

Series 6000

VME, -64x, -64xC, -64xP, VXI

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 between the description in manual and the 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 advises 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 without the express written permission of **W-Ie-Ne-R**.

Mains Voltage and Connection

The Power supplies are equipped with a “World”- mains input, which works properly form 94VAC up to 264VAC and within a frequency range of 47 to 63Hz.

Before connecting to the mains please double-check correspondence.

The mains input connection at the power supply side is done with a 3-pin Hirschmann connector (input current max. 16 A) or power terminals.

Hirschmann Pin No.	Signal	Description	Color of the Wire
Pin 1	L	Phase	black or brown
Pin 2	N	Return, Neutral	blue
Pin 3		not connected	
Earth	PE	Protective Earth	green/yellow

Safety

After connecting the Power box to the mains, the mains input module is powered permanently. Filter and storage capacitors of the power factor correction module are charged with about **400VDC**. The DC-On-Signal as well as a power switch at control board (if any installed) operates as a DC on/off switch only and not as a mains breaker. **Therefore it becomes dangerous if the box cover is open. In this case a lot of components on high voltage potential get touchable!**

Before starting any kind of work inside the power box remove the unit from mains and wait a couple of minutes with your activities! Discharge the primary DC Filter-capacitors by use of a well isolated 22 ohm 10W resistor.

Table of contents:

1 General Information 4

1.1 6021 Crates 4

1.2 6020 Fan Trays 4

1.2.1 LX Fan Trays 4

1.2.2 EX Fan Trays 5

1.3 6021 Power Supplies 5

2 Operation, Function and Connections 5

2.1 Fan Tray Operation and Control. 5

2.1.1 Function of Fan Tray Switches 6

2.2 UEL6000 Operation and Programming 7

2.2.1 Additional temperature sensors 7

2.2.2 Hot Swapping of Fan Tray 7

2.2.3 Time lag of fan stopping 8

2.2.4 Programming via front panel switches 8

2.2.5 Main operation modes and associated submenus 10

2.2.6 EX Fan Tray Remot Control Pin Description 12

2.2.7 LX / EX fan-tray front panel view 14

3 6021-6023 Bin Technical details 16

3.1.1 VME-Bus Terminology, Signal Identification 16

3.1.2 Backplane Current Ratings 17

3.1.3 Pin Assignment Jaux of VME 430-Bus (CERN) 18

3.1.4 Pin Assignments of J1 and J2 VME Bus 20

3.1.5 Pin Assignments of VME 64x-Bus 21

3.1.6 Pin Assignment J0 of VME 64xC –Bus 24

3.1.7 Special Pin Assignment J0 of VME 64xP - Bus (VIPA) 24

3.1.8 Pin Assignments of VXI-Bus 25

4 Power Supply UEP6021 29

4.1 Power Connector Board (Round Contacts) 29

4.1.1 Sense and Signal Connector-SUB D 37 30

4.1.2 Fan tray and Control Connector SUB D9 30

4.2 Control and Adjustment of 6021 Power Supply 31

4.2.1 Connection of a Personal Computer to the Power Supply UEP6021 32

4.2.2 Output Voltage Adjustments 33

4.3 CANbus 33

5 Ethernet Remote Monitoring and Control 33

5.1 SNMP communication protocol 34

5.2 Change of IP address via SNMP 41

5.3 Change of community names / setting of passwords 42

5.4 SNMP Version 3 43

5.4.1 Users 43

5.4.2 Authentication 43
5.4.3 Privacy (Encryption) 43
5.4.4 Security Level 43
5.4.5 SNMP v3 Examples 44
5.4.6 Changing the Passwords 45
5.4.7 Changing the Security Level 47
5.4.8 Creating a Save System 49
5.4.9 Restoring Factory Defaults 49
5.5 WIENER SYScontrol Software 50
5.6 MIB Browser 52
6 Technical Details of 6021 Power Supplies 53
6.1.1 EC Declaration of Conformity 55
APPENDIX A : Technical Details of Fan Trays 57
APPENDIX B : VME 430 Backplane, Situation of Jaux connector 59
APPENDIX C : Power Bugs detailed, Customized Backplane 60

1 General Information

1.1 6021 Crates

The VME/VXI-Crate 6021 consist of a power supply (UEP 6021), bin (UEV 6021 / 6023) and a fan tray (UEL 6020). All these components are plugable and easy to exchange. Divider sets 6U/9U can be mounted into bins for 9U format modules. For powering of 6021 and 6023 bins same UEP 6021 power supplies have to be used.

Standard crates are available for different module formats: 160, 220, 280, 340, as well as 400mm deep and 6 or 9 units high. 6021 bins are additionally two units and the 6023 bins three units higher (fan tray space). Available W-IE-NE-R VME backplanes: VME64 with J1/J2, VME430 with J1/Jaux/J2, VME64x, VME64xP, VME64xC with Jo special (Cern).

1.2 6020 Fan Trays

The-fan trays are plugged into the bin from the front side. For efficient cooling, controlling and monitoring of the crate various fan trays are constructed according to the slot deepness, whereas both front and bottom air supply, is possible. Fan rotation speed is shown by use of LX/EX fan trays and can be regulated; every fan is single controlled. Furthermore temperatures of the incoming air and (optionally) of the exhaust above selected slots can be displayed.

The UEL 6020 fan tray and control unit occupies two units of a 6021 crate below the VME / VXI-bus slots.
For 6023 crates an additional plenum chamber of 1 unit homogenized the cooling air flow.
Fan trays with a depth of 160 and 220mm are equipped with three axial D.C. blowers, while 280, 340 and 400mm deep fan trays have 6 blowers. To cool the rear transition area a 9 fold one is available.

Among the a. m. fan trays high performance super blower with four or six blowers can be used, too. The super blower fan tray is outfitted with a topped plenum and generates a high efficient homogenous cooling air flow through the VME modules.

The 3 fold fan-tray can operate in two different modes. Either the air is taken from the front and then pushed upwards to the modules or from bottom side, which gives full cooling efficiency.

The maximal air flow reached by a 3-fold W-IE-NE-R fan-tray with bottom inlet is greater than 540 m^3/h and shows a good homogeneity. Working with front air inlet only a reduced air flow of about 400 m^3/h is available. Due to the lower homogeneity of the air distribution in this mode only the power dissipation of about 800 W can be cooled. The static pressure is approx. 8-10 mm water column.

