

# Rexroth Inline power terminal ( $U_S$ , $U_M$ )/boost terminal ( $U_L$ , $U_{ANA}$ )

**R911170478**  
 Edition 02

## Data sheet R-IB IL 24 PWR IN/R/(CN)-PAC

24 V DC

03 / 2016



## 1 Description

The terminal is designed for use within an Inline station.

If the maximum load of the bus coupler for the communications power ( $U_L$ ) or the supply voltage for the analog terminals ( $U_{ANA}$ ) is reached, this terminal can be used to provide these voltages again.

To this end, a 24 V DC voltage ( $U_{24V}$ ) is applied to the terminal from which the communications power ( $U_L$ ) and the supply voltage for the analog terminals ( $U_{ANA}$ ) is generated.

The terminal also allows the 24 V DC main voltage ( $U_M$ ) and the 24 V DC segment voltage ( $U_S$ ) to be supplied.

### Features

- Supply of all 24 V voltages required for the low-level signal of an Inline station
- Diagnostic indicators



This terminal does not have a protocol chip and, therefore, is not a bus device.



This data sheet is only valid in association with the "Automation terminals of the Rexroth Inline product range" application description (DOK-CONTRL-ILSYS-INS\*\*\*-AW..-EN-P, MNR R911317021).



Make sure you always use the latest documentation.

It can be downloaded under [www.boschrexroth.com/electrics](http://www.boschrexroth.com/electrics).

**2 Table of contents**

1	Description .....	1
2	Table of contents .....	2
3	Ordering data .....	3
4	Technical data .....	3
5	Electrical isolation/isolation of the voltage areas.....	5
6	Internal circuit diagram .....	6
7	Terminal point assignment.....	7
8	Local diagnostic indicators .....	9
9	Connection example.....	9

### 3 Ordering data

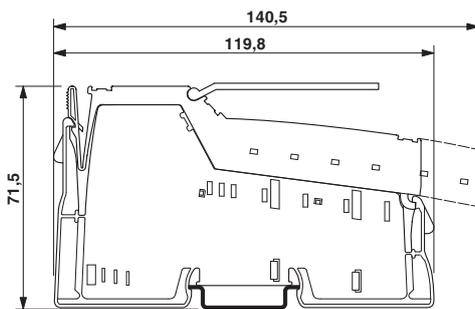
Description	Type	MNR	Pcs./Pkt.
Rexroth Inline power terminal ( $U_S$ , $U_M$ )/boost terminal ( $U_L$ , $U_{ANA}$ ), complete with accessories (connectors and marking fields)	R-IB IL 24 PWR IN/R-PAC	R911170446	1
Rexroth Inline power terminal ( $U_S$ , $U_M$ )/boost terminal ( $U_L$ , $U_{ANA}$ ), complete with accessories (connectors and marking fields); connectors are consecutively numbered	R-IB IL 24 PWR IN/R/CN-PAC	R911173924	1
Documentation	Type	MNR	Pcs./Pkt.
Application description	DOK-CONTRL-ILSYSINS***-	R911317021	1
Automation terminals of the Rexroth Inline product range	AW..-EN-P		

#### Additional ordering data

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

### 4 Technical data

#### Dimensions (nominal sizes in mm)



Width	48.8 mm
Height	119.8 mm
Depth	71.5 mm

#### General data

Color	green
Weight	192 g (with connectors)
Mounting type	DIN rail
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**

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
Stripping length	8 mm

**Interface Inline local bus**

Connection method	Inline data jumper
Transmission speed	500 kBit/s (can be used in Inline stations with this transmission speed)

**Power consumption****NOTICE Electronics may be damaged when overloaded**

Provide external fuses for each 24 V area.

The power supply unit must be able to supply four times the nominal current of the external fuse, to ensure that it blows in the event of an error.



When supply voltages  $U_M/U_S$  are supplied separately from the supply voltage  $U_{24V}$ , they are electrically isolated from one another. This is only ensured if two separate power supply units are used.

24 V supply ( $U_{24V}$ ) for generating $U_L$ and $U_{ANA}$	24 V DC
Supply voltage range $U_{24V}$	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Current consumption	min. 12 mA DC (from $U_{24V}$ , at nominal voltage) max. 1.25 A DC (from $U_{24V}$ , at nominal voltage; consisting of: 0.75 A DC for the communications power and 0.5 A DC for the analog voltage supply)
Main circuit supply $U_M$	24 V DC
Supply voltage range $U_M$	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Power supply at $U_M$	max. 8 A (Sum of $U_M + U_S$ ; 4 A, maximum, when used in potentially explosive areas.)
Segment circuit supply $U_S$	24 V DC
Supply voltage range $U_S$	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Power supply at $U_S$	max. 8 A DC (Sum of $U_M + U_S$ ; 4 A, maximum, when used in potentially explosive areas.)
Communications power $U_L$	7.5 V DC $\pm 5\%$ (via voltage jumper)
Power supply at $U_L$	max. 2 A DC
I/O supply voltage $U_{ANA}$	24 V DC
Supply voltage range $U_{ANA}$	19.2 V DC ... 30 V DC (including all tolerances, including ripple)
Power supply at $U_{ANA}$	max. 0.5 A DC

**Power dissipation**

Power dissipation	max. 2.55 W (entire device)
-------------------	-----------------------------

**Configuration and parameter data in a PROFIBUS system**

Required parameter data	0 Byte
Need for configuration data	0 Byte

Electrical isolation/isolation of the voltage areas	
Test section	Test voltage
7.5 V logics supply, 24 V analog supply/functional earth ground	500 V AC , 50 Hz , 1 min.
7.5 V logics supply, 24 V analog supply, 24 V main supply, 24 V segment supply	500 V AC , 50 Hz , 1 min.
24 V main supply, 24 V segment supply / functional earth ground	500 V AC , 50 Hz , 1 min.

