



# **VME NIX-I Crate**

---

## **User's Manual**

## General Remarks

The only purpose of this manual is a description of the product. It must not be interpreted as a declaration of conformity for this product including the product and software.

**W-IE-Ne-R** revises this product and manual without notice. Differences of the description in manual and product are possible.

**W-IE-Ne-R** excludes completely any liability for loss of profits, loss of business, loss of use or data, interrupt of business, or for indirect, special incidental, or consequential damages of any kind, even if **W-IE-Ne-R** has been advised of the possibility of such damages arising from any defect or error in this manual or product.

Any use of the product which may influence health of human beings requires the express written permission of **W-IE-Ne-R**.

Products mentioned in this manual are mentioned for identification purposes only. Product names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies.

No part of this product, including the product and the software may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means with the express written permission of **W-IE-Ne-R**.

## Mains Voltage

The VME NIX-I Crate is equipped with a 115/230VAC 47 to 63Hz. mains input, internal selectable by a solder jumper,

Before connecting to the mains please double-check correspondence. The company settings are printed on the type sticker

## Safety

After connecting the NIX-I to the mains, the mains input module is permanent powered. Filter and storage capacitors are charged with more than **350VDC**. The power switch at front panel operates as a DC on/off switch only and not as a mains breaker. **Therefore it becomes dangerous if the power box cover has been removed. In this case a lot of components on high voltage potential get touchable!**

**Before starting every kind of work inside the power supply remove the NIX-I from mains and wait a couple of minutes with your activities!**

# Declaration of Conformity

Declaration de Conformité - Dichiarazione di Conformita – Konformitätserklärung

Art. 10.2 of 89/336 and 89/392 / ECC

**W-IE-NE-R**  
**Plein & Baus GmbH**

---

declare under our own responsibility that the product  
declarons sous notre seule responsabilité que le produit  
dichiariamo sotto nostra esclusiva Responsabilita´che il Prodotto  
erklärt in eigener Verantwortung, dass das Produkt

**VME – NIX-I crate**

**Item: 0306.x700, 0316.0070, 0406.1010 D**

to which this declaration relates, is in conformity with the following standards or normative documents :

auquel cette declaration se refait,est conforme aux normes ou aux autres documents normatifs:

al quale si riferisce la Dichiarazione, e´ in conformita´ alle Seguenti normative:

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten  
übereinstimmt:

1. EN 50 081 - 1
3. EN 50 082 – 2
4. EN 60 950

Conditions: Use in conformity of the definition in a closed rack and equipped with fully closed slots by front panels.

Bedingungen: Bestimmungsgemäßer Gebrauch im geschlossenen Schrank und alle Slots mit Frontplatten bestückt.

Name and signature of authorized person

Place and Date

Nome et signature du signataire autorisé

Lieu et date

Nome de Firma della Persona autorizzata

Luogo e Data

Name und Unterschrift des Befugten

Ort und Datum

Burscheid 23.12.1999

---

Dipl. Ing. Jürgen Baus  
Director

**Table of contents:**

1	Device description .....	4
1.1	Technical data .....	6
1.2	Fan tray, Operating Elements.....	7
	Switches .....	7
	LED's.....	8
1.3	Power Supply, .....	
2	CANbus and Temperature Sensors <b>Options</b> .....	8
2.1	Technical details of W-Ie-Ne-R - CANbus	8
2.2	Temperatur Measurement	10
3.	Backplane	10
3.1	Pin assignment of VME Backplane J1/J2	11
3.2	Current ratings allowable	12

## 1 Device description

The standard bin is equipped with a 21 slot J1-J2 VME- backplane.

The module cage mechanics are made alternatively with:

1. Transversal bars and Cern spec. front members for standard and Cern spec. VME modules.
2. IEEE front members and ESD module guides according to IEEE 1101.10/11

The NIX-I types are fit for front side modules of 6U x 160mm.

The whole crate is sufficient cooled by three blowers with  $>540\text{m}^3/\text{h}$  air flow, bottom air entry only.

**Optional** up to four temperature sensors can be placed in top above the inserted modules to watch the exhaust air temperature and therefore the fan tray, too. In case of exceeding one programmed temperature limit the power supply will trip off. This function needs the presence of the CANbus interface.

The EN 50 081 for generic emissions as well as the EN 50 082 for immunity standards, in particular EN 55 011 RFI rejection (incl. VDE 0871 class B) and EN 55 022 electromagnetic compatibility is accomplished. The insulation performs the EN 60 950, ISO 380, VDE 0805 (SELV)! Furthermore are considered UL 1950, UL 1012, UL 478, C22.2.950, C22.2.220/234.

Therefore the power supply of the VME NIX-I can fulfil the CE rules and will CE marked for use for industrial power nets.