1.2.1 LX Fan Trays

All DC voltages (up to 8) at backplane level and the corresponding currents among other are shown by the LX monitoring. The threshold-limits (minimum / maximum voltages and currents) can be set manually or piloted by remote control and remain stored even after lack of voltage. In case of global trip off, the fault will be displayed by the diagnostic system.

VME-signals ACFAIL and SYSRESET are generated according to VME-Specs. SYSRESET can also be released manually.

Remote-control by network (CANbus, IEC-Bus) is optionally possible.

1.2.2 EX Fan Trays

Featuring the same facilities as the LX type (except IEC Bus interface) and additionally TCP/IP over Ethernet as well as RS232 connection. While the LX type can be outfitted with air intake from front side, the EX is for bottom intake only!

1.3 6021 Power Supplies

The VME power supply of the 6000 series is a micro-processor controlled switching power supply designed in the high density W-IE-NE-R - cavity technology, which provides a extremely low noise output voltage.

The mains input includes a power factor correction module which works according to EN 60 555-2/IEEE 555-2 (PFC). An external fuse or circuit breaker has to be installed (16A for C/E and 32A for H/K types). The turn-on inrush current is limited by a soft start-circuit to a maximum value of about 12 A.

The AC- input module is permanently powered after connecting the unit to the AC- mains. POWER ON/OFF activates only the DC on/off function of the power inverter modules.
The EN 50 081-1 for generic emissions as well as the EN 50 082-1 or 2 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, C 22.2.950, C 22.2.220/234.

Therefore the UEP 6021 power supplies fulfil the CE rules comprehensively and are CE marked for use in all power nets.

Turning on the power supply all voltages reach the nominal values nearly simultaneously within 50 ± 2.5 ms (start-end-time) whereby the voltage versus time curve shows a monotonic behavior. The start-off-time which corresponds to a value of 10% of the nominal voltages is reached after 5±2.5 ms.

The power packs are readily replaceable. The maximum output power is 700... 2000W with C input and 1400... >3000W with H input, correspondence with 92... 264VAC input voltage. For 6U power packs the output can be increased to the double if two mains input modules work in parallel (E or K suffix).

2 Operation, Function and Connections

2.1 Fan Tray Operation and Control.

All monitoring and control operations are performed by a micro-processor based alarm and control circuit placed inside the UEP 6021 power supply monitored by UEL 6020**LX / EX** fan trays. To protect both the power supply and the VME modules, a DC cut-off is started in the case of:

- **overheat**: in the power modules (each module is equipped with temperature sensors);
- **overload:** if maximal current is exceeded (trip-off due to programmed lower values is not indicated as overload)
- **overvoltage:** if voltage >125% (default, crow bar function) and if voltage >105% (default, can be changed via LX/EX fan tray or network)
- **undervoltage:** if voltage <97.5% % (default, can be changed via LX/EX fan tray or network)
- **fan failure:** if one or more fans fail

The reasons of a trip off will be displayed on the alphanumerical display.

Voltages, currents, cooling air temperatures (selectable °F - °C), fan speed, power dissipation of inserted modules, operation time of power supply and fan tray and optional net parameters, can be shown on the alphanumeric display of the fan-tray. The ADC resolution is 10 bit. The accuracy of the voltage measurement is better than 0.5%. The total accuracy of the current measurement depends on the corresponding voltage, i.e. for ±5V it is better than 2A in the range between 5A - 50A and for -2V it is better than 1A in the range between 1A - 20A. Above these current ranges the accuracy is <5% of the final value. In the case of ±12V and ±15V the accuracy is better than 0.2 in the whole current range.

2.1.1 Function of Fan Tray Switches

POWER ON /Off	main switch for ventilation and power supply
MODE SELECT	selection switch to choose items and values for fan-tray and power supply monitoring and control
SYS RES	protected located switch for VME SYSRESET circuit activation
FAN SPEED	push button for step wise in- or decrease of fan speed.
FAN AUTO OFF	1: Switch off after fan-failure (yes/no) 2: Activate the "hot swap" function of the fan
ADDRESS	Optional if remote network is installed
LOCAL	Optional if remote network is installed (IEC Bus only)

The adjusting range of fan speed is from 1200 RPM up to >3000 RPM. Pre selected reference speed and displayed value are average RPM. The display shows the fan speed in flashing mode if the selected speed is not equal to the true speed. This happens when either the fans are still accelerated to the higher turns or the selected value is not reachable (if >3000 RPM and higher density of modules inserted in the bin, etc.). After a certain time the FAN FAIL circuit will detect this status as fan fail! While the display shows average speed of all fans only, the CANbus option (or other supported remote interfaces) will transmit the turns of each blower situated inside the fan tray.

Information by Fan Tray LED's

AC POWER	green large LED if *POWER* is on
STATUS	green LED if all voltages are within the limit
FAN FAIL	yellow LED if a fan failure is recognized
OVERHEAT	yellow LED if an overheat in the power supply occurs
SYS FAIL	red LED if VME-bus system generates the *SYSFAIL* signal (system failure)
FAN SPEED	Red LED if fan speed below 100%
AUTO OFF	red LED indicates DC cut off disabled, remote warning only, hot swapping of fan tray possible now
LOCAL	Optional if remote network is installed

2.2 UEL6000 Operation and Programming

2.2.1 Additional temperature sensors

Optionally installed temperature sensor(s), measuring the exhaust air, allows to switch the fan to stop. That will be achieved by keeping pushed the FAN SPEED button to lower speed for about 10 seconds.

Also the sensor(s) will

- accelerate the fan speed to the maximum if the first (FanUp) programmed temperature threshold is exceeded (default: 45°C) . While the outcoming cooling air temperature is above this threshold, adjustment to lower fan speed is disabled. The downward adjustment will be automatically reenabled as soon as the exhaust temperature drops below the limit.
- switch off the power supply if the second (PsOff) programmed temperature threshold is exceeded (default: disabled) .

The sensors are placed normally above selected slots at the bin.

2.2.2 Hot Swapping of Fan Tray

If the "hot swap" function is activated (AUTO OFF), the crate can be fully powered during withdrawal of the fan tray.

The power supply will trip off to prevent damage of inserted modules

1. if the operating time with removed fan tray is too long (30 seconds)
2. when the programmed second limit of slot 1 temperature sensor (or of optional installed ones) is exceeded.

2.2.3 Time lag of fan stopping

After Switch- or Trip-Off of the unit the fans continue to run for a programmable time. By means of this function overheating of critical parts after power off will be avoid.

