



VME-PMC-CADDY

VME-Carrier Board for PMC-Modules



Hardware Manual

to Product V.1911.01,
V.1911.10,
V.1911.11



NOTE

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esd electronic system design gmbh
Vahrenwalder Str. 207
30165 Hannover
Germany

Phone: +49-511-372 98-0

Fax: +49-511-372 98-68

E-Mail: info@esd.eu

Internet: www.esd.eu



This manual contains important information and instructions on safe and efficient handling of the VME-PMC-CADDY. Carefully read this manual before commencing any work and follow the instructions.

The manual is a product component, please retain it for future use.

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Document History

The changes in the document listed below affect changes in the hardware as well as changes in the description of the facts, only.

Rev.	Chapter	Changes versus previous version	Date
1.9	-	Safety Instructions and Information and Classification of Warning messages inserted, Manual restructured	2016-10-24
	1.1	Description revised	
	1.2.1	Extended temperature range option deleted	
	1.2.2	New Chapter "VMEbus "	
	1.2.3	Standard corrected	
	2.	Notes inserted	
	2.2.1	Notice inserted	
	3.	Manufacturer of PCI-bridge component changed, link updated	
	4.	Chaptee "Front Panel with LEDs" moved	
	5.	New Chapter "Hardware Installation"	
	6.	Chapter "Connector Assignments" moved	
	7.	Chapter "Order Information" moved and revised	

Technical details are subject to change without further notice.

Classification of Warning Messages and Safety Instructions

This manual contains noticeable descriptions, warning messages and safety instructions, which you must follow to avoid personal injuries or death and property damage.



This is the safety alert symbol.

It is used to alert you to potential personal injury hazards. Obey all safety messages and instructions that follow this symbol to avoid possible injury or death.

DANGER, WARNING, CAUTION

Depending on the hazard level the signal words DANGER, WARNING or CAUTION are used to highlight safety instructions and warning messages. These messages may also include a warning relating to property damage.



DANGER

Danger statements indicate a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Warning statements indicate a hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION

Caution statements indicate a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

Notice statements are used to notify people on hazards that could result in things other than personal injury, like property damage.



NOTICE

This NOTICE statement indicates that the device contains components sensitive to electrostatic discharge.



NOTICE

This NOTICE statement contains the general mandatory sign and gives information that must be heeded and complied with for a safe use.

INFORMATION



INFORMATION

Notes to point out something important or useful.



Safety Instructions

- When working with the VME-PMC-CADDY follow the instructions below and read the manual carefully to protect yourself from injury and the VME-PMC-CADDY from damage.
- The device is a built-in component. It is essential to ensure that the device is mounted in a way that cannot lead to endangering or injury of persons or damage to objects.
- Do not use damaged or defective cables to connect the VME-PMC-CADDY.
- In case of damages to the device, which might affect safety, appropriate and immediate measures must be taken, that exclude an endangerment of persons and domestic animals and property.
- Current circuits which are connected to the device have to be sufficiently protected against hazardous voltage (SELV according to EN 60950-1).
- The VME-PMC-CADDY may only be driven by power supply current circuits, that are contact protected. A power supply, that provides a safety extra-low voltage (SELV) according to EN 60950-1, complies with this conditions.

- The device has to be securely installed in the control cabinet before commissioning.
- Protect the VME-PMC-CADDY from dust, moisture and steam.
- Protect the VME-PMC-CADDY from shocks and vibrations.
- The VME-PMC-CADDY may become warm during normal use. Always allow adequate ventilation around the VME-PMC-CADDY and use care when handling.
- Do not operate the VME-PMC-CADDY adjacent to heat sources and do not expose it to unnecessary thermal radiation. Ensure an ambient temperature as specified in the technical data.



DANGER

Hazardous Voltage - **Risk of electric shock** due to unintentional contact with uninsulated live parts with high voltages inside of the system into which the VME-PMC-CADDY is to be integrated.

- Disconnect all hazardous voltages (mains voltage) before opening the system.
- Ensure the absence of voltage before starting any electrical work



NOTICE

Electrostatic discharges may cause damage to electronic components.

To avoid this, perform the steps described on page 23 *before* you touch the VME-PMC-CADDY, in order to discharge the static electricity from your body.

Qualified Personal

This documentation is directed exclusively towards personal qualified in control and automation engineering. The installation and commissioning of the product may only be carried out by qualified personal, which is authorized to put devices, systems and electric circuits into operation according to the applicable national standards of safety engineering.

Conformity

The VME-PMC-CADDY is a sub-assembly intended for incorporation into an apparatus by a manufacturer and NOT by the end user. The manufacturer of the final system must decide, whether additional EMC or EMI protection requirements are necessary.

Intended Use

The intended use of the VME-PMC-CADDY is the operation as a carrier board for PMC modules in a VME-system. The guarantee given by esd does not cover damages which result from improper use, usage not in accordance with regulations or disregard of safety instructions and warnings.

- Use 5 V tolerant PMC boards only.
- The VME-PMC-CADDY is intended for installation in VMEbus systems only.
- The operation of the VME-PMC-CADDY in hazardous areas, or areas exposed to potentially explosive materials is not permitted.
- The operation of the VME-PMC-CADDY for medical purposes is prohibited.

Service Note

The VME-PMC-CADDY does not contain any parts that require maintenance by the user. The VME-PMC-CADDY does not require any manual configuration of the hardware. Unauthorized intervention in the device voids warranty claims.

Disposal

Devices which have become defective in the long run have to be disposed in an appropriate way or have to be returned to the manufacturer for proper disposal. Please, make a contribution to environmental protection.

Number Representation

All numbers in this document are base 10 unless designated otherwise. Hexadecimal numbers have a prefix of 0x. For example, 42 is represented as 0x2A in hexadecimal notation.

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1. Overview

1.1 Block Circuit Diagram

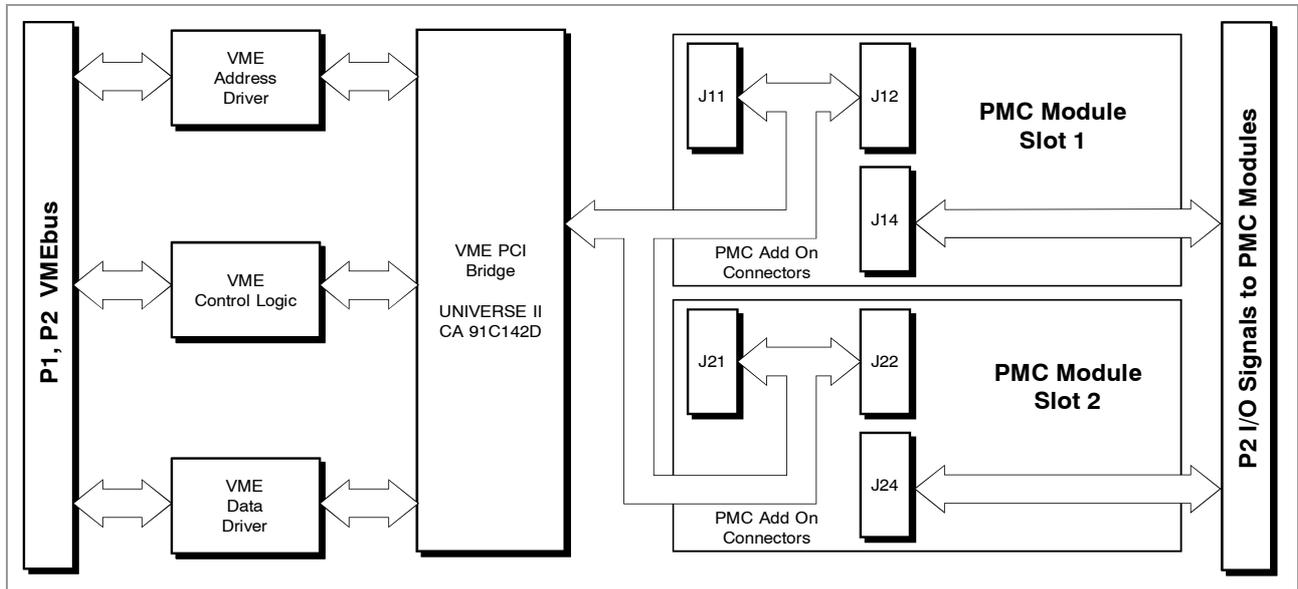


Figure 1: Block circuit diagram of VME-PMC-CADDY

The VMEbus unit VME-PMC-CADDY is a VME64-basis board which can carry up to two single-size PMC modules or one double-size module.

