, degree of protection: IP20, including Inline connector	IB IL 24 DI 8/HD-ECO	2702792	1
Accessories	Type	Order No.	Pcs./Pkt.
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
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
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
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
Note on dimensions	Housing dimensions

General data

Color	green
Weight	60 g (with connector)
Operating mode	Process data mode with one byte
Ambient temperature (operation)	0 °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)

Connection data: Inline connector

Connection method	Spring-cage connection
Conductor cross section, rigid	0.08 mm ² ... 1.5 mm ²
Conductor cross section, flexible	0.08 mm ² ... 1.5 mm ²
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 mm ² ... 1.5 mm ²
Conductor cross section, flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section [AWG]	24 ... 16
Stripping length	8 mm

Interface: Inline local bus

Number	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. 30 mA
Power consumption	max. 0.225 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	max. 5.5 mA

Power consumption

Power consumption	max. 0.8 W (Module, complete)
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Digital inputs

Number of inputs	8
Connection method	Spring-cage connection
Connection technology	1-conductor
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	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
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

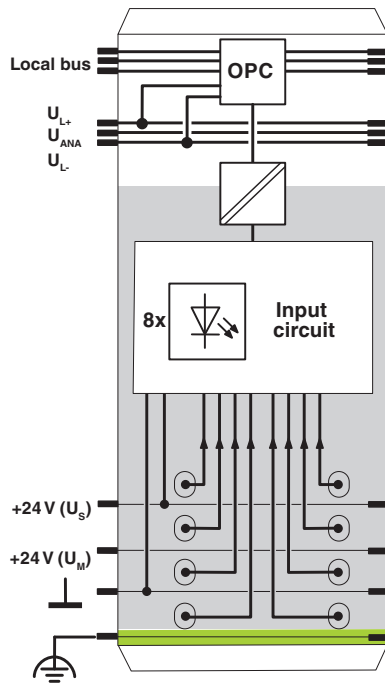
For the latest approvals, please visit phoenixcontact.net/products.

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)


 Electrical isolation

 LED (status indicator)

 Input circuit

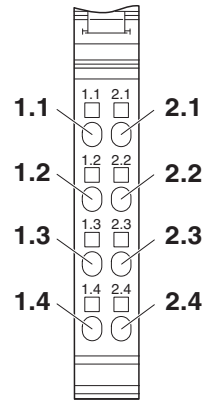
 Digital input

 Electrically isolated areas

 Please refer to the IL SYS INST UM E user manual for an explanation of other symbols used.

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

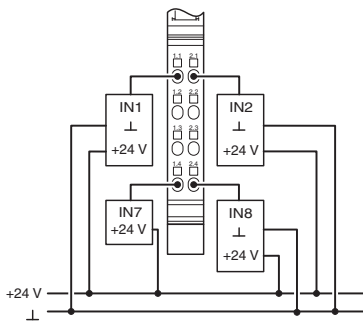
Supply the sensors and U_S from the same power supply.

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.

See "Application examples".

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

Figure 3 Example of a connection of sensors when using external busbars



9 Application examples

Figure 4 Connection of sensors when using the IB IL PD 24V-PAC terminal

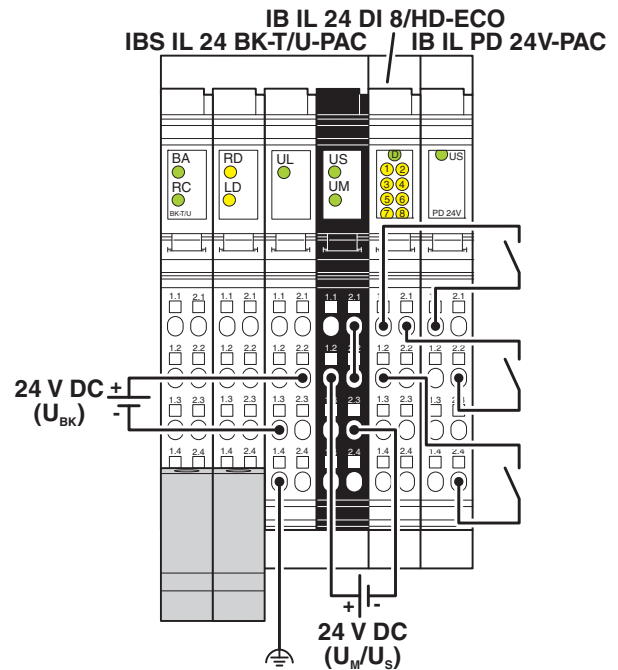
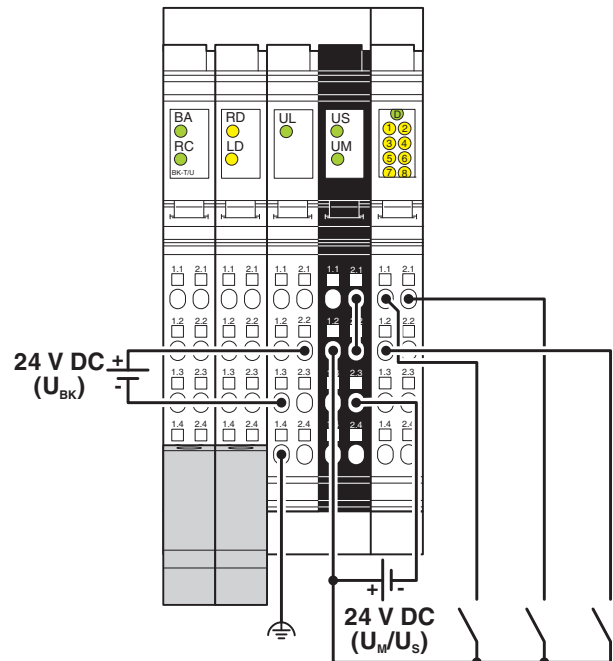
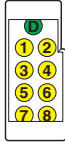


Figure 5 Connection of sensors when using external busbars



10 Local diagnostic and status indicators

Figure 6 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

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.