The time lag can be programmed in submenu "Display the fan rotation speed".

Twice Off- operation of the Power switch stops the fans immediately.

This feature was implemented in 2005

2.2.4 Programming via front panel switches

After the UEL6000 fan tray has been switched on by pushing the "Power" switch up, the main operation modes can be selected by pushing the "Mode Select" switch up or down.

Many main operation modes do have one or more submenus, which can be accessed by a special procedure.

The front panel-switches of the fan tray can be used in the following way:

Symbol	***Description***	***Remarks***
P▲	Push "Power" switch up (ON)	**Main operation mode:** Switch the crate on. **Submenu:** OK button. Used to enter the selected submenu, request to change a value, accept the changes.
P▼	Push "Power" switch down (OFF)	**Main operation mode:** Switch the crate off. **Submenu:** CANCEL button. Used to leave a submenu, discard the changes.
M▲	Push "Mode Select" switch up	**Main operation mode:** Select the next operation mode. **Submenu:** Change the selected item to the next possible state.
M▼	Push "Mode Select" switch down	**Main operation mode:** Select the previous operation mode. **Submenu:** Change the selected item to the previous possible state.

2.2.4.1 IP Address (EX fan tray)

The following example describes the detailed steps to change the IP gateway address of the fan tray.

Description	***Switch***	***Display*** two lines: displayed alternating alternate background color: blinking
switch the crate on	P▲	+5V 5.01V 1.2A
select the requested main operation mode	M▲ or M▼ (until right mode is displayed)	TCPIP: no link
enter submenu	M▲(push and hold), P▲	Config: Wait
	hold both switches up	Config: Wait...
	after 4 seconds you can	Config: Ready !
	release the switches	TCPIP Address 192.168.91.80
Select submenu "TCPIP Gateway"	M▲ or M▼ (until right menu is displayed)	TCPIP Gateway 192.168.91.94
Enter this menu	P▲	192.168.91.94
Change the value	M▲ or M▼	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Ready, back to submenu selection	P▲	TCPIP Gateway 196.168.91.94
Ready, leave submenu	M▼	TCPIP: no link

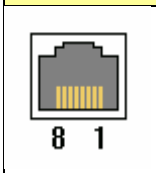
2.2.5 Main operation modes and associated submenus

Operation Mode	*Submenu*	*Display*
Display voltage and current of the selected output channel		+5V 5.01V 72.A
	Change of the current limit	+5V Ilim 115.A
	Fine adjustment of the output voltage	+5V Uadj +50%
	Change the output voltage (coarse)	+5V Unom 5.00V
	Change the overvoltage protection threshold (crowbar, measured at the power supply outputs)	+5V OVP 6.00V
	Change of the overcurrent switch-off threshold	+5V IOff 110.A
	Change of the undervoltage switch-off threshold	+5V Umin 4.50V
	Change of the overvoltage switch-off threshold	+5V Umax 5.50V
Display the total power at the load		
Display the CANbus address		
Display the TCP/IP connection state Possible values & symbols are: no link (no cable connected) 10M (connected to 10M network) 100M (connected to 100M network) HD (half duplex) FD (full duplex) ↓, ↑, ↕ (Frame received, transmitted, both)		Ethernet 100M FD
	Change the TCP/IP address	TCPIP Address 192.168.91.80
	Change the TCP/IP subnet mask	TCPIP SubnetMask 255.255.255.224
	Change the TCP/IP gateway address	TCPIP Gateway 192.168.91.94
	Allow writes (e.g. switch on/off) via the web server	HTTP:read/write
	Change TCP/IP negotiation settings	TCPIPnegotiation AutoNegotiation
	Display of the ethernet hardware address (MAC). This address is written at the type plate, too.	TCPIP MAC Addres 0050-C22D-C231
	Change the TCP/IP port of the web server	HTTP Port 80
	Change the TCP/IP port of the TELNET server	TELNET Port 23
	Change the TCP/IP port of the SNMP server	SNMP Port 161
	Restore the default SNMP settings (community strings)	SNMP Default No

Operation Mode	*Submenu*	*Display*
Display the RS232 interface state		
Display the fan rotation speed		
	Change the time for which the fans will continue running after switching the power supply off.	
	Display the number of supervised fans	
Display the internal fan tray temperature (inlet air temperature)		
	Select the temperature unit (Celsius or Farenheit)	
	Functionality of the "Fan Auto Off" switch	
	Hide the display of the internal fan tray temperature	
Display the BIN sensor temperature		
	Change the WARNIG threshold temperature (fans will switch to full speed)	
	Change the ERROR threshold temperature (power supply is switched off)	
Display the fan operating time		
Display the power supply operating time		

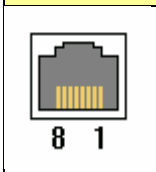
2.2.6 EX Fan Tray Remot Control Pin Description

CAN-Bus (X1, X2)

RJ45 Socket	Pin	Signal	Comment
	1	CAN-H	
	2	CAN-L	
	3	GND	
	4	n.c.	
	5	n.c.	
	6	reserved	
	7	GND	
	8	n.c.	

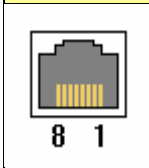
This is the standard CIA pinning. Both CANbus connectors are wired in parallel, so it's easy to connect many crates in a daisy-chain.

RS232 (X3)

RJ45 Socket	Pin	Signal	Comment
	1	n.c.	
	2	n.c.	
	3	n.c.	
	4	GND	
	5	RXD	Output
	6	TXD	Input
	7	CTS	Output
	8	RTS	Input

This is the standard RS232D DCE pinning. Connection to DTE (e.g. computer) with a 1:1-cable.