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

None

Protective circuit	
Polarity reversal (segment supply/main supply)	Parallel diodes for protection against polarity reversal; in the event of an error the high current flowing through the diodes causes the fuse connected upstream to blow.
Polarity reversal (24 V supply)	Serial diode in the lead path of the power supply unit; in the event of an error only a low current flows. In the event of an error, no fuse trips within the external power supply unit. If you want to protect the 24 V supply, use a 2 A medium-blow fuse.

**Approvals**

For the latest approvals, please visit [www.boschrexroth.com/electrics](http://www.boschrexroth.com/electrics).

## 5 Electrical isolation/isolation of the voltage areas

Common potentials	
When providing the 24 V supply for generating $U_L$ and $U_{ANA}$ separately from the 24 V main supply/24 V segment supply	Main and segment supply have the same potential. From the power terminal onwards, common ground is led through the potential jumper to the devices as reference ground GND.
	24 V supply for generating $U_L$ and $U_{ANA}$ , 24 V analog supply $U_{ANA}$ , and 7.5 V communications power $U_L$ have the same potential. From the bus coupler onwards, common ground is led through the potential jumper to the devices as the reference ground "Logical GND" ( $U_L-$ ).
When providing the 24 V supply for generating $U_L$ and $U_{ANA}$ by jumpering the 24 V main supply/24 V segment supply	Main supply, segment supply, 24 V analog supply, and 7.5 V communications power have the same potential. From the power terminal onwards, common ground is led through the potential jumper to the devices as the reference ground "Logical GND" ( $U_L-$ ) for the communications power and analog supply and separately as reference ground GND for the supply and segment level.
Separate potentials	
When providing the 24 V supply for generating $U_L$ and $U_{ANA}$ separately from the 24 V main supply/24 V segment supply	The 24 V supply for generating $U_L$ and $U_{ANA}$ is physically and therefore electrically isolated from the main supply and the segment supply.
When providing the 24 V supply for generating $U_L$ and $U_{ANA}$ by jumpering the 24 V main supply/24 V segment supply	None

## 6 Internal circuit diagram

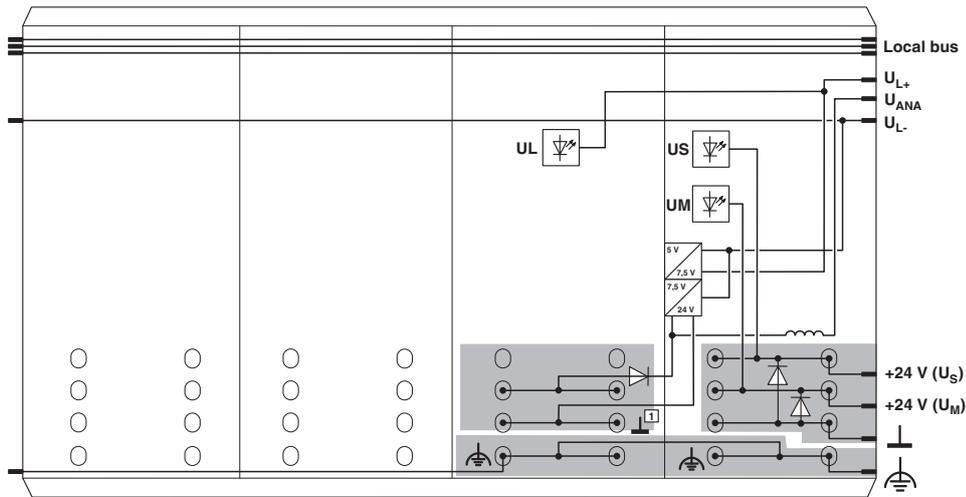


Fig. 1 Internal wiring of the terminal points

Key:



LED



Electrically isolated area



Power supply unit



Diode



Reference potential GND (24 V supply)