By means of the VME-PCI bridge UNIVERSE CA91C142 by IDT®, with an internal pulse rate of 33 MHz, the VME-PMC-CADDY is connected to the VMEbus.

By means of the design of the CA91C142 the board can either be operated as a slave or as a master on the VMEbus. As a master the board supports a 4-level arbiter. The VME-PMC-CADDY operates on the VMEbus with a data width of up to 32 bits and with 32 address signals. The VMEbus interrupt can be applied to any of the seven interrupt-request lines.

The board is connected to the VMEbus by two 160-pin VG-connectors according to IEC603-xx on VME64 extensions.

An active VMEbus interrupt request is indicated by a red LED and a VMEbus access to the board is indicated by a yellow LED in the front panel.

Both PMC plug-in units are designed according to the draft standard IEEE P1386/Draft 2.0 (except the standard I/O pin routing). It is possible therefore to insert all PMC modules which are on the market, that can handle 5 V signalling on PCI bus.

In addition to the connectors for the PMC address/data and control signals, every plug-in unit of the VME-PMC-CADDY has an I/O-connector which applies the I/O signals of the PMC modules to VMEbus connector P2.

Two different P2 pin assignments are available:

In the standard configuration each P2-pin is only connected to one I/O-pin of the PMC modules (acc. to PMC-Update of FORCETM, Table 1, Author: Wayne Fischer, Director of Strategic Programs CMC/PMC Working Groups Chair, 22.10.96).

In the option '-32P' the pin assignment is designed acc. to IEEE P1386/Draft 2.0, Table 6-3.

This pin assignment offers the connection of the two PMC-modules via P2, because several PMC-I/O-signals are shorted at P2.

The IRQ-mapping on the PCI-bus can be set via a coding switch. Closing the coding switch contacts connects the interrupt lines of the PMC-module in slot 1 with the interrupt lines of the PMC-module in slot 2.

The front panel of the VME-PMC-CADDY has two cut-outs for the front panels of the PMC-modules. A blank cover for unused positions is part of the product package.

1.2 Technical Data

1.2.1 General technical Data

Temperature range	max. permissible ambient temperature: 0...50 °C	
Humidity	max. 90%, non-condensing	
Connectors	P1, P2 -	160-pole VG-connectors in accordance with IEC 603-xx, according to VME64-Extension
	J11, J12, J21, J22	64-pole PMC-female connectors, PMC address/data
	J14, J24 -	64-pole PMC-female connectors, PMC I/O signals
	X400 -	male connector 1 x 6
	X430 -	male connector 1 x 8 (ISP-interface, only used for service)
PCB dimensions	160 mm x 233 mm	
Chassis dimensions	6 HE high / 4 TE wide	
Weight	ca. 250 g	
Component design	SMD	
Voltage supply	VMEbus P1, P2:	5 V 5% / ca. 1.2 A +12 V 5% (only at PMC-positions) -12 V 5% (only at PMC-positions)

Table 1: General technical Data

1.2.2 VMEbus

VMEbus standard	IEEE 1014 Rev. D master or slave functionality,
Addressing	A32, A24, A16
Data-transfer mode	D8, D16, D32
Base address	selectable via coding switch (no geographical addressing)
Address modifier	standard supervisory and non-privileged data access, extended supervisory and non-privileged data access, short supervisory and non-privileged access
VMEbus connector	160-pole VG connector (IEC 603-xx), acc. to VME64 extension standard
LEDs	VMEbus interrupt - red LED VMEbus access - yellow LED

Table 2: VMEbus data

1.2.3 PMC Positions

Standard	IEEE P1386 / Draft 2.0
Components	two single-size or one double-size module
VME-PCI bridge	UNIVERSE II, CA91C142D, configuration via coding switches
I/O-signals at P2	<p>standard: according to PMC-update of FORCE (table 1, author: Wayne Fischer, Director of Strategic Programs CMC/PMC Working Groups Chair, 22.10.96), i.e. J14 completely at rows a and c, J24 at rows d and z</p> <p>option '-32P2': according to IEEE P1386/Draft 2.0, table 6-3, i.e. J14 as above, parallel assignment by J24-pin 33...64, additionally J24 at rows d and z</p>
Signal Voltage Level	<p>5V</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>NOTICE 3.3V-PMC modules are only usable, if they are 5V-tolerant. PMC-modules with 3.3V-only signal voltage level are forbidden!</p> </div>
Voltage supply	<p>5 V: VMEbus-voltage supply via P1/P2</p> <p>3.3 V: via voltage control from 5 V of the VMEbus (each max. 1.5 A load current) or via option '-3.3P1' directly from VME64-P1</p>

Table 3: PMC positions

1.2.4 Software

Example libraries for initializing the board in C-Source-Code for VxWorks® and RTOS-UH are available for a fee on CD-ROM. An OS-9® driver is available for a fee, too. Drivers for further operating systems are available on request. Please state your operating system with the version number when you order.