Ethernet (X4)

RJ45 Socket	Pin	Signal	Comment
	1	TX+	
	2	TX-	
	3	RX+	
	4	GND 1	75 Ohm
	5	GND 1	
	6	RX-	
	7	GND 2	75 Ohm
	8	GND 2	

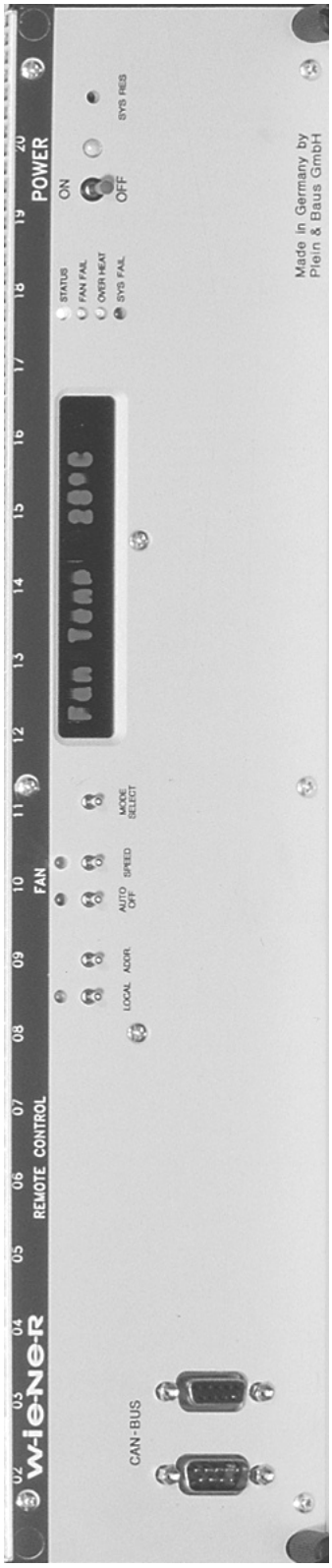
This is the standard NIC configuration. **You need a** 1:1-cable to connect a to a HUB, or a **cross-over cable to connect to** another NIC (e.g. **a computer**). *There is no automatic signal crossing like with some routers*.

CAN Transmission Speed Index

Index	Max. Distance	Bit Rate	Type
0	10 m	1.6 Mbit/s	high- speed
1	40 m	1.0 Mbit/s	
2	130 m	500 kbit/s	(needs termination)
3	270 m	250 kbit/s	
4	530 m	125 kbit/s	
5	620 m	100 kbit/s	low-speed
6	1.300m	50 kbit/s	
7	3.300 m	20 kbit/s	
8	6.700 m	10 kbit/s	
9	10.000 m	5 kbit/s	

For software protocol see separate manual No. *00183

2.2.7 LX / EX fan-tray front panel view



SYS Reset Switch (protected)

Power On LED
Main Switch **ON/OFF**; Trip off Rest

Status LEDs: Green Status
Yellow Fan Fail
Yellow Over Heat
Red SYS Fail

Alphanumeric Display

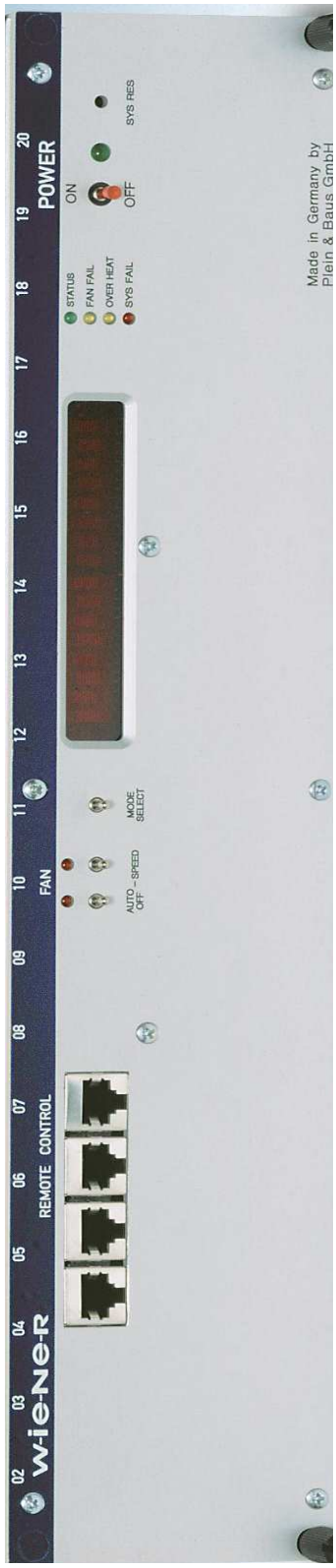
MODE SELECT Switch

Fan **SPEED** Switch and LED
AUTO OFF Switch and LED

Network **ADDR**ess Switch
LOCAL Switch and LED

EX RJ45 (standard)
- Ethernet
- RS232
- CANbus
- CANbus

CANbus connector 1 female
LX Sub D (optional)
CANbus connector 2 male



Standard Measurement Ranges

Available Modes and Display Examples			
Mode	Monitored Values		Description
+5V	5.00 V	115A.... 230A (460)	+5V channel
+12V	12.0 V	11.5 / 46.0A (92)	+12V channel
+15V [1]	15.0 V	11.5 / 35.0A (70)	+15V channel
+24V [1]	24.0 V	11.5 / 23,0 A (66)	+15V channel
+3,3V	3.30 V	115.... 230A (460)	3,3V channel
+48V [1]	48,0 V	13,5... 67A	
-5V	5.20 V	100A.... 400A	-5.2V channel
-12V	12.0 V	6.0 / 10.0 / 40.0A (80)	-12V channel
-15V [1]	15.0 V	6.0 / 10.0 / 30.0A (80)	-15V channel
-24V [1]	24.0 V	6.5 / 20,0A (80)	-24V channel
-2V	2.00 V	100.0A.... 200A	-2V channel
POWER	135	W	output power
FANS	3000	RPM	fan rotation speed
FAN TEMP	25	° C or °F	fan air inlet temp.
FAN TIME	82000,6	h	Operating hours Fan tray
P.S. TIME	150000,0	h	Operating hours Power Supply
Options			
BIN TEMP 1	35°C	° C or °F	bin slot 1 (?) temp.
BIN TEMP 2		° C or °F	bin slot 2 (?) temp.
..... up to			
BIN TEMP 8		° C or °F	bin slot 8 (?) temp.
Networks *			
CAEN*	ADDR	99	CAENET address
BAUD*	RATE	1 MBAUD	CANbus bit rate
CANbus*	ADDR	127	CANbus address
IEC*	ADDR	25	IECbus address
TCP/IP	ADDR		Details see 2.2 ++

[1] Either the 15V-, the 24V- or the 48V- output will be in use, depending on the application (VME, VME64x, VXI)

