CompactRIO PROFIBUS DP

Installation Instructions

V1.7/23.02.2017

Revision History

Version	Date	Description	Resp.
V1.7	23.02.2017	KUNBUS branding	JK, AME
V1.6	03.03.2010	Minor Fixes	SF
V1.5	16.02.2010	National Instruments specific changes	SF, JK
V1.4	23.09.2009	Technical data table updated	SF
V1.3	07.05.2009	Technical data table updated	BS
V1.2	28.04.2009	Technical data table updated	SF
V1.1	20.08.2008	Technical data table updated	JK
V1.0	21.02.2008	Initial Version	

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1 Installation of the Module

The cRIO PB module is a PROFIBUS DP Master/Slave module for National Instruments CompactRIO, Single-Board RIO systems. The configuration entirely takes place by means of the delivered software. Thus, no jumpers or DIP-switch adjustments are necessary.

To mount the module in the CompactRIO or Single-Board RIO proceed as follows:

- Switch off the CompactRIO or Single-Board RIO
- Plug the cRIO PB module into slot 1 until it snaps in.
  Pay attention to a proper adjustment of the board in the guidance (avoid canting !).

Important note: *The CompactRIO PROFIBUS DP modules require 2.5 W of power, so you must use it in Slot 1 while leaving Slot 2 empty.*

Important note: *The CompactRIO PROFIBUS DP modules is supported only in CompactRIO reconfigurable chassis, such as an NI cRIO-911x, and NI Single-Board RIO devices.*