2. PCB View, Coding Switches, Configuration Resistors

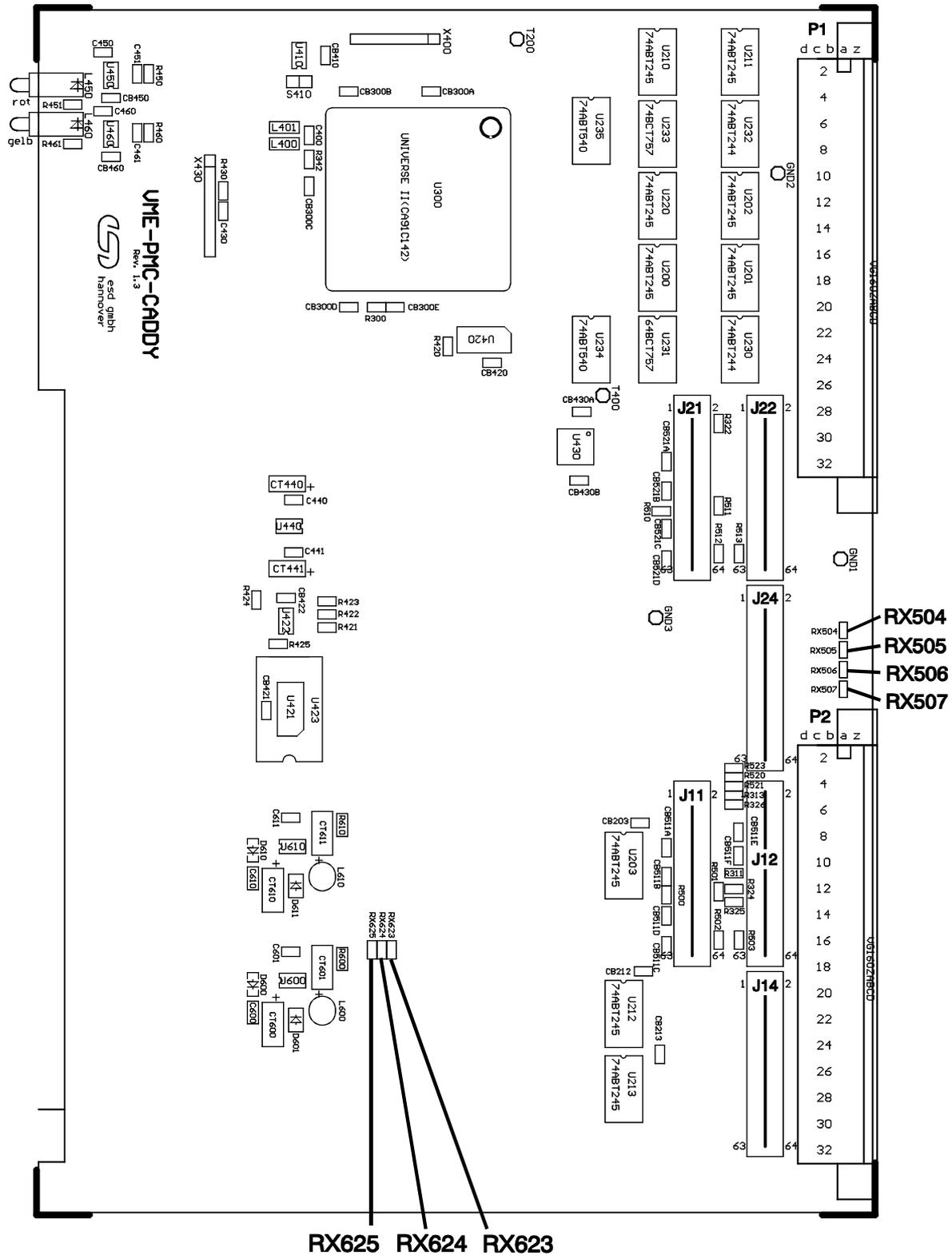


Figure 2: Position of connectors and configuration resistors on the VME-PMC-CADDY



NOTICE

Read chapter “Hardware Installation” on page 23, before you start with the installation of the hardware!

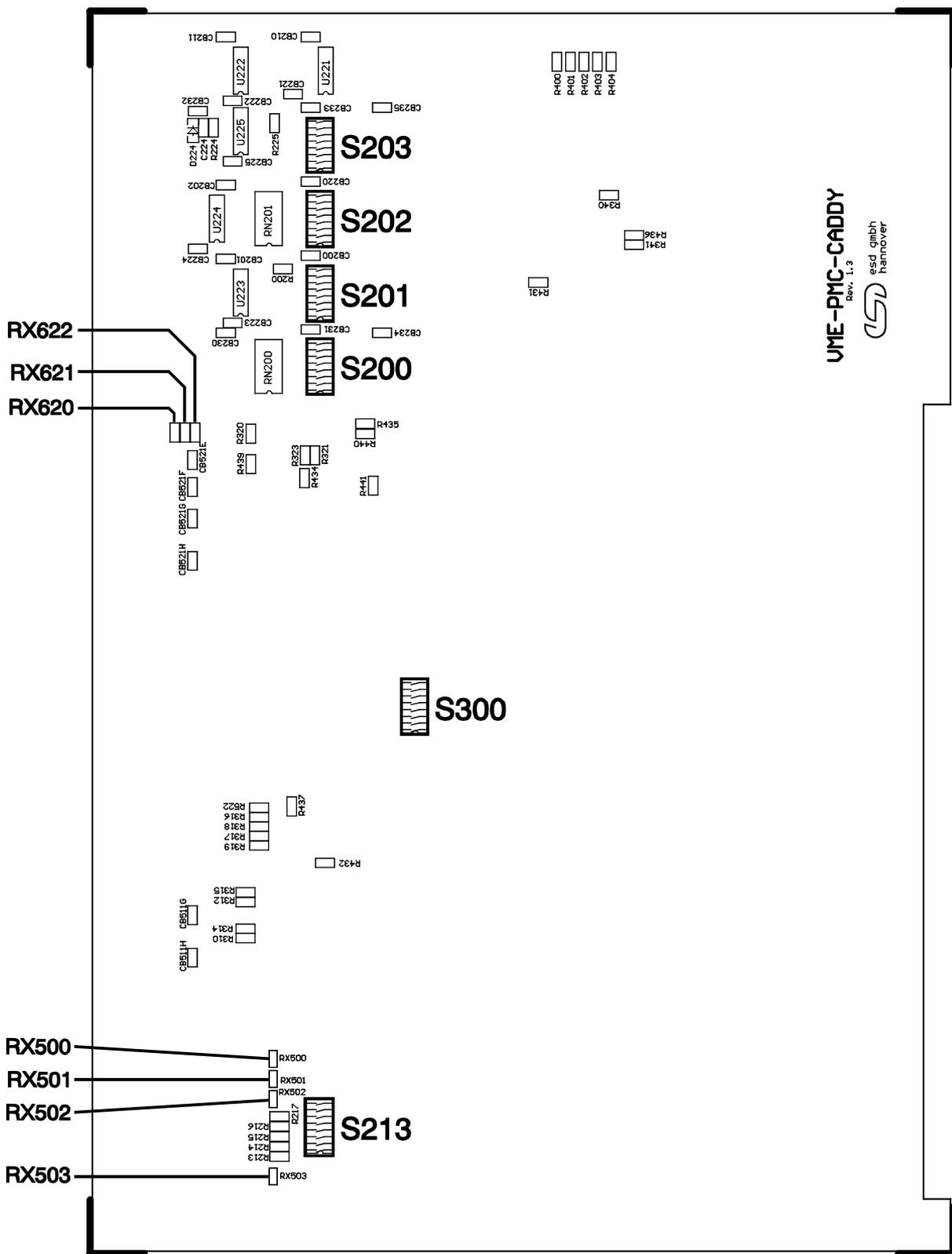


Figure 3: Position of coding switches and configuration resistors on the bottom layer of the PCB

See also from page 24 for signal assignment of the connectors.

2.1 Coding Switches

2.1.1 Default Setting of the Coding Switches

The respective default setting of the board is specified in the following table.

The position of the coding switches can be taken from figure 3. In the following descriptions the coding switches will be described as seen by the user when looking at the board with the VMEbus connectors to the left (bottom layer view).