## 1.1 Technical Data

Mains input request	98... 132VAC / 195... 260VAC 47- 63Hz, 47- 440Hz on request
Inrush current:	Voltage range selection by solder jumper limited by NTC soft start-circuit, max 30A (cold unit)
Isolation Inp.- outp.	<b>CE</b> EN 60950, ISO 380, VDE 0805, UL 1950, C22.2.950
Output:	5V 50A, +/-12V 2A 5V 100... 120A +/-12V 6... 10A 650W max.
Regulation static:	<25mV (+/-100% load, +/-15% mains)
12V:	<0,1% (+/-100% load, +/-15% mains)
dynamic :	<100mV (+/-25% load)
12V:	<0,7% (+/-25% load)
Recovery time +/-25% load:	within +/-1% within +/-0,1%
12V:	0,2ms 1,5ms, 0,0ms 1,0ms
Sense compensation range:	min. 0,5V, with full load
Noise and ripple:	< 30mVpp (0-20MHz ) 3mVrms (0-2MHz) on request below 10mVpp (0-20MHz)
<b>EMI</b>	
RFI-rejection (emission):	<b>CE</b> EN 50081-1 VDE 0871B
EMC (immunity):	<b>CE</b> EN 50082-2
Operation temperature:	0...50°C without derating (600W DC output)
Storage:	-30°C up to 85°C
Temp.-coefficient:	< 0,2% / 10K
Stability: (conditions const.)	10mV or 0,1% within 24 hours 50mV or 1,0% within 6 month
Current limits:	115% of rated current-values,
Overvoltage protection:	trip off adjusted to 125% of nominal voltage each output
DC Off (trip off):	within 5ms if >2% deviation from adjusted nominal values, after overload, overheat, overvoltage, undervoltage (bad status) temperatur limits 110°C heat sink, 70°C ambient, trip off points processor controlled
Optionally:	All power supply parameters and bin temperatures can be controlled by CANbus based on W-IE-NE-R CANtrol protocol
Efficiency:	75% - 80%
M T B F:	40°C ambient temperature: >65 000 h
Size:	including power supply, WHD: 19" x 7U x 320mm
Fan tray, Air flow	>540m <sup>3</sup> /h

**Option:** CANbus interface for Crate remote control. **W-IE-NE-R** CANtrol Protocol  
Additional temperature sensors for airflow control



**X 17 pin out**, power supply sensing and controlling

Pin	Signal	Pin	Signal
		Z4	n.c.
D6	n.c.	Z8	n.c.
<b>D10</b>	<b>Inhibit</b>	<b>Z12</b>	<b>ACfail</b>
D14	MAN SYS reset (not wired at bin side)	<b>Z16</b>	<b>SysReset</b>
<b>D18</b>	<b>Sysfail</b>	<b>Z20</b>	<b>5V sense</b>
<b>D22</b>	<b>+12V sense</b>	<b>Z24</b>	<b>0V sense 5V</b>
<b>D26</b>	<b>-12V sense</b>	Z28	
<b>D30</b>	<b>0V sense 12V</b>	Z32	

## 2 CAN bus interface and Temperature Sensors (optional)

By use of an **optionally** possible interface inside the VME NIX-I all important crate parameters can be monitored and the fan can be single controlled. The *CANbus* is designed to control up to 126 Crates (if 127 is reserved for common call).

Depending from the distance between the Minicrate and the host the transmission rate can be selected up to 1,6Mbit/s by use of a simple flat cable.

### 2.1 Technical details of W-IE-NE-R - CANbus

CAN controller type: P80C592 (CAN 2.0A protocol)  
 Physical Layer: differential according to ISO 11898  
 Transceiver: PCA82C250, opto-isolated, rise and fall slope control  
 CAN connector: X2, 9-pin DSUB (male) according to CiA DS 102-1

#### Pin out of x1

Pin	Line	Comment
1	-	reserved by CiA
2	CAN_L	CAN_L bus line (dominant low)
3	GND	Ground
4	-	reserved by CiA
5	-	reserved by CiA
6	-	
7	CAN_H	CAN_H bus line (dominant high)
8	-	reserved by CiA (failure signal)
9	-	

Protocol: CAN-Bus Interface for **W-IE-NE-R** Crate Remote Control

This protocol is described in a separate document  
 (Part No. \*00183.A0)

Can Bus Node Address: Selectable with the 2 hex-switches S1 (high) and S2 (low). Valid addresses are hex 00 (can bus disabled) to hex 7F (127).

Factory default address: 01

Baud rate:

The baud rate is selectable with the two switches S1 and S2:

1. Switch the high one (S1) to hex C (for config).
2. Then select the baud rate index with the low switch (S2)
3. Wait at least 5 seconds
4. Select your preferred can bus node address with the two switches.