3 6021-6023 Bin Technical details

3.1.1 VME-Bus Terminology, Signal Identification

BR0*-BR3*	**Bus request (0-3).** Open-collector driven signals generated by requesters. A low level on one of these lines indicates that some master need to use the DTB
D00-D31	**Data bus.** Three-state driven bi-directional lines used to transfer data between masters an slaves, and status/ID information from interrupters to interrupt handlers.
DS0*, DS1*	**Data strobe zero, one.** Three-state driven signals used in conjunction with LWORD* and A01 to indicate how many byte locations are being accessed (1, 2, 3, or 4). In addition, during a write cycle, the falling edge of the first data strobe indicates that valid data is available on the data bus. On a read cycle, the rising edge of the first data strobe indicates that data has been accepted from the data bus.
DTACK*	**Data transfer acknowledge.** An open-collector driven signal generated by a SLAVE. The falling edge of this signal indicates that valid data is available on the data bus during a read cycle, or that data has been accepted from the data bus during a write cycle. The rising edge indicates when the slave has released the data bus at the end of a read cycle.
GND	the dc voltage reference for the system
IACK*	**interrupt acknowledge.** An open-collector or three-state driven signal used by an interrupt handler to acknowledge an interrupt request. It is routed, by way of a backplane signal trace, to the IACKIN* pin of slot 1, where it is monitored by the IACK daisy-chain driver.
IACKIN*	**interrupt acknowledge in.** A totem-pole driven signal. The IACKIN* and IACKOUT* signal indicates to the board receiving it that it is allowed to respond to the interrupt acknowledge cycle that is in progress.
IACKOUT*	**Interrupt acknowledge out.** A totem-pole driven signal. The IACKIN* and IACKOUT* signal is sent by a board to indicate to the next board in the daisy-chain that it is allowed to respond the interrupt acknowledge cycle that is in progress.
IRQ1*-IRQ7*	**Interrupt request (1-7).** Open-collector driven signals, that are driven low by interrupters to request an interrupt. When several lines are monitored by a single handler the highest numbered line is given the highest priority.
LWORD*	**Longword.** A three-state driven signal used in conjunction with DS0*, DS1*, and A01 to select which byte location(s) within the 4-byte group are accessed during the data transfer.
RESERVED	**Reserved.** A signal line reserved for future enhancements.
SERCLK	**Serial clock.** A totem-pole driven signal that is used to synchronize the data transmission on the VMSbus.

SERDAT*	**Serial data.** An open collector driven signal that is used for VMEbus data transmission.
SYSCLK	**System clock.** A totem-pole driven signal that provides a constant 16 MHz clock signal that is independent of any other bus timing.
SYSFAIL*	**System reset.** An open-collector driven signal that indicates when a failure has occurred in the system. This signal can be generated by any board in the system.
SYSRESET*	**System reset.** An open-collector driven signal, which when low, causes the system to be reset.
WRITE*	**Write.** A three-state driven signal generated by the master to indicate whether the data transfer cycle is a read or write. A high level indicates a read operation; a low level indicates a write operation.
+ 5 V STDBY	**+ 5V dc standby.** This line supplies 5 V dc to devices requiring battery backup.
+ 5 V	**+ 5 V dc power.** Used by system logic circuits.
+ 12 V	**+ 12 V dc power.** Used by system logic circuits.
- 12 V	**- 12 V dc power**. Used by system logic circuits.

3.1.2 Backplane Current Ratings

Power distribution	**VME**	**VME**	**VME**	**VME 430**	**VME 64x**
each slot (20°C / 70°C)	J1	J2	J1-J2	J1-Jaux-J2	J1
3,3V					17/12A
5V	9,5/7,5A	9,5/7,5A	19/15A	19/15A	8,5/6A
+/-12V	3,2/2,5A		3,2/2,5A	3,2/2,5A	1,7/1,2A
+/-15V				3,2/2,5A	
-5,2V				19/15A	
-2V				9,5/7,5A	
Vw, Vx, Vy, Vz					
V1, V2					1,7/1,2A
Layers	8	4	8	8	10
Type of ADC	mech		mech	mech	active
Termination on board	passive	passive	passive	passive	active
J2 with 160pin		optional	optional	optional	
Power Connections	Studs	Studs	Studs	Studs	Bugs

Backplane Current ratings cont.

Power distribution	**VME 64x**	**VME64xP**	**VXI C size**	**VXI D size**
each slot (20°C / 70°C)	J1-Jo-J2	J1-Jo-J2 **Slot 2- 21[2])[1]**	J1-J2	J1-J2-J3
3,3V	17/12A	17/12A		
5V	15,3/10,8A	27/19A	14/10,5A	24/18A
+/-12V	1,7/1,2A	1,7/1,2A	2/1,5A	4/3A
+/-15V				
-5,2V			10/7,5A	20/15A
-2V			4/3A	10/7,5A
+/-24V			2/1,5A	4/3A
Vw, Vx, Vy, Vz	4/3A	4/3A		
V1, V2	1,7/1,2A	1,7/1,2A		
Layers	10	18	10	10
Type of ADC	active	active	active	active
Termination on board	active	active	active	active
Power Connections	Bugs	Bugs	Studs	Studs

3.1.3 Pin Assignment Jaux of VME 430-Bus (CERN)

Pin Number	Row A	Row B	Row C
01	SN1	GND	SN2
02	SN3	GND	SN4
03	SN5	GND	GND
04	CK*	GND	CK
05	SG*	GND	SG
06	CL*	GND	CL
07	-2 V	-2 V	-2 V
08	- 15 V	CE	+ 15 V
09	- 5,2 V	-5,2 V	- 5,2V
10	- 5,2 V	- 5,2 V	- 5,2V

[2] **On slot 1 of the 64xP** backplane the Jo is not feeding additional 5V pins. Therefore the current capability for +5V is only **15,3/10,8A.**

3.1.3.1 Terminology and Signal Identification of Jaux

SN1... SN5, Binary coded slot No. lines, Geographical address

Slot Number	SN1	SN2	SN3	SN4	SN5
01	NC	GND	GND	GND	GND
02	GND	NC	GND	GND	GND
03	NC	NC	GND	GND	GND
04	GND	GND	NC	GND	GND
05	NC*	GND	NC	GND	GND
06	GND	NC	NC	GND	GND
19	NC	NC	GND	GND	NC
20	GND	GND	NC	GND	NC
21	NC	GND	NC	GND	NC

NC = No Connection (represents H- level, generated by 5k6 resistor on VME modul for TTL, e.g.)

CK, SG and CL signals, Clean Earth

CK, Clock signal, bussed differential line terminated on both sides of the backplane (2 resistors to ground and 1 resistor in between the two lines according to the impedance .