Coding switches	Bit	Setting	Value	Description
S203	8	OFF	0	no evaluation
	7	ON	1	slave register: enabled
	6	OFF	0	address modifier for VMEbus access by VMEbus master set to A24-address area
	5	ON	1	
	4	OFF	0	VMEbus base address A23 = 0
	3	ON	1	VMEbus base address A22 = 1
	2	ON	1	VMEbus base address A21 = 1
S202	1	ON	1	VMEbus base address A20 = 1
	8	OFF	0	VMEbus base address A19 = 0
	7	OFF	0	VMEbus base address A18 = 0
	6	OFF	0	VMEbus base address A17 = 0
	5	OFF	0	VMEbus base address A16 = 0
	4	OFF	0	VME-control and status reg. in PCI-memory space
	3	OFF	0	VME-CSR-translation offset (A20 = 0)
	2	OFF	0	VME-CSR-translation offset (A19 = 0)
S201	1	OFF	0	VME-CSR-translation offset (A18 = 0)
	8	OFF	0	VME-CSR-translation offset (A17 = 0)
	7	OFF	0	VME-CSR-translation offset (A16 = 0)
	6	OFF	0	VME-CSR-translation offset: disabled!
	5	OFF	0	PCI-slave image: disabled
	4	OFF	0	PCI-slave image in PCI-memory space (if enabled)
	3	OFF	0	address modifier for access by PCI to VMEbus is set to A16-address area (but not enabled).
	2	OFF	0	
1	OFF	0	least decoded VMEbus address = A31 of PCI-address	

Coding switches	Bit	Setting	Value	Description
S200	8	OFF	0	least decoded VMEbus address = A30 of PCI-address
	7	OFF	0	least decoded VMEbus address = A29 of PCI-address
	6	OFF	0	least decoded VMEbus address = A28 of PCI-address
	5	OFF	0	most decoded VMEbus address = A31 of PCI-address
	4	OFF	0	most decoded VMEbus address = A30 of PCI-address
	3	OFF	0	most decoded VMEbus address = A29 of PCI-address
	2	OFF	0	most decoded VMEbus address = A28 of PCI-address
	1	OFF	0	Universe register in PCI-I/O-space
S213	8	OFF	0	no evaluation
	7	OFF	0	no evaluation
	6	OFF	0	no evaluation
	5	OFF	0	PKG-size
	4	OFF	0	DY4-auto-ID-mode: disabled
	3	OFF	0	VME64-auto-ID-mode: disabled
	2	OFF	0	bus-isolation mode: enabled
	1	ON	1	SYSFAIL: disabled
S300 *	8	OFF	0	no evaluation
	7	OFF	0	no evaluation
	6	OFF	0	no evaluation
	5	OFF	0	no evaluation
	4	OFF	0	IRQ-mapping on PCI-bus (INTD1 ↔ INTA2): disabled
	3	OFF	0	IRQ-mapping on PCI-bus (INTC1 ↔ INTD2): disabled
	2	OFF	0	IRQ-mapping on PCI-bus (INTB1 ↔ INTC2): disabled
	1	OFF	0	IRQ-mapping on PCI-bus (INTA1 ↔ INTB2): disabled

* Note: S300 is equipped for special cases only.
 S300 is not equipped on the VME-PMC-CADDY versions with the following order numbers:
 V.1911.01, V.1911.02, V.1911.10 and V.1911.11.

Table 4: Position of coding switches at delivery of the VME-PMC-CADDY

2.1.2 Slave Register and AM for Accesses by the VMEbus Master (S203)

Via bit 7 of the coding switch S203 the slave mode of the CA91C142 is activated or deactivated. In order to be able to access the component from the VMEbus, the slave register has to be activated.

Coding switches	Bit	Default setting		Description			
		Switch	Value				
S203	8	OFF	0	no evaluation			
	7	ON	1	slave register: ON - enabled OFF - disabled			
	6	OFF	0	address modifier for VMEbus access by VMEbus master (refer to following table)			
	5	ON	1				
	4	OFF	0	VMEbus base address (default = A24-mode)	A32-mode	A24-mode	A16-mode
	3	ON	1		A31	A23	A15
	2	ON	1		A30	A22	A14
	1	ON	1		A29	A21	A13
				A28	A20	A12	

Table 5: Coding switch S203

Coding switch S203 is just used to set the most significant four VMEbus address bits. The following address bits are set by coding switch S202!

By means of switches 5 and 6 the address area is set under which the PMC-CADDY can be accessed by the VMEbus master.



NOTICE
If the selected address area is changed, the evaluation of the base address due to the setting of S202 and S203 will be changed, too!

S203 - Switch 6	S203 - Switch 5	Selected address area
Space 1	Space 0	
OFF	OFF	A16
OFF	ON	A24 (default)
ON	OFF	A32
ON	ON	not permissible

Table 6: Selection of the VMEbus address area via coding switch S203

2.1.3 VMEbus Base Address, CSR-Translation Offset (S202)

Coding switch	Bit	Default setting		Description															
		Switch	Value																
S202																			
				<table border="1"> <thead> <tr> <th>A32-mode</th> <th>A24-mode</th> <th>A16-mode</th> </tr> </thead> <tbody> <tr> <td>A27</td> <td>A19</td> <td>don't care</td> </tr> <tr> <td>A26</td> <td>A18</td> <td>don't care</td> </tr> <tr> <td>A25</td> <td>A17</td> <td>don't care</td> </tr> <tr> <td>A24</td> <td>A16</td> <td>don't care</td> </tr> </tbody> </table>	A32-mode	A24-mode	A16-mode	A27	A19	don't care	A26	A18	don't care	A25	A17	don't care	A24	A16	don't care
	A32-mode	A24-mode	A16-mode																
	A27	A19	don't care																
	A26	A18	don't care																
	A25	A17	don't care																
	A24	A16	don't care																
	8	OFF	0	VMEbus base address (default = A24-mode)															
	7	OFF	1																
6	OFF	1																	
5	OFF	1																	
4	OFF	0	VME control and status reg. in PCI-memory space																
3	OFF	0	VME-CSR translation offset (A20 = 0)																
2	OFF	0	VME-CSR translation offset (A19 = 0)																
1	OFF	0	VME-CSR translation offset (A18 = 0)																

Table 7: Coding switch S202

2.1.4 IRQ-Mapping on PCI-Bus, Coding Switch S300



INFORMATION

S300 is equipped for special cases only.
 S300 is not equipped on the VME-PMC-CADDY standard versions with order numbers V.1911.01, V.1911.10 and V.1911.11.

The IRQ-mapping on the PCI-bus can be set via coding switch S300. The interrupt lines of the PMC-modules in slot 1 and 2 are routed to the VMEbus. If the coding switch contacts are closed, the interrupt lines of the modules are additionally connected from one PMC module to the other.

Coding switch	Bit	Switch	Value	IRQ-Mapping
S300	4	OFF	0	INTD1 ↔ INTA2: disabled
	3	OFF	0	INTC1 ↔ INTD2: disabled
	2	OFF	0	INTB1 ↔ INTC2: disabled
	1	OFF	0	INTA1 ↔ INTB2: disabled