Factory default baudrate: 1 Mbit/s

Index	Max. Distance	Bit Rate	Type
0	10 m	1.6 Mbit/s	high- speed (needs termination)
1	40 m	1.0 Mbit/s	
2	130 m	500 kbit/s	
3	270 m	250 kit/s	
4	530 m	125 kbit/s	
5	620 m	100 kbit/s	low-speed
6	1300 m	50 kbit/s	
7	3300 m	20 kbit/s	
8	6700 m	10 kbit/s	
9	10.000 m	5kbit/s	

## 2.2 Temperature Measurement

Connector X1, 9-pin DSUB (male) according to CiA DS 102-1  
 Sensor Types KTY81-110 (Pilips), TSP 102 (Texas)

Pin out of X2

Pin	Line	CAN Data (ID_Temp)
1	Sensor 1	Byte 4
2	Sensor 2	Byte 5
3	Sensor 3	Byte 6
4	Sensor 4	Byte 7
5	n.c.	
6	Sensor 1 Return	
7	Sensor 2 Return	
8	Sensor 3 Return	
9	Sensor 4 Return	

Optionally X2 connector has been used to monitor the voltages (5V and +/-12V). These signals are protected against short circuit by internal resistors: 56R for 5V and ground, 220R for 12V. On special request Op Amp outputs are available.

Pin out for voltage monitoring:

1- 6	5V-	5V Return
2- 7	12V-	12V Return
3- 8	-12V-	-12V Return

## 3 Backplane

The monolithic Backplane is an 8-layer version designed in stripline technology.

DC ground shift has been reduced to minimum by separate layers inside the board and an external current rails of 120mm<sup>2</sup>. Decoupling of the supply voltages has been disposed of a certain number of capacitors, electrolytics and ceramics.

The J1 connectors are equipped with robust mechanical automatic daisy chain switches.

### 3.1 Pin assignment of VME Backplane

<b>J1</b>				<b>J2</b>			
Pin No.	Row A	Row B	Row C	Pin No.	Row A	Row B	Row C
01	D00	BBSY*	D08	01	User defined	+5 VAC	User defined
02	D01	BCLR	D09	02	User defined	GND	User defined
03	D02	ACFAIL*	D10	03	User defined	RESERVED	User defined
04	D03	BG0IN*	D11	04	User defined	A24	User defined
05	D04	BG0OUT*	D12	05	User defined	A25	User defined
06	D05	BG1IN*	D13	06	User defined	A26	User defined
07	D06	BG1OUT*	D14	07	User defined	A27	User defined
08	D07	BG2IN*	D15	08	User defined	A28	User defined
09	GND	BG2OUT*	GND	09	User defined	A29	User defined
10	SYSCLK	BG1IN*	SYSFAIL*	10	User defined	A30	User defined
11	GND	BG3OUT*	BERR*	11	User defined	A31	User defined
12	DS1*	BR0*	SYSRESET*	12	User defined	GND	User defined
13	DS0*	BR1*	LWORD*	13	User defined	+5 VAC	User defined
14	WRITE*	BR2*	AM5	14	User defined	D16	User defined
15	GND	BR3*	A23	15	User defined	D17	User defined
16	DTACK*	AM0	A22	16	User defined	D18	User defined
17	GND	AM1	A21	17	User defined	D19	User defined
18	AS*	AM2	A20	18	User defined	D20	User defined
19	GND	AM3	A19	19	User defined	D21	User defined
20	IACK*	GND	A18	20	User defined	D22	User defined
21	IACKIN*	SERCLK	A17	21	User defined	D23	User defined
22	IAOUT*	SERDAT	A16	22	User defined	GND	User defined
23	AM4	GND	A15	23	User defined	D24	User defined
24	A07	IRQ7*	A14	24	User defined	D25	User defined
25	A06	IRQ6*	A13	25	User defined	D26	User defined
26	A05	IRQ5*	A12	26	User defined	D27	User defined
27	A04	IRQ4*	A11	27	User defined	D28	User defined
28	A03	IRQ3*	A10	28	User defined	D29	User defined
29	A02	IRQ2*	A09	29	User defined	D30	User defined
30	A01	IRQ1*	A08	30	User defined	D31	User defined
31	-12 VDC	+5V STDBY	+ 12 VDC	31	User defined	GND	User defined
32	+5 V DC	+ 5 V DC	+ 5 V DC	32	User defined	+ 5 VDC	User defined

**3.2 Current ratings allowable per slot (W-IE-NE-R- Backplanes)**

Power distribution each slot (20 / 70°C)	VME J1	VME J2	VME J1-J2
5V	9,5/7,5A	9,5/7,5A	19/15A
+/-12V	3,2/2,5A		3,2/2,5A
Layers	8	4	8
Type of ADC	mech		mech
Termination on board	passive	passive	passive
J2 with 160pin		optional	optional
Power Connections	Studs	Studs	Studs

**Listed current ratings are only valid if each other connector pin leads less than 100mA continuously**