Inline terminal with 8 digital inputs

R911332208
Edition 02

Data sheet R-IB IL 24 DI 8/HD-PAC

8 digital inputs
24 V DC

04 / 2022

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 1-conductor technology

This data sheet is only valid in association with the “Automation terminals of the Inline product range” application description (DOK-CONTRL-ILSYSINS***-AW..-EN-P, MNR R911317021).

Make sure you always use the latest documentation.
It can be downloaded under www.boschrexroth.com/electrics.

2 Table of contents

3 Ordering data

Description	Type	MNR	Pcs./Pkt.
Inline terminal with eight digital inputs; complete with accessories (plugs and labeling fields)	R-IB IL 24 DI 8/HD-PAC	R911171972	1

Accessories	Type	MNR	Pcs./Pkt.
Inline terminal for potential distribution GND; complete with accessories (connector and labeling field)	R-IB IL PD 24V-PAC	R911297189	1
Inline terminal for potential distribution GND; complete with accessories (connector and labeling field)	R-IB IL PD GND-PAC	R911297193	1

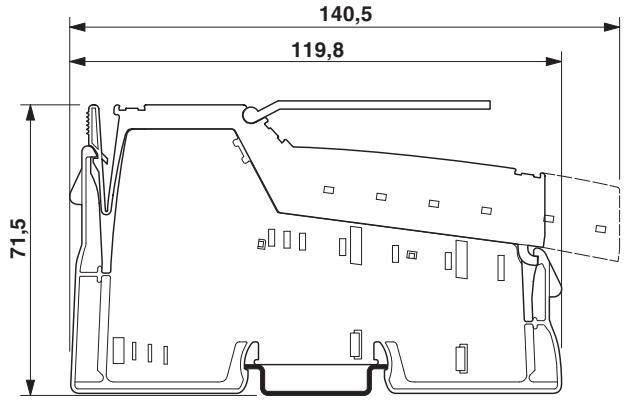
Documentation	Type	MNR	Pcs./Pkt.
Application description Automation terminals of the Inline product range	DOK-CONTRL-ILSYSINS***-AW..-EN-P	R911317021	1

Additional ordering data

For additional ordering data (accessories), please refer to the product catalog at www.boschrexroth.com/electrics.

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	light grey RAL 7035
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 % (non-condensing)
Permissible humidity (storage/transport)	10 % ... 95 % (non-condensing)

General data	
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)
Mounting type	DIN rail mounting

Connection data: 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	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)

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. Connecting the supply devices in the 24 V area is not permitted (see also the “Automation terminals of the Inline product range” application description (DOK-CONTRL-ILSYSINS***-AW..-EN-P, MNR R911317021).

Approvals

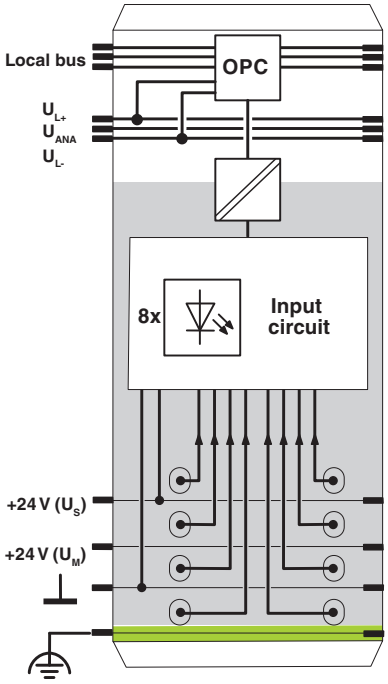
For the latest approvals, please visit www.boschrexroth.com/electrics.

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

Fig. 1 Internal wiring of the terminal points



Key:

OPC — Protocol chip
(Bus logic including voltage conditioning)

LED (status indicator)

Electrical isolation

Input circuit — Input circuit

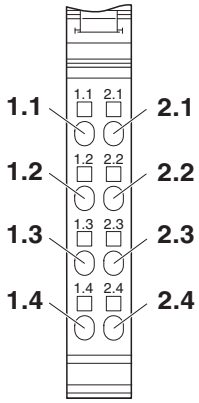
Digital input

Electrically isolated areas

For an explanation of the other symbols used, please refer to the “Automation terminals of the Inline product range” application description (DOK-CONTRL-ILSYSINS***-AW..-EN-P, MNR R911317021).

7 Terminal point assignment

Fig. 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.