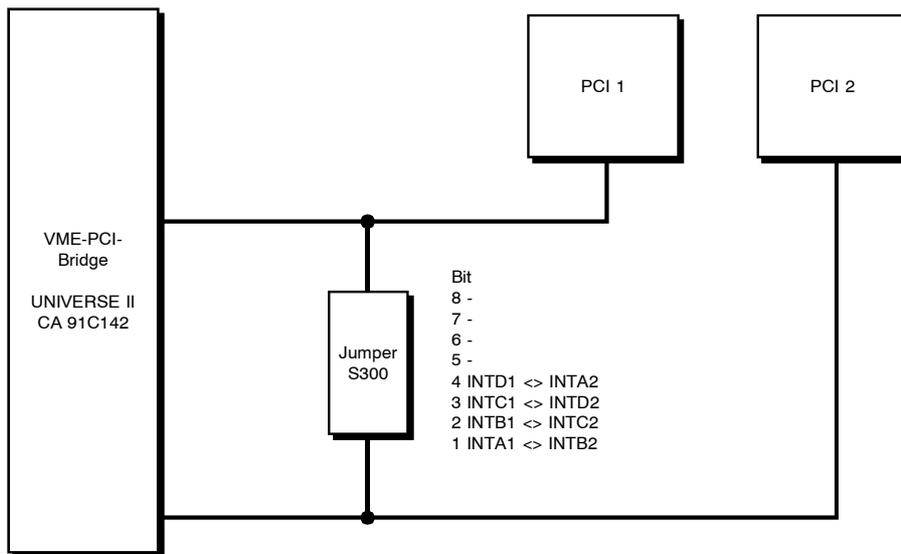


Figure 4: Connecting P1 and P2 via jumper S300

2.2 Configuration Resistors

2.2.1 Changing the P2-Assignment via RX500...RX507

A. **Standard Assignment** (assignment at delivery of board) **PMC-I/O-Signals at Rows a, c, d and z of P2**

At work the assignment of I/O-signals of the PMC-connector J14 to the P2-connector are configured as recommended in the PMC-update by FORCE (table 1, author: Wayne Fischer, Director of Strategic Programs CMC/PMC Working Groups Chair, 22.10.96). All 64 I/O-signals are fed to rows a and c of the P2-connector.

The I/O-signals of the PMC-connector are also assigned in accordance with the PMC-update. They are fed to rows d and z of the P2-connector.

This assignment guarantees that the I/O-signals and the PMC-modules do not come into conflict. The signals of PMC-connector J24, however, can only be connected by means of a fitting counterpart to the VME64-connector (VME64-backplane or mating connector with adaptor board), because they apply to the outer rows of the connector.

B. **Option '-32P2'** **PMC-I/O-Signals on Rows a and c of P2**

By means of option '-32P2' the assignment of rows a and c of the P2-connector changes as specified in table 6-3 in the Standard IEEE P1386/Draft 2.0:

The pins of PMC-connector J14 are still connected to those of the P2-connector as described above. All 64 I/O-signals are fed to rows a and c of the P2-connector.

Parallel to this, pins 33...64 of PMC-connector J24 are also fed to rows a and c of the P2-connector. Therefore, pins a1...a16 and c1...c16 of P2 are assigned twice. Furthermore both PMC-modules are connected via 32 of their I/O-pins.

When using this option it is therefore very important to bear in mind avoiding conflicts between the I/O-signals of both PMC-modules!

In order to activate option '-32P2', the eight resistor networks RX500...RX503 and RX504...Rx505 have to be equipped. The resistor networks must be in '4x0603/1206' design and must each have four 0-Ω resistors. The position of the resistors on the PCB can be taken from the figures 2 and 3 on pages 12 and 13.



NOTICE

Changing the component equipment may only be carried out by esd!
Warranty is void if modifications of the product are made by others than by esd.

2.2.2 3.3V Supply Voltage via VMEbus (RX620...RX625)

In standard design the 3.3 voltage supply of the PMC-modules is provided by one voltage control for each module. The controllers are fed by the +5V supply voltage of the VMEbus and provide an output current of maximum 1.5 A each.

There are no voltage controllers in option '-3.3P1' and the 3.3V supply voltage is fed for both PMC-modules by the ten according pins of VME64-connector P1.

For option '-3.3P1' the six resistors RX620 to RX625 have to be equipped. The resistors are in '0805' design and have a value of 0 Ω . Furthermore the following components have to be removed: Voltage regulators U600 and U610, inductors L600 and L610 and the resistors R600 and R610.



NOTICE

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Warranty is void if modifications of the product are made by others than by esd.

3. Address Assignment of the VME-PMC-CADDY

The VMEbus-base address of the PCI-bridge component is set via the coding switches. In default setting it is:

Access: **A24**
Address: **0x70 00 00**

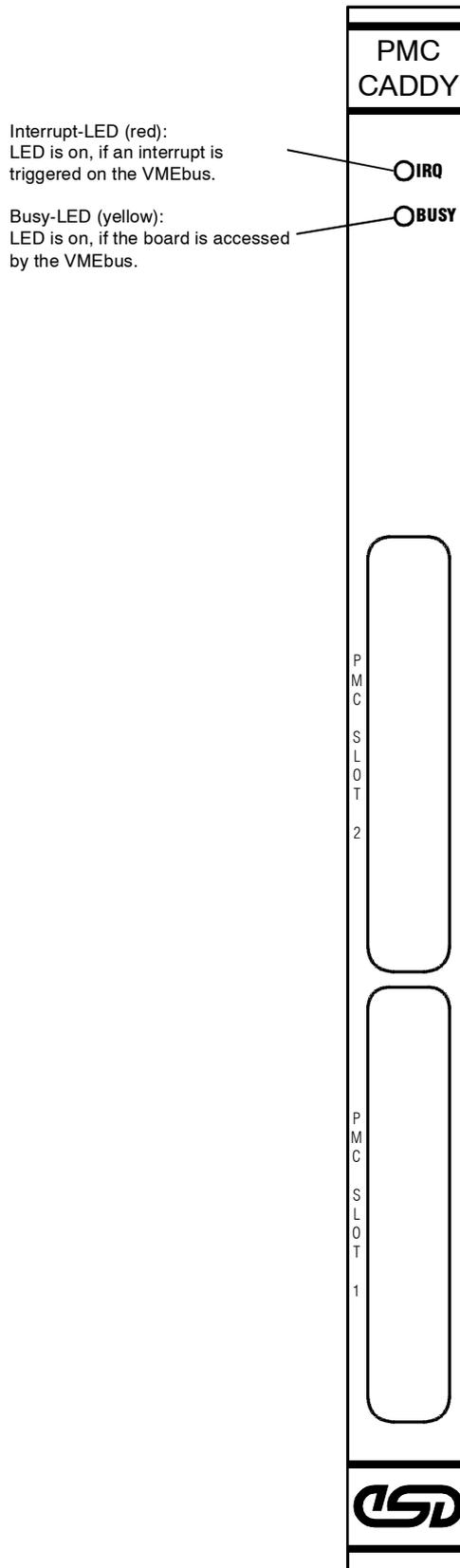
In the appendix of the manual of the PCI-bridge component (Appendix A: Register) the registers are specified which can be accessed via the base address specified above (with according offset).

The complete UNIVERSE CA91C142D manual in PDF-format can be downloaded from the IDT website

<http://www.idt.com/>

There, the updated error lists to the manual of the component can be found, too.

4. Front Panel with LEDs



5. Hardware Installation



NOTICE

Read the safety instructions at the beginning of this document carefully, before you start with the hardware installation!



DANGER

Hazardous Voltage - **Risk of electric shock** due to unintentional contact with uninsulated live parts with high voltages inside of the system into which the VME-PMC-CADDY is to be integrated.

- Disconnect all hazardous voltages (mains voltage) before opening the system.
- Ensure the absence of voltage before starting any electrical work



NOTICE

Electrostatic discharges may cause damage to electronic components.

- To avoid this, please discharge the static electricity from your body by touching the metal case of the VMEbus system *before* you touch the VME-PMC-CADDY.
- Furthermore, you should prevent your clothes from touching the VME-PMC-CADDY, because your clothes might be electrostatically charged as well.

Procedure:

1. Switch off your system and all connected peripheral devices (monitor, printer, etc.).
2. Discharge your body as described above.
3. Disconnect the system from the mains.



DANGER

Hazardous Voltage

Risk of electric shock due to unintentional contact with uninsulated live parts with high voltages.