CK positive logic
CK* negative logic

SG, Start / Stop Gate, bussed differential line terminated like CK lines.

SG positive logic
SG* negative logic

CL, Clear, bussed differential line terminated like CK lines.

CL positive logic
CL* negative logic

CE, Clean Earth , unbussed line without termination.

3.1.4 Pin Assignments of J1 and J2 VME Bus

	J1			J2		
Pin No.	Row A	Row B	Row C	Row A	Row B	Row C
01	D00	BBSY*	D08	User defined	+5 V	User defined
02	D01	BCLR	D09	User defined	GND	User defined
03	D02	ACFAIL*	D10	User defined	Reserved	User defined
04	D03	BG0IN*	D11	User defined	A24	User defined
05	D04	BG0OUT*	D12	User defined	A25	User defined
06	D05	BG1IN*	D13	User defined	A26	User defined
07	D06	BG1OUT*	D14	User defined	A27	User defined
08	D07	BG2IN*	D15	User defined	A28	User defined
09	GND	BG2OUT*	GND	User defined	A29	User defined
10	SYSCLK	BG3IN*	SYSFAIL*	User defined	A30	User defined
11	GND	BG3OUT*	BERR*	User defined	A31	User defined
12	DS1*	BR0*	SYSRESET*	User defined	GND	User defined
13	DS0*	BR1*	LWORD*	User defined	+5 V	User defined
14	WRITE*	BR2*	AM5	User defined	D16	User defined
15	GND	BR3*	A23	User defined	D17	User defined
16	DTACK*	AM0	A22	User defined	D18	User defined
17	GND	AM1	A21	User defined	D19	User defined
18	AS*	AM2	A20	User defined	D20	User defined
19	GND	AM3	A19	User defined	D21	User defined
20	IACK*	GND	A18	User defined	D22	User defined
21	IACKIN*	SERCLK	A17	User defined	D23	User defined
22	IAOUT*	SERDAT	A16	User defined	GND	User defined
23	AM4	GND	A15	User defined	D24	User defined
24	A07	IRQ7*	A14	User defined	D25	User defined
25	A06	IRQ6*	A13	User defined	D26	User defined
26	A05	IRQ5*	A12	User defined	D27	User defined
27	A04	IRQ4*	A11	User defined	D28	User defined
28	A03	IRQ3*	A10	User defined	D29	User defined
29	A02	IRQ2*	A09	User defined	D30	User defined
30	A01	IRQ1*	A08	User defined	D31	User defined
31	-12 V	+5V STDBY	+ 12 V	User defined	GND	User defined
32	+5 V	+ 5 V	+ 5 V	User defined	+ 5 V	User defined

3.1.5 Pin Assignments of VME 64x-Bus

J1 (extended)

Pin No.	Row Z	Row A	Row B	Row C	Row D
01	MPR	D00	BBSY*	D08	VPC (1)
02	GND	D01	BCLR*	D09	GND (1)
03	MCLK	D02	ACFAIL*	D10	+V1
04	GND	D03	BG0IN*	D11	+V2
05	MSD	D04	BG0OUT*	D12	RsvU
06	GND	D05	BG1IN*	D13	-V1
07	MMD	D06	BG1OUT	D14	-V2
08	GND	D07	BG2IN*	D15	RsvU
09	MCTC	GND	BG2OUT*	GND	GAP*
10	GND	SYSCLK	BG3IN*	SYSFAIL*	GAO*
11	RESP*	GND	BG3OUT*	BERR*	GA1*
12	GND	DS1*	BR0*	SYSRESET*	+3.3V
13	RsvBus	DS0*	BR1*	LWORD	GA2*
14	GND	WRITE*	BR2*	AM5	+3.3V
15	RsvBus	GND	BR3*	A23	GA3*
16	GND	DTACK*	AM0	A22	+3.3V
17	RsvBus	GND	AM1	A21	GA4*
18	GND	AS*	AM2	A20	+3.3V
19	RsvBus	GND	AM3	A19	RsvBus
20	GND	IACK*	GND	A18	+3.3V
21	RsvBus	IACKIN*	SERCLK	A17	RsvBus
22	GND	IAOUT*	SERDAT	A16	3.3V
23	RsvBus	AM4	GND	A15	RsvBus
24	GND	A07	IRQ7*	A14	+3.3V
25	RsvBus	A06	IRQ6*	A13	RsvBus
26	GND	A05	IRQ5*	A12	+3.3V
27	RsvBus	A04	IRQ4*	A11	LI/I*
28	GND	A03	IRQ3*	A10	+3.3V
29	RsvBus	A02	IRQ2*	A09	LI/O*
30	GND	A01	IRQ1*	A08	+3.3V
31	RsvBus	-12 V	+5V STDBY	+12 V	GND (1)
32	GND	+5 V	+5V	+ 5 V	VPC (1)

J2 (extended)

Pin No.	Row Z	Row A	Row B	Row C	Row D
01	User defined	User defined	+5 VAC	User defined	User defined(1)
02	GND	User defined	GND	User defined	User defined(1)
03	User defined	User defined	RESERVED	User defined	User defined
04	GND	User defined	A24	User defined	User defined
05	User defined	User defined	A25	User defined	User defined
06	GND	User defined	A26	User defined	User defined
07	User defined	User defined	A27	User defined	User defined
08	GND	User defined	A28	User defined	User defined
09	User defined	User defined	A29	User defined	User defined
10	GND	User defined	A30	User defined	User defined
11	User defined	User defined	A31	User defined	User defined
12	GND	User defined	GND	User defined	User defined
13	User defined	User defined	+5 V	User defined	User defined
14	GND	User defined	D16	User defined	User defined
15	User defined	User defined	D17	User defined	User defined
16	GND	User defined	D18	User defined	User defined
17	User defined	User defined	D19	User defined	User defined
18	GND	User defined	D20	User defined	User defined
19	User defined	User defined	D21	User defined	User defined
20	GND	User defined	D22	User defined	User defined
21	User defined	User defined	D23	User defined	User defined
22	GND	User defined	GND	User defined	User defined
23	User defined	User defined	D24	User defined	User defined
24	GND	User defined	D25	User defined	User defined
25	User defined	User defined	D26	User defined	User defined
26	GND	User defined	D27	User defined	User defined
27	User defined	User defined	D28	User defined	User defined
28	GND	User defined	D29	User defined	User defined
29	User defined	User defined	D30	User defined	User defined
30	GND	User defined	D31	User defined	User defined
31	User defined	User defined	GND	User defined	GND (1)
32	GND	User defined	+5 V	User defined	VPC (1)