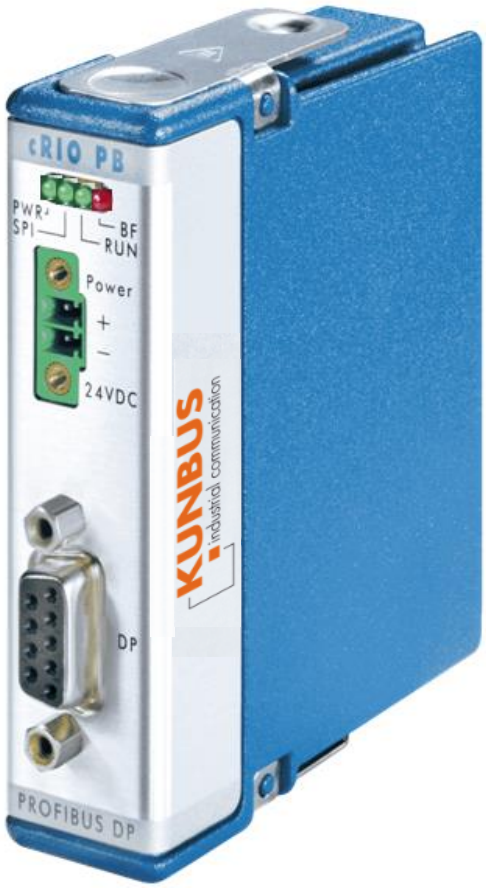

Figure 1: cRIO PB module

2 LEDs and Connectors

2.1 Position of LEDs and Connectors

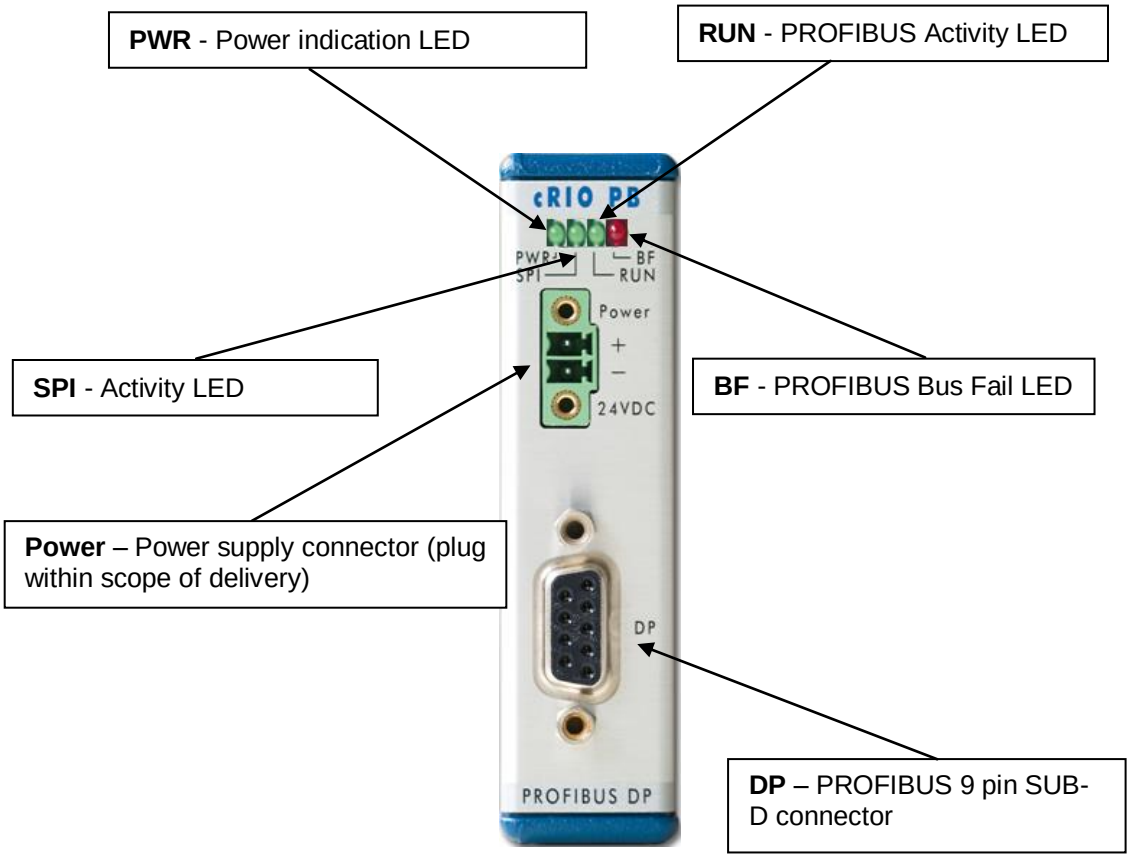

Figure 2: LEDs and connectors

2.2 LED's

LED	Colour	State	Function
PWR	Green	OFF	No power supply connected
		ON	Power supply connected
SPI	Green	OFF	SPI bus not active
		ON	SPI bus active
RUN	Green		
			Operation as DP-Master
		OFF	Scanning not activated
		ON	Scanning activated
			Operation as DP-Slave
		OFF	DP Slave not active
		ON	DP Slave initialized
		Flash fast	DP Slave (AutoSlaveMode) waits for a DP Master to communicate
		Flash slow	DP Slave (AutoSlaveMode) baud rate detection active
BF	Red		
			Operation as DP-Master
		OFF	PROFIBUS OK
		ON	PROFIBUS Bus Fail
			Possible reasons:
			Configuration error
			Non responding DP-Slave
			Operation as DP-Slave
		OFF	Data exchange O.K
		ON	No data exchange with DP Master
			Possible reasons:
			Configuration error
			DP Master not active
			DP Master gone
			Watchdog expired
		Flash fast	DP Slave (AutoSlaveMode) waits for a DP Master to communicate
		Flash slow	DP Slave (AutoSlaveMode) baud rate detection active

Table 1: Meaning of the LEDs

2.3 Power connector

Parameter	Value
Nominal value	24 Volts DC
Input range	11 – 30 Volts DC
Power consumption	2.5 W in Active mode (Receiving and Transmitting)

Table 2: Power requirements

2.4 9 pin SUB D connector

Pin Number	Signal	Function	Direction
1	-	shielding	
3	RxD/TxD-P	Data+	Input/Output
5	0V (potential free 80 mA)	Feeding of bus terminator	Input
6	5V (potential free 80 mA)	Feeding of bus terminator	Output
8	RxD/TxD-N	Data-	Input/Output

Table 3: Pin Assignment 9 pin SUB D connector

Remark: To assure correct operation of the PROFIBUS, a terminating resistor must be mounted at each bus end.

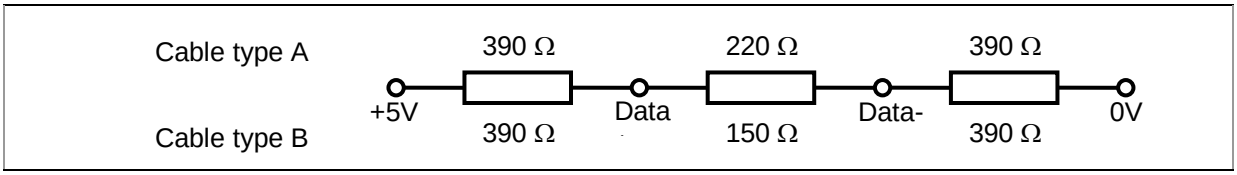

Figure 3: Profibus-Terminator (cable type B is no longer used)

3 Technical Data

Processor	ARM 9 at 150 MHz
Profibus Controller	ASPC2 at 48 MHz
Memory	32 Mbyte SRAM 4 Mbyte Flash Type Memory
SPI Interface	SPI Slave up to 4 Mbit/s
Profibus Interface	1 Port (Sub-D 9 pins)
Interface Physics	RS485 (isolated)
Profibus Data Rates	9600 Bit/s – 12000 Kbit/s
Data Size of Process Image	max. 8 KByte
PROFIBUS Isolation Voltage	500 VDC
Power Requirements	2.5 W Active Mode (Transmitting and Receiving)
Storage Temperature Range	-25 °C – +70 °C
Ambient Temperature Range	0 °C – +50 °C
Weight	0,16 KG
RoHS	Compliant 2002/95/EC
Certification	DIN EN 55024, issue 2003-10 DIN EN 55022, issue 2007-04

Table 4: Technical Data

3.1 Use in hazardous locations

The module is only suitable for use in **nonhazardous** locations.

4 CE- Conformity Declaration

We herewith declare that the CompactRIO Module

cRIO PB

corresponds to the requirements stated in the
EU standards 2004/108/EG.

The device corresponds to the following standards:

DIN EN 55024, issue 2003-10

DIN EN 55022, issue 2007-04

Manufacturer:
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