- Disconnect all hazardous voltages (mains voltage) before opening the system.
- If the system does not have a flexible mains cable, but is directly connected to mains, disconnect the power supply via the safety fuse and make sure that the fuse cannot switch on again unintentionally (i.e. with caution label).
- Ensure the absence of voltage before starting any electrical work.

4. Open the case if necessary.
5. Install the PMC boards on the VME-PMC-CADDY carrier board.
6. If necessary, configure the coding switches as described in chapter "Coding Switches" on page 14.
7. Insert the VME-PMC-CADDY board into the selected VME slot. Carefully push the board until it snaps into place.
8. Close the system's case again.
9. Connect the system to mains again (mains connector or safety fuse).
10. Switch on the system and the peripheral devices. - End of hardware installation.

6. Connector Assignments

6.1 VMEbus P1

Pin	Row z	Row a	Row b	Row c	Row d	Pin
1	-	D00	BBSY*	D08	-	1
2	GND	D01	BCLR*	D09	GND	2
3	-	D02	ACFAIL*	D10	-	3
4	GND	D02	BG0IN*	D11	-	4
5	-	D04	BG0OUT*	D12	-	5
6	GND	D05	BG1IN*	D13	-	6
7	-	D06	BG1OUT*	D14	-	7
8	GND	D07	BG2IN*	D15	-	8
9	-	GND	BG2OUT*	GND	-	9
10	GND	SYSCLK	BG3IN*	SYSFAIL*	-	10
11	-	GND	BG3OUT*	BERR*	-	11
12	GND	DS1*	BR0*	SYSRESET*	-	12
13	-	DS0*	BR1*	LWORD*	-	13
14	GND	WRITE*	BR2*	AM5	-	14
15	-	GND	BR3*	A23	-	15
16	GND	DTACK*	AM0	A22	-	16
17	-	GND	AM1	A21	-	17
18	GND	AS*	AM2	A20	-	18
19	-	GND	AM3	A19	-	19
20	GND	IACK*	GND	A18	-	20
21	-	IACKIN*	-	A17	-	21
22	GND	IACKOUT*	-	A16	-	22
23	-	AM4	GND	A15	-	23
24	GND	A07	IRQ7*	A14	-	24
25	-	A06	IRQ6*	A13	-	25
26	GND	A05	IRQ5*	A12	-	26
27	-	A04	IRQ4*	A11	-	27
28	GND	A03	IRQ3*	A10	-	28
29	-	A02	IRQ2*	A09	-	29
30	GND	A01	IRQ1*	A08	-	30
31	-	-12 V	-	+12 V	GND	31
32	GND	+5 V	+5 V	+5 V	-	32

Male connector in accordance with DIN41612 design C96/a+b+c
 I_{max} per pin: 1.0 A

-] ... Signals bridged on board
 - ... Signal not connected on board

6.2 Standard Assignment of I/O-Signals

6.2.1 Standard Assignment P2

Pin	Row z	Row a	Row b	Row c	Row d	Pin
1	I/O202	I/O102	+5 V	I/O101	I/O201	1
2	GND	I/O104	GND	I/O103	I/O203	2
3	I/O205	I/O106	-	I/O105	I/O204	3
4	GND	I/O108	A24	I/O107	I/O206	4
5	I/O208	I/O110	A25	I/O109	I/O207	5
6	GND	I/O112	A26	I/O111	I/O209	6
7	I/O211	I/O114	A27	I/O113	I/O210	7
8	GND	I/O116	A28	I/O115	I/O212	8
9	I/O214	I/O118	A29	I/O117	I/O213	9
10	GND	I/O120	A30	I/O119	I/O215	10
11	I/O217	I/O122	A31	I/O121	I/O216	11
12	GND	I/O124	GND	I/O123	I/O218	12
13	I/O220	I/O126	+5 V	I/O125	I/O219	13
14	GND	I/O128	D16	I/O127	I/O221	14
15	I/O223	I/O130	D17	I/O129	I/O222	15
16	GND	I/O132	D18	I/O131	I/O224	16
17	I/O226	I/O134	D19	I/O133	I/O225	17
18	GND	I/O136	D20	I/O135	I/O227	18
19	I/O229	I/O138	D21	I/O137	I/O228	19
20	GND	I/O140	D22	I/O139	I/O230	20
21	I/O232	I/O142	D23	I/O141	I/O231	21
22	GND	I/O144	GND	I/O143	I/O233	22
23	I/O235	I/O146	D24	I/O145	I/O234	23
24	GND	I/O148	D25	I/O147	I/O236	24
25	I/O238	I/O150	D26	I/O149	I/O237	25
26	GND	I/O152	D27	I/O151	I/O239	26
27	I/O241	I/O154	D28	I/O153	I/O240	27
28	GND	I/O156	D29	I/O155	I/O242	28
29	I/O244	I/O158	D30	I/O157	I/O243	29
30	GND	I/O160	D31	I/O159	I/O245	30
31	I/O246	I/O162	GND	I/O161	GND	31
32	GND	I/O164	+5 V	I/O163	-	32

Male connector in accordance with DIN41612 design C96/a+b+c

I_{\max} per pin: 1.0 A

- ... Signal not connected on board

6.2.2 Standard Assignment of an Interface Module with Signals of Rows a and c from P2

The following table represents the assignment of a 64-pole interface module when connected to the P2-connector. The 64 pins of the module are assigned with the signals of rows a and c of the P2-connector.

Assignment of a 64-pole interface module					
Pin	Assignment of I/O-connector P2				Pin
	Row a	Signal		Row c	
2	1	I/O102	I/O101	1	1
4	2	I/O104	I/O103	2	3
6	3	I/O106	I/O105	3	5
8	4	I/O108	I/O107	4	7
10	5	I/O110	I/O109	5	9
12	6	I/O112	I/O111	6	11
14	7	I/O114	I/O113	7	13
16	8	I/O116	I/O115	8	15
18	9	I/O118	I/O117	9	17
20	10	I/O120	I/O119	10	19
22	11	I/O122	I/O121	11	21
24	12	I/O124	I/O123	12	23
26	13	I/O126	I/O125	13	25
28	14	I/O128	I/O127	14	27
30	15	I/O130	I/O129	15	29
32	16	I/O132	I/O131	16	31
34	17	I/O134	I/O133	17	33
36	18	I/O136	I/O135	18	35
38	19	I/O138	I/O137	19	37
40	20	I/O140	I/O139	20	39
42	21	I/O142	I/O141	21	41
44	22	I/O144	I/O143	22	43
46	23	I/O146	I/O145	23	45
48	24	I/O148	I/O147	24	47
50	25	I/O150	I/O149	25	49
52	26	I/O152	I/O151	26	51
54	27	I/O154	I/O153	27	53
56	28	I/O156	I/O155	28	55
58	29	I/O158	I/O157	29	57
60	30	I/O160	I/O159	30	59
62	31	I/O162	I/O161	31	61
64	32	I/O164	I/O163	32	63

6.2.3 Standard Assignment of PMC-Connector J14

Signal		Pin-No of J14		Signal	
Name	at P2-pin			Name	at P2-pin
I/O101	c1	1	2	I/O102	a1
I/O103	c2	3	4	I/O104	a2
I/O105	c3	5	6	I/O106	a3
I/O107	c4	7	8	I/O108	a4
I/O109	c5	9	10	I/O110	a5
I/O111	c6	11	12	I/O112	a6
I/O113	c7	13	14	I/O114	a7
I/O115	c8	15	16	I/O116	a8
I/O117	c9	17	18	I/O118	a9
I/O119	c10	19	20	I/O120	a10
I/O121	c11	21	22	I/O122	a11
I/O123	c12	23	24	I/O124	a12
I/O125	c13	25	26	I/O126	a13
I/O127	c14	27	28	I/O128	a14
I/O129	c15	29	30	I/O130	a15
I/O131	c16	31	32	I/O132	a16
I/O133	c17	33	34	I/O134	a17
I/O135	c18	35	36	I/O136	a18
I/O137	c19	37	38	I/O138	a19
I/O139	c20	39	40	I/O140	a20
I/O141	c21	41	42	I/O142	a21
I/O143	c22	43	44	I/O144	a22
I/O145	c23	45	46	I/O146	a23
I/O147	c24	47	48	I/O148	a24
I/O149	c25	49	50	I/O150	a25
I/O151	c26	51	52	I/O152	a26
I/O153	c27	53	54	I/O154	a27
I/O155	c28	55	56	I/O156	a28
I/O157	c29	57	58	I/O158	a29
I/O159	c30	59	60	I/O160	a30
I/O161	c31	61	62	I/O162	a31
I/O163	c32	63	64	I/O164	a32

Female connector 2x32

6.2.4 Standard Assignment of PMC-Connector J24

Signal		Pin-No. of J24		Signal	
Name	at P2-pin			Name	at P2-pin
I/O201	d1	1	2	I/O202	z1
I/O203	d2	3	4	I/O204	d3
I/O205	z3	5	6	I/O206	d4
I/O207	d5	7	8	I/O208	z5
I/O209	d6	9	10	I/O210	d7
I/O211	z7	11	12	I/O212	d8
I/O213	d9	13	14	I/O214	z9
I/O215	d10	15	16	I/O216	d11
I/O217	z11	17	18	I/O218	d12
I/O219	d13	19	20	I/O220	z13
I/O221	d14	21	22	I/O222	d15
I/O223	z15	23	24	I/O224	d16
I/O225	d17	25	26	I/O226	z17
I/O227	d18	27	28	I/O228	d19
I/O229	z19	29	30	I/O230	d20
I/O231	d21	31	32	I/O232	z21
I/O233	d22	33	34	I/O234	d23
I/O235	z23	35	36	I/O236	d24
I/O237	d25	37	38	I/O238	z25
I/O239	d26	39	40	I/O240	d27
I/O241	z27	41	42	I/O242	d28
I/O243	d29	43	44	I/O244	z29
I/O245	d30	45	46	I/O246	z31
I/O247	-	47	48	I/O248	-
I/O249	-	49	50	I/O250	-
I/O251	-	51	52	I/O252	-
I/O253	-	53	54	I/O254	-
I/O255	-	55	56	I/O256	-
I/O257	-	57	58	I/O258	-
I/O249	-	59	60	I/O260	-
I/O261	-	61	62	I/O262	-
I/O263	-	63	64	I/O264	-

Female connector 2x32

6.3 Assignment of I/O-Signals when Using Option '-32P2'

6.3.1 Assignment P2 at Option '-32P2'

Pin	Row z	Row a	Row b	Row c	Row d	Pin
1	I/O202	I/O102+I/O234	+5 V	I/O101+I/O233	I/O201	1
2	GND	I/O104+I/O236	GND	I/O103+I/O235	I/O203	2
3	I/O205	I/O106+I/O238	-	I/O105+I/O237	I/O204	3
4	GND	I/O108+I/O240	A24	I/O107+I/O239	I/O206	4
5	I/O208	I/O110+I/O242	A25	I/O109+I/O241	I/O207	5
6	GND	I/O112+I/O244	A26	I/O111+I/O243	I/O209	6
7	I/O211	I/O114+I/O246	A27	I/O113+I/O245	I/O210	7
8	GND	I/O116+I/O248	A28	I/O115+I/O247	I/O212	8
9	I/O214	I/O118+I/O250	A29	I/O117+I/O249	I/O213	9
10	GND	I/O120+I/O252	A30	I/O119+I/O251	I/O215	10
11	I/O217	I/O122+I/O254	A31	I/O121+I/O253	I/O216	11
12	GND	I/O124+I/O256	GND	I/O123+I/O255	I/O218	12
13	I/O220	I/O126+I/O258	+5 V	I/O125+I/O257	I/O219	13
14	GND	I/O128+I/O260	D16	I/O127+I/O259	I/O221	14
15	I/O223	I/O130+I/O262	D17	I/O129+I/O261	I/O222	15
16	GND	I/O132+I/O264	D18	I/O131+I/O263	I/O224	16
17	I/O226	I/O134	D19	I/O133	I/O225	17
18	GND	I/O136	D20	I/O135	I/O227	18
19	I/O229	I/O138	D21	I/O137	I/O228	19
20	GND	I/O140	D22	I/O139	I/O230	20
21	I/O232	I/O142	D23	I/O141	I/O231	21
22	GND	I/O144	GND	I/O143	I/O233+I/O101	22
23	I/O235+I/O103	I/O146	D24	I/O145	I/O234+I/O102	23
24	GND	I/O148	D25	I/O147	I/O236+I/O104	24
25	I/O238+I/O106	I/O150	D26	I/O149	I/O237+I/O105	25
26	GND	I/O152	D27	I/O151	I/O239+I/O107	26
27	I/O241+I/O109	I/O154	D28	I/O153	I/O240+I/O108	27
28	GND	I/O156	D29	I/O155	I/O242+I/O110	28
29	I/O244+I/O112	I/O158	D30	I/O157	I/O243+I/O111	29
30	GND	I/O160	D31	I/O159	I/O245+I/O113	30
31	I/O246+I/O114	I/O162	GND	I/O161	GND	31
32	GND	I/O164	+5 V	I/O163	-	32

Male connector in accordance with DIN41612 design C96/a+b+c

I_{\max} per pin: 1.0 A

- ... Signal not connected on board

6.3.2 Assignment of an Interface Module at Option '-32P2'

The following table represents the assignment of a 64-pole interface module when connected to the P2-connector. The 64 pins of the module are assigned with the signals of rows a and c of the P2-connector.

Assignment of a 64-pole interface module					
Pin	Assignment of I/O-connector P2				Pin
	Row a	Signal		Row c	
2	1	I/O102+I/O234	I/O101+I/O233	1	1
4	2	I/O104+I/O236	I/O103+I/O235	2	3
6	3	I/O106+I/O238	I/O105+I/O237	3	5
8	4	I/O108+I/O240	I/O107+I/O239	4	7
10	5	I/O110+I/O242	I/O109+I/O241	5	9
12	6	I/O112+I/O244	I/O111+I/O243	6	11
14	7	I/O114+I/O246	I/O113+I/O245	7	13
16	8	I/O116+I/O248	I/O115+I/O247	8	15
18	9	I/O118+I/O250	I/O117+I/O249	9	17
20	10	I/O120+I/O252	I/O119+I/O251	10	19
22	11	I/O122+I/O254	I/O121+I/O253	11	21
24	12	I/O124+I/O256	I/O123+I/O255	12	23
26	13	I/O126+I/O258	I/O125+I/O257	13	25
28	14	I/O128+I/O260	I/O127+I/O259	14	27
30	15	I/O130+I/O262	I/O129+I/O261	15	29
32	16	I/O132+I/O264	I/O131+I/O263	16	31
34	17	I/O134	I/O133	17	33
36	18	I/O136	I/O135	18	35
38	19	I/O138	I/O137	19	37
40	20	I/O140	I/O139	20	39
42	21	I/O142	I/O141	21	41
44	22	I/O144	I/O143	22	43
46	23	I/O146	I/O145	23	45
48	24	I/O148	I/O147	24	47
50	25	I/O150	I/O149	25	49
52	26	I/O152	I/O151	26	51
54	27	I/O154	I/O153	27	53
56	28	I/O156	I/O155	28	55
58	29	I/O158	I/O157	29	57
60	30	I/O160	I/O159	30	59
62	31	I/O162	I/O161	31	61
64	32	I/O164	I/O163	32	63

6.3.3 Assignment of PMC-Connector J14 at Option '-32P2'

Signal		J24-Pin	J14-Pin		J24-Pin	Signal	
Name	P2-Pin					P2-Pin	Name
I/O101 + I/O233	c1 + d22	33	1	2	34	a1 + d23	I/O102 + I/O234
I/O103 + I/O235	c2 + z23	35	3	4	36	a2 + d24	I/O104 + I/O236
I/O105 + I/O237	c3 + d25	37	5	6	38	a3 + z25	I/O106 + I/O238
I/O107 + I/O239	c4 + d26	39	7	8	40	a4 + d27	I/O108 + I/O240
<u>I/O109</u> + <u>I/O241</u>	<u>c5</u> + <u>z27</u>	<u>41</u>	9	10	42	a5 + d28	I/O110 + I/O242
I/O111 + I/O243	c6 + d29	43	11	12	44	a6 + z29	I/O112 + I/O244
I/O113 + I/O245	c7 + d30	45	13	14	46	a7 + z31	I/O114 + I/O246
I/O115 + I/O247	c8	47	15	16	48	a8	I/O116 + I/O248
I/O117 + I/O249	c9	49	17	18	50	a9	I/O118 + I/O250
I/O119 + I/O251	c10	51	19	20	52	a10	I/O120 + I/O252
I/O121 + I/O253	c11	53	21	22	54	a11	I/O122 + I/O254
I/O123 + I/O255	c12	55	23	24	56	a12	I/O124 + I/O256
I/O125 + I/O257	c13	57	25	26	58	a13	I/O126 + I/O258
I/O127 + I/O249	c14	59	27	28	60	a14	I/O128 + I/O260
I/O129 + I/O261	c15	61	29	30	62	a15	I/O130 + I/O262
I/O131 + I/O263	c16	63	31	32	64	a16	I/O132 + I/O264
I/O133	c17		33	34		a17	I/O134
I/O135	c18		35	36		a18	I/O136
I/O137	c19		37	38		a19	I/O138
I/O139	c20		39	40		a20	I/O140
I/O141	c21		41	42		a21	I/O142
I/O143	c22		43	44		a22	I/O144
I/O145	c23		45	46		a23	I/O146
I/O147	c24		47	48		a24	I/O148
I/O149	c25		49	50		a25	I/O150
I/O151	c26		51	52		a26	I/O152
I/O153	c27		53	54		a27	I/O154
I/O155	c28		55	56		a28	I/O156
I/O157	c29		57	58		a29	I/O158
I/O159	c30		59	60		a30	I/O160
I/O161	c31		61	62		a31	I/O162
I/O163	c32		63	64		a32	I/O164

Female connector 2x32

How to read the table - example:

Pin 9 of PMC-connector J14 is connected to pin 41 of PMC-connector J24. Furthermore, pin 9 is connected to pins c5 and z27 of VMEbus connector P2.

In the circuit diagrams the signal names I/O109 and I/O241 are used for this network.

6.3.4 Assignment of PMC-Connector J24 at Option '-32P2'

Signal		J14-Pin	J24-Pin		J14-Pin	Signal	
Name	P2-Pin					P2-Pin	Name
I/O201	d1		1	2		z1	I/O202
I/O203	d2		3	4		d3	I/O204
I/O205	z3		5	6		d4	I/O206
I/O207	d5		7	8		z5	I/O208
I/O209	d6		9	10		d7	I/O210
I/O211	z7		11	12		d8	I/O212
I/O213	d9		13	14		z9	I/O214
I/O215	d10		15	16		d11	I/O216
I/O217	z11		17	18		d12	I/O218
I/O219	d13		19	20		z13	I/O220
I/O221	d14		21	22		d15	I/O222
I/O223	z15		23	24		d16	I/O224
I/O225	d17		25	26		z17	I/O226
I/O227	d18		27	28		d19	I/O228
I/O229	z19		29	30		d20	I/O230
I/O231	d21		31	32		z21	I/O232
I/O233 + I/O101	d22 + c1	1	33	34	2	d23 + a1	I/O234 + I/O102
I/O235 + I/O103	z23 + c2	3	35	36	4	d24 + a2	I/O236 + I/O104
I/O237 + I/O105	d25 + c3	5	37	38	6	z25 + a3	I/O238 + I/O106
I/O239 + I/O107	d26 + c4	7	39	40	8	d27 + a4	I/O240 + I/O108
I/O241 + I/O109	z27 + c5	9	41	42	10	d28 + a5	I/O242 + I/O110
I/O243 + I/O111	d29 + c6	11	43	44	12	z29 + a6	I/O244 + I/O112
I/O245 + I/O113	d30 + c7	13	45	46	14	z31 + a7	I/O246 + I/O114
I/O247 + I/O115	c8	15	47	48	16	a8	I/O248 + I/O116
I/O249 + I/O117	c9	17	49	50	18	a9	I/O250 + I/O118
I/O251 + I/O119	c10	19	51	52	20	a10	I/O252 + I/O120
I/O253 + I/O121	c11	21	53	54	22	a11	I/O254 + I/O122
I/O255 + I/O123	c12	23	55	56	24	a12	I/O256 + I/O124
I/O257 + I/O125	c13	25	57	58	26	a13	I/O258 + I/O126
I/O249 + I/O127	c14	27	59	60	28	a14	I/O260 + I/O128
I/O261 + I/O129	c15	29	61	62	30	a15	I/O262 + I/O130
I/O263 + I/O131	c16	31	63	64	32	a16	I/O264 + I/O132

Female connector 2x32

7. Order Information

Type	Properties	Order No.
VME-PMC-CADDY	Passive carrier board for 2 PMC modules UNIVERSE bridge, 6U front panel	V.1911.01
VME-PMC-CADDY-3-3.P1	3.3V voltage supply directly from 3.3V VMEbus supply voltage and not taken from 5V supply voltage by means of a voltage control	V.1911.10
VME-PMC-CADDY-32P2	Assignment of rows a and c of connector P2 in accordance with Standard IEEE P1386/Draft 2.0/Table 6-3	V.1911.11
Software		
VME-PMC-CADDY-VxWorks-LIB	Library for VxWorks to support access to PCI- Devices, C-Source	V.1911.58
VME-PMC-CADDY-OS-9-LIB	Library for OS-9 to support access to PCI- Devices as C-Source	V.1911.56

For detailed information about the driver availability for your special operating system, please contact our sales team.

Table 8: Order information

PDF Manuals

Manuals are available in English and usually in German as well. For availability of English manuals see table below.

Please download the manuals as PDF documents from our esd website www.esd.eu for free.

Manuals	Order No.
VME-PMC-CADDY-ME Hardware manual in English	V.1911.21

Table 9: Available manuals

Printed Manuals

If you need a printout of the manual additionally, please contact our sales team: sales@esd.eu for a quotation. Printed manuals may be ordered for a fee.