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

## 7 Terminal point assignment

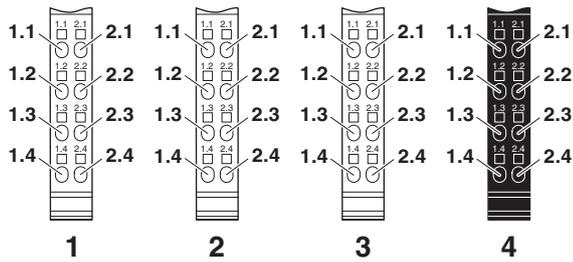


Fig. 2 R-IB IL 24 PWR IN/R-PAC terminal point assignment

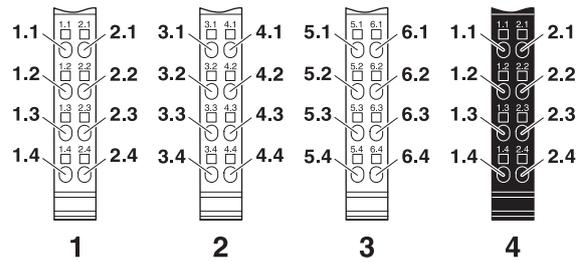


Fig. 3 R-IB IL 24 PWR IN/R/CN-PAC terminal point assignment

Terminal point		Designation	Assignment	
<b>R-IB IL 24 PWR IN/R-PAC</b>	<b>R-IB IL 24 PWR IN/R/CN-PAC</b>			
<b>Connector 1</b>		<b>Not used</b>		
<b>Connector 2</b>		<b>Not used</b>		
<b>Connector 3</b>		<b>Voltage supply for generating the communications power and analog voltage</b>		
1.1, 2.1	5.1, 6.1	Not used		
1.2, 2.2	5.2, 6.2	24 V DC	For generating $U_L$ and $U_{ANA}$	
1.3, 2.3	5.3, 6.3	GND	Ground	Ground of the 24 V supply
1.4, 2.4	5.4, 6.4	FE	Functional earth ground	Functional earth ground of the power terminal and, therefore, of the Inline station. The contacts are directly connected to the potential jumper and the FE spring on the bottom of the housing.
<b>Connector 4</b>		<b>Voltage supply for the main circuit and segment circuit</b>		
1.1, 2.1	1.1, 2.1	24 V DC	$U_S$	24 V supply for segment circuit
1.2, 2.2	1.2, 2.2	24 V DC	$U_M$	24 V supply for main circuit
1.3, 2.3	1.3, 2.3	GND	Reference potential of the I/O supply	The reference potential is routed directly to the potential jumper and simultaneously functions as reference ground for the main and segment supplies.
1.4, 2.4	1.4, 2.4	FE	Functional earth ground	Functional earth ground of the power terminal and, therefore, of the Inline station. The contacts are directly connected to the potential jumper and the FE spring on the bottom of the housing.



Functional earth ground is only used to discharge interference.

**NOTICE Electronics may be damaged when overloaded**

Ensure that the maximum permissible current of 8 A flowing through potential jumpers  $U_M$  and  $U_S$  (total current) is not exceeded.

**NOTICE Malfunction**

Connect the power terminal to the functional earth ground (FE) via one of the FE connections of connector 3 or connector 4. To do so, connect the corresponding contact to a grounding terminal block.

**24 V segment supply/24 V main supply**

The segment supply and main supply must have the same reference potential. Therefore, an electrically isolated voltage area on the I/O side cannot be created.

The main supply and the segment supply are protected against polarity reversal and transient overvoltage.

**NOTICE Module can become damaged**

The main supply and segment supply do not have short-circuit protection.

The user must provide short-circuit protection. Measure the rating of the fuse connected upstream such that the maximum permissible load current is not exceeded.

**24 V supply for generating  $U_L$  and  $U_{ANA}$** 

The 24 V supply has protection against polarity reversal and transient overvoltage. These protective elements are only used to protect the power supply unit.

**NOTICE Module can become damaged**

The 24 V supply does not have short-circuit protection.

The user must provide short-circuit protection. Measure the rating of the fuse connected upstream such that the maximum permissible load current is not exceeded.

**24 V segment supply**

You can provide the segment voltage at this terminal or one of the supply terminals.

There are several ways of providing the segment voltage at the terminal (connector 4):

1. The segment voltage can be supplied separately at terminal points 1.1 (or 2.1) and 1.3 (or 2.3) (GND) of the power connector.
2. Connections 1.1 (or 2.1) and 1.2 (or 2.2) can be jumpered to tap the supply for the segment circuit from the main circuit.
3. A switch can be inserted between terminal points 1.1 (or 2.1) and 1.2 (or 2.2) to create a switched segment circuit (e.g., an emergency stop circuit).

### 8 Local diagnostic indicators

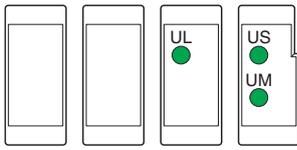


Fig. 4 Local diagnostic indicators

LED	Color	Meaning
UL	Green	7.5 V communications power
US	Green	24 V supply for segment circuit
UM	Green	24 V supply for main circuit

#### Function identification

Black

### 9 Connection example

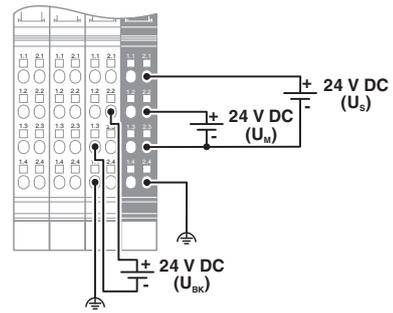


Fig. 5 Typical connection of the supply voltage