3.1.5.1 Pin Assignment Jo of VME 64x-Bus

J0 (extended)

Pos	Row f	Row e	Row d	Row c	Row b	Row a	Row z
1	GND	User defined	User defined	User defined	User defined	User defined	GND
2	GND	User defined	User defined	User defined	User defined	User defined	GND
3	GND	User defined	User defined	User defined	User defined	User defined	GND
4	GND	User defined	User defined	User defined	User defined	User defined	GND
5	GND	User defined	User defined	User defined	User defined	User defined	GND
6	GND	User defined	User defined	User defined	User defined	User defined	GND
7	GND	User defined	User defined	User defined	User defined	User defined	GND
8	GND	User defined	User defined	User defined	User defined	User defined	GND
9	GND	User defined	User defined	User defined	User defined	User defined	GND
10	GND	User defined	User defined	User defined	User defined	User defined	GND
11	GND	User defined	User defined	User defined	User defined	User defined	GND
12	GND	User defined	User defined	User defined	User defined	User defined	GND
13	GND	User defined	User defined	User defined	User defined	User defined	GND
14	GND	User defined	User defined	User defined	User defined	User defined	GND
15	GND	User defined	User defined	User defined	User defined	User defined	GND
16	GND	User defined	User defined	User defined	User defined	User defined	GND
17	GND	User defined	User defined	User defined	User defined	User defined	GND
18	GND	User defined	User defined	User defined	User defined	User defined	GND
19	GND	User defined	User defined	User defined	User defined	User defined	GND

3.1.6 Pin Assignment J0 of VME 64xC –Bus

The VME64xC Bus consists of a monolythic VME64x J1/J2 bus with a special J0 high power distribution bus. The J0 connector is built out of three 10-pin connectors MP2-HP10-51P1-TR (Robinson Nugent) for each slot (Reference Numbers: J0.1A, J0.1B and J0.1C for slot 1, and so on). A Current of up to 26A/slot could be supplied with each of the six UAUX lines.

Connector	Pin					Signal
J0.A	A1	B1	C1	D1	E1	UAUX1 (3.3V)
	A2	B2	C2	D2	E2	UAUX1 Return
J0.B	A1	B1	C1	D1	E1	UAUX2 (2.5V)
	A2	B2	C2	D2	E2	UAUX2 Return
J0.C	A1	B1	C1	D1	E1	UAUX3 (1.8V)
	A2	B2	C2	D2	E2	UAUX3 Return

3.1.7 Special Pin Assignment J0 of VME 64xP - Bus (VIPA)

Some user defined pins of the 64x- Jo connector have been specified in the 64xP (VIPA) document to get available additional voltages and signals on the backplane. The slot 1 pin out is identical to those of the Jo of the 64x pin assignment. Slot 2 to 21 are outfitted with the following pin out:

Jo Slot 2-21

Pin No.	Row z	Row a	Row b	Row c	Row d	Row e	Row f
01	COM	+5V	+5V	+5V	+5V	+5V	COM
02	COM	RET_WX	Reserved	+5V	TBUS1+	TBUS1-	COM
03	COM	RET_WX	Reserved	Reserved	TBUS2+	TBUS2-	COM
04	COM	Vw	Reserved	USER I/O	USER I/O	USER I/O	COM
05	COM	Vw	Reserved	USER I/O	USER I/O	USER I/O	COM
06	COM	RET_WX	Reserved	USER I/O	USER I/O	USER I/O	COM
07	COM	AREF_WX	Reserved	USER I/O	USER I/O	USER I/O	COM
08	COM	RET_WX	Reserved	USER I/O	USER I/O	USER I/O	COM
09	COM	Vx	Reserved	USER I/O	USER I/O	USER I/O	COM
10	COM	Vx	Reserved	USER I/O	USER I/O	USER I/O	COM
11	COM	Vy	Reserved	USER I/O	USER I/O	USER I/O	COM
12	COM	Vy	Reserved	USER I/O	USER I/O	USER I/O	COM
13	COM	RET_YZ	Reserved	USER I/O	USER I/O	USER I/O	COM
14	COM	AREF_YZ	Reserved	USER I/O	USER I/O	USER I/O	COM
15	COM	RET_YZ	Reserved	USER I/O	USER I/O	USER I/O	COM
16	COM	Vz	Reserved	USER I/O	USER I/O	USER I/O	COM
17	COM	Vz	Reserved	Reserved	TBUS3+	TBUS3-	COM
18	COM	RET_YZ	Reserved	Reserved	TBUS4+	TBUS4-	COM
19	COM	RET_YZ	Reserved	Reserved	TBUS_OC1	TBUS_OC2	COM

3.1.8 Pin Assignments of VXI-Bus

VXIbus J1/J2 Connector, Slot 1-13, C- and D- size

	J1			**J2**		
Pin No.	Row A	Row B	Row C	Row A	Row B	Row C
01	D00	BBSY*	D08	ECLTRG0	+ 5 V	CLK10+
02	D01	BCLR	D09	- 2V	GND	CLK10-
03	D02	ACFAIL*	D10	ECLTRG1	RSV1	GND
04	D03	BG0IN*	D11	GND	A24	-5.2V
05	D04	BG0OUT*	D12	LBUSA00	A25	LBUSC00
06	D05	BG1IN*	D13	LBUSA01	A26	LBUSC01
07	D06	BG1OUT*	D14	-5.2V	A27	GND
08	D07	BG2IN*	D15	LBUSA02	A28	LBUSC02
09	GND	BG2OUT*	GND	LBUSA03	A29	LBUSC03
10	SYSCLK	BG3IN*	SYSFAIL*	GND	A30	GND
11	GND	BG3OUT*	BERR*	LBUSA04	A31	LBUSC04
12	DS1*	BR0*	SYSRESET*	LBUSA05	GND	LBUSC05
13	DS0*	BR1*	LWORD*	-5.2V	+ 5V	-2V
14	WRITE*	BR2*	AM5	LBUSA06	D16	LBUSC06
15	GND	BR3*	A23	LBUSA07	D17	LBUSC07
16	DTACK*	AM0	A22	GND	D18	GND
17	GND	AM1	A21	LBUSA08	D19	LBUSC08
18	AS*	AM2	A20	LBUSA09	D20	LBUSC09
19	GND	AM3	A19	-5.2V	D21	-5.2V
20	IACK*	GND	A18	LBUSA10	D22	LBUSC10
21	IACKIN*	SERCLK	A17	LBUSA11	D23	LBUSC11
22	IAOUT*	SERDAT	A16	GND	GND	GND
23	AM4	GND	A15	TTLTRG0*	D24	TTLTRG1*
24	A07	IRQ7*	A14	TTLTRG2*	D25	TTLTRG3*
25	A06	IRQ6*	A13	+5V	D26	GND
26	A05	IRQ5*	A12	TTLTRG4*	D27	TTLTRG5*
27	A04	IRQ4*	A11	TTLTRG6*	D28	TTLTRG7*
28	A03	IRQ3*	A10	GND	D29	GND
29	A02	IRQ2*	A09	RSV2	D30	RSV3
30	A01	IRQ1*	A08	MODID	D31	GND
31	-12 V	5V STDBY	+ 12 V	GND	GND	+24V
32	+5 V	+ 5 V	+ 5 V	SUMBUS	+ 5V	-24V

VXIbus J2 Connector, Slot 1, C- and D- size

Pin Number	Row A	Row B	Row C
01	ECLTRG0	+ 5 VDC	CLK10+
02	- 2V	GND	CLK10-
03	ECLTRG1	RSV1	GND
04	GND	A24	-5.2V
05	MODID12	A25	LBUSC00
06	MODID11	A26	LBUSC01
07	-5.2V	A27	GND
08	MODID10	A28	LBUSC02
09	MODID09	A29	LBUSC03
10	GND	A30	GND
11	MODID08	A31	LBUSC04
12	MODID07	GND	LBUSC05
13	-5.2V	+ VDC	-2V
14	MODID06	D16	LBUSC06
15	MODID05	D17	LBUSC07
16	GND	D18	GND
17	MODID04	D19	LBUSC08
18	MODID03	D20	LBUSC09
19	-5.2V	D21	-5.2V
20	MODID02	D22	LBUSC10
21	MODID01	D23	LBUSC11
22	GND	GND	GND
23	TTLTRG0*	D24	TTLTRG1*
24	TTLTRG2*	D25	TTLTRG3*
25	+5V	D26	GND
26	TTLTRG4*	D27	TTLTRG5*
27	TTLTRG6*	D28	TTLTRG7*
28	GND	D29	GND
29	RSV2	D30	RSV3
30	MODID	D31	GND
31	GND	GND	+24V
32	SUMBUS	+ 5VDC	-24V

VXIbus J3 Connector, Slot 2-13, **D- size only**

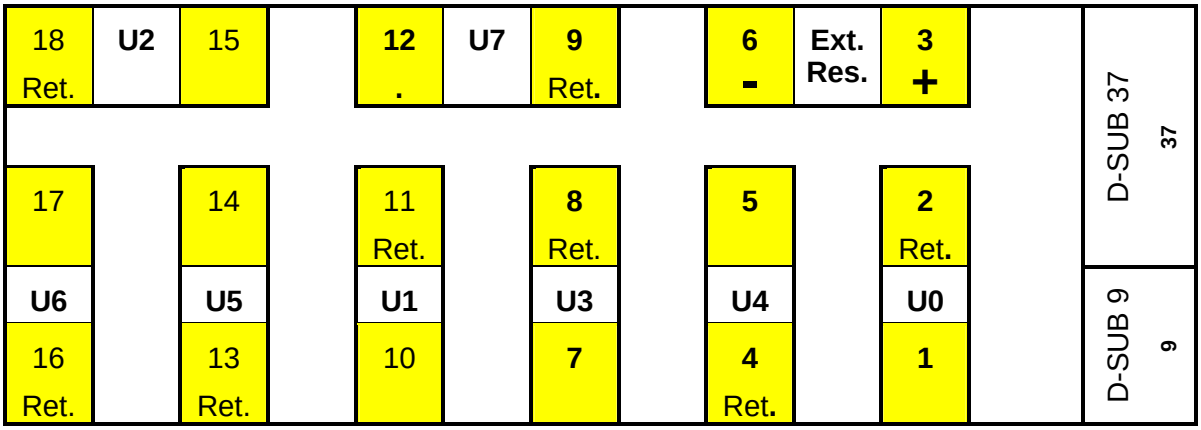
Pin Number	Row A	Row B	Row C
01	ECLTRG2	+24V	+12V
02	GND	-24V	-12V
03	ECLTRG3	GND	RSV4
04	-2V	RSV5	+5V
05	ECLTRG4	-5.2V	RSV6
06	GND	RSV7	GND
07	ECLTRG5	+5V	-5.2V
08	-2V	GND	GND
09	LBUSA12	+5V	LBUSC12
10	LBUSA13	LBUSC15	LBUSC13
11	LBUSA14	LBUSA15	LBUSC14
12	LBUSA16	GND	LBUSC16
13	LBUSA17	LBUSC19	LBUSC17
14	LBUSA18	LBUSA19	LBUSC18
15	LBUSA20	+5V	LBUSC20
16	LBUSA21	LBUSC23	LBUSC21
17	LBUSA22	LBUSA23	LBUSC22
18	LBUSA24	-2V	LBUSC24
19	LBUSA25	LBUSC27	LBUSC25
20	LBUSA26	LBUSA27	LBUSC26
21	LBUSA28	GND	LBUSC28
22	LBUSA29	LBUSC31	LBUSC29
23	LBUSA30	LBUSA31	LBUSC30
24	LBUSA32	+5V	LBUSC32
25	LBUSA33	LBUSC35	LBUSC33
26	LBUSA34	LBUSA35	LBUSC34
27	GND	GND	GND
28	STARX+	-5.2V	STARY+
29	STARX-	GND	STARY-
30	GND	-5.2V	-5.2V
31	CLK100+	-2V	SYNC100+
32	CLK100-	GND	SYNC100-

VXIbus J3 Connector, Slot 1, **D- size only**

Pin Number	Row A	Row B	Row C
01	ECLTRG2	+24V	+12V
02	GND	-24V	-12V
03	ECLTRG3	GND	RSV4
04	-2V	RSV5	+5V
05	ECLTRG4	-5.2V	RSV6
06	GND	RSV7	GND
07	ECLTRG5	+5V	-5.2V
08	-2V	GND	GND
09	STARY12+	+5V	STARX01+
10	STARY12-	STARY01-	STARