



cRIO PN – C SERIES Module for PROFINET IO Slave

Installation Instructions

V0.3/12.05.2017

Revision History

Version	Date	Description	Resp.
V0.3	12.05.2017	Changed to Kunbus corporate Identity	AME
V0.2	10.06.2015	Ambient temperature changed to 0 - +50°C	JK
V0.1	03.02.2011	Initial Version	JK

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Contents

1	Safety information.....	1
2	Installation of the Module	2
3	LEDs and Connectors.....	3
3.1	Position of LEDs and Connectors	3
3.2	LED's.....	4
3.3	Power connector.....	4
4	Technical Data.....	5
4.1	Use in hazardous locations.....	5
5	CE- Conformity Declaration	6

List of Figures

Figure 1: cRIO PN module	2
Figure 2: LEDs and connectors	3

List of Tables

Table 1: Meaning of the LEDs.....	4
Table 2: Power requirements	4
Table 3: Technical Data	5

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1 Safety information



WARNING: Disregarding this warning may result in damage to equipment and/or serious personal injury. Only qualified personnel may start up and operate this device. According to the safety instructions in this text, qualified personnel are persons who are authorized to start up, to ground, and to mark devices, systems, and equipment according to the standards of safety technology. In addition, these persons must be familiar with all warning instructions and maintenance measures in this text.



WARNING: The cRIO PN is designed exclusively for PELV operation according to EN 60950/EN 60204/VDE 0805-1. Only protective extra-low voltages according to the defined standards may be used to supply.

**Shielding**

The shielding ground of the connected twisted pair cables is electrically connected to the female connector. When connecting network segments, avoid ground loops, potential transfers, and voltage equalization currents via the braided shield.

**NOTE: Electrostatic discharge!**

The device contains components that can be damaged or destroyed by electrostatic discharge. When handling the device, observe the necessary safety precautions against electrostatic discharge (ESD), in accordance with EN 61340-5-1 and EN 61340-5-2, as well as IEC 61340-5-1 and IEC 61340-5-2.

**Housing**

Only staff authorized by **KUNBUS** is permitted to open the housing.

2 Installation of the Module

The cRIO PN module is a PROFINET IO Device module for National Instruments CompactRIO system. 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 system, please proceed as follows:

- Switch off the CompactRIO system
- Plug the cRIO PN 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 cRIO PN module requires 1.7 W of power, so you must use it in Slot 1 while leaving Slot 2 empty.

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



Figure 1: cRIO PN module

3 LEDs and Connectors

3.1 Position of LEDs and Connectors

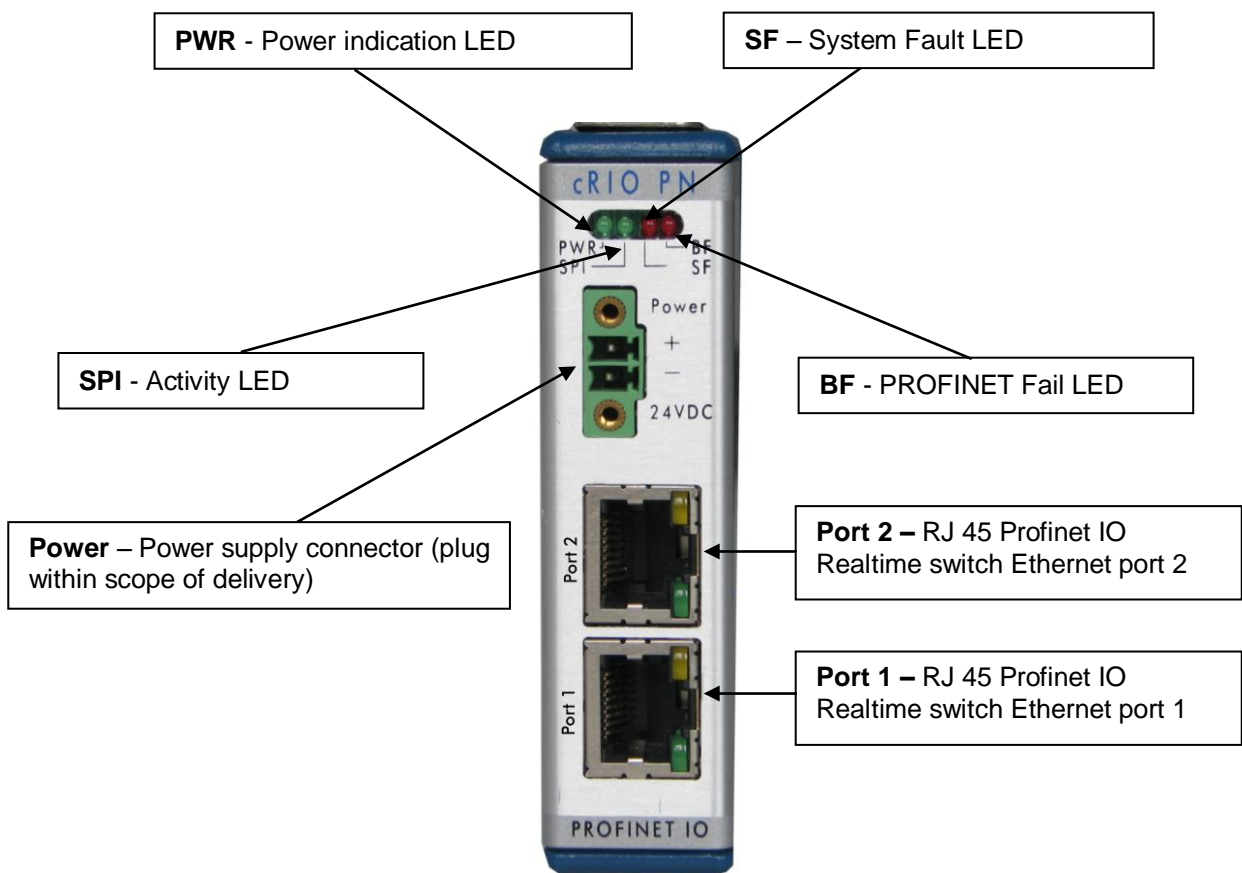


Figure 2: LEDs and connectors

3.2 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
SF	Red	OFF	No system fault active
		ON	System fault active
			Possible reasons:
			SPI bus failure
		PROFINET Alarm active	
BF	Red	OFF	PROFINET O.K
		ON	PROFINET Bus fail
			Possible reasons:
			Configuration error
			PROFINET controller not active
			PROFINET controller gone
		PROFINET controller not connected	

Table 1: Meaning of the LEDs

3.3 Power connector

Parameter	Value
Nominal value	24 Volts DC
Input range	12 – 36 Volts DC
Power consumption	1.7 W in Active mode (Receiving and Transmitting)

Table 2: Power requirements

4 Technical Data

Parameter	Value
Functionality	PROFINET IO Device
	LLDP supported
	SNMP MIB2 Physical Device
	Max. 254 bytes input and 254 bytes output data
	16 PROFINET IO slots supported
	Min. 1 mS cycle time with RT
	Min. 250 uS cycle time with IRT
	Acyclic communication Read/Write Record with max. 256 Bytes
	Supported alarm types: Process Alarm, Diagnostic Alarm, Plug Alarm, Pull Alarm
PN IO Conformance classes	NRT, RT, IRT
Processor	ARM 9 at 150 MHz
Memory	32 Mbyte SRAM 4 Mbyte Flash Type Memory
SPI Interface	SPI Slave up to 4 MBit/s
Ethernet interface	2 Port PROFINET IO Realtime switch
Ethernet Connection Format	8-pin RJ45-female connector
Ethernet Connection medium	Twisted pair cable with a conductor cross-section of 0,14 mm ² ..0,22 mm ²
Ethernet Cable impedance	100 Ω
Ethernet Transmission speed	100 MBit/s
Ethernet max. network segment expansion	100 m
Ethernet Function	100 Base-T(X)
Power Requirements	1.7 W Active Mode (Transmitting and Receiving)
Storage Temperature Range	-40 °C – +85 °C
Ambient Temperature Range	0 °C – +50 °C

Table 3: Technical Data

4.1 Use in hazardous locations

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

PROFINET IO with 100 MBit/s may not be used in hazardous locations.

5 CE- Conformity Declaration



EC Declaration of Conformity

We herewith declare that the product

cRIO PN

complies with the requirements laid down in the Directives and/or Regulations listed overleaf.

1. The object of this declaration is the product as described in section II.
2. The assessment of compliance of this product with regulations identified in section III has been carried out in accordance with procedures defined in section VI.

This declaration is issued under the sole responsibility of KUNBUS GmbH. I declare on behalf of the Management of KUNBUS GmbH that the product described in section II has been assessed to

- meet the essential requirements of the regulatory provisions identified in section III, and
- considered in isolation, conform with the harmonized and other standards identified in section IV, and
- therefore, can be labelled with the CE mark.


(Joachim Kurpat, Head of Product Management)

Ettlingen, this 02.01.2017

ID: DoC-cRIO-PN-0117-RoHS

page 1 of 3

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CRIO PN – EC DECLARATION OF CONFORMITY

I. MANUFACTURER

Name: KUNBUS GmbH
Address: Heerweg 15C
73770 Denkendorf
Germany

II. DESCRIPTION OF THE PRODUCT

Product: cRIO PN

III. REGULATION REFERENCES

- European Requirements:**
- Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility
 - Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
 - Commission Delegated Directive 2012/50/EU of 10 October 2012 amending, for the purposes of adapting to technical progress, Annex III to Directive 2011/65/EU of the European Parliament and of the Council as regards an exemption for applications containing lead
 - Commission Delegated Directive 2012/51/EU of 10 October 2012 amending, for the purposes of adapting to technical progress, Annex III to Directive 2011/65/EU of the European Parliament and of the Council as regards an exemption for applications containing cadmium

IV. MEANS OF COMPLIANCE

- Harmonized Standards:**
- EN 55022:2006 + A1:2007
 - EN 55024:1998+A1:2001 + A2:2003
 - EN 50581:2012
- International Standards:**
- n/a
- National Standards:**
- none applied

page 2 of 3

CRIO PN – EC DECLARATION OF CONFORMITY

V. STATEMENT TO THE USE OF RESTRICTED SUBSTANCES

The product cRIO PN is in conformance with the requirements laid down in the EC Directive 2011/65/EU (RoHS Directive) Articles 4 and 7.

The directive restricts the use of the six substances specified in its Annex II and listed at right up to the maximum concentration values by weight of homogeneous materials:	• Lead (Pb)	0.1%
	• Mercury (Hg)	0.1%
	• Cadmium (Cd)	0.01%
	• Hexavalent Chromium (Cr6+)	0.1%
	• Polybrominated Biphenyls (PBB)	0.1%
	• Polybrominated Diphenyl Ethers (PBDE)	0.1%
Applications exempted in line with Annex III	• None	

VI. DESCRIPTION OF THE ASSESSMENT PROCEDURE

- Role of the Manufacturer:**
- The manufacturer was responsible for the conception, design and manufacturing of the cRIO PN laid down in the necessary documents, drawings and schemes. The compliance of the constituent with the requirements listed in section III has been examined by means of assessment and, if applicable, measurements using equipment suitable for this purpose.
- Assessment Module(s) used:**
- The Assessment of Conformance has been performed in accordance with Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products.
 - Module A has been chosen for the assessment.

If applicable:

Accredited Test Lab:

MECTRONIC Prüflabor GmbH
Werner-von-Siemens-Str. 2
64319 Pfungstadt / Germany
Accreditation ID: DAT-P-218/06-00

Nemko GmbH & Co. KG
Reetzstr. 5B
76327 Pfinztal / Germany
Accreditation ID: DGA-PL-203/05-01

Role of the Test Lab:

The Test Lab performed all measurements necessary to state conformance with the EMC directive 2004/108/EG. The results are recorded in test reports P072562 dated 15.10.2007 and FS-1301-230784 dated 22.02.2013. The changes of the DIN EN 55024: 2003-10 and DIN EN 55022: 2007-04 are minor changes in the test and measurement setup and will not affect the test results.

page 3 of 3

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