NOTICE **Malfunction**

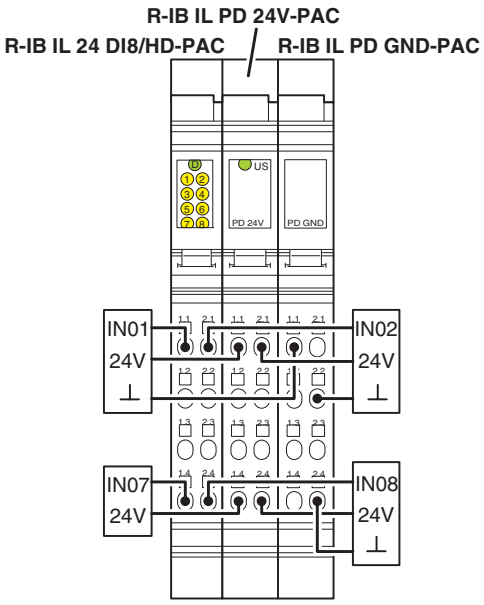
The supply voltage U_S is used internally as the auxiliary supply.
If it is not present, the terminal will not operate properly.
Make sure that the supply voltage U_S is available.

NOTICE **Malfunction**

Supply the sensors and U_S from the same power supply.

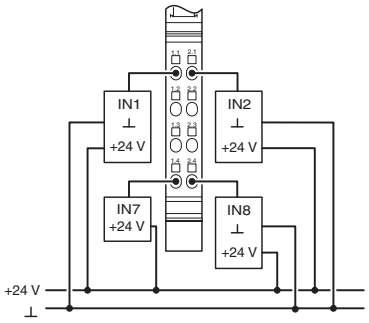
The simplest way to meet this requirement is to use the R-IB IL PD 24V-PAC terminal. Wire the 24 V sensor connections to this terminal. In this way, they are supplied from the potential jumper U_S of the Inline station.

Fig. 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.

Fig. 4 Example of a connection of sensors when using external busbars



9 Application examples

Fig. 5 Connection of sensors when using the R-IB IL PD 24V-PAC terminal

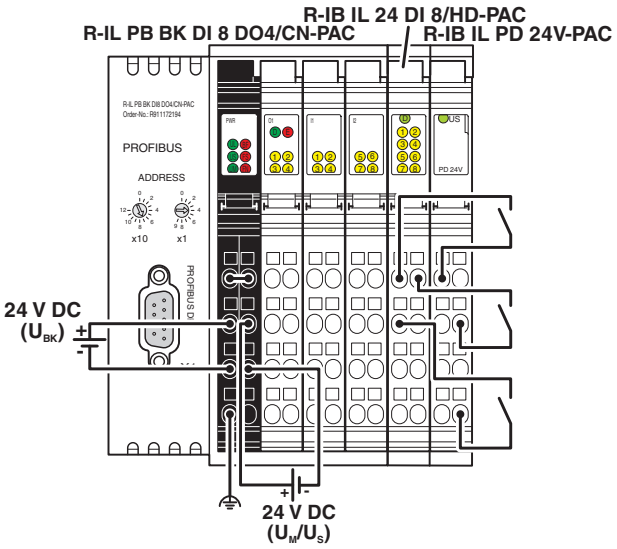
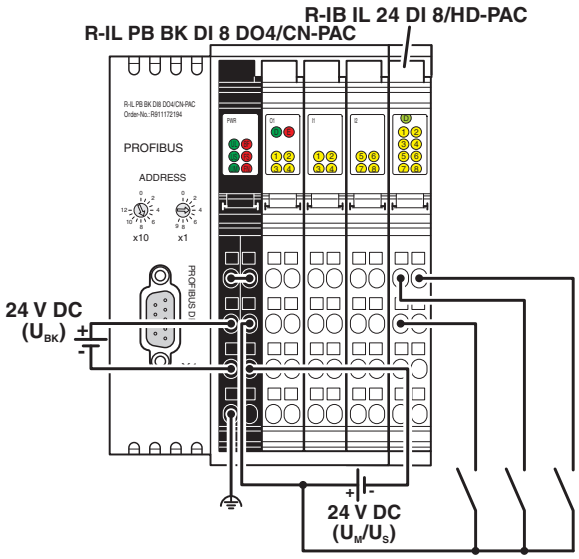
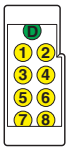


Fig. 6 Connection of sensors when using external busbars



10 Local diagnostic and status indicators

Fig. 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

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

DOK-CONTRL-IL24DI8*HD*-DA02-EN-P

Bosch Rexroth AG
Bgm.-Dr.-Nebel-Str. 2
97816 Lohr a.Main
Germany
Tel. +49 9352 18 0
Fax +49 9352 18 8400
www.boschrexroth.com/electrics

8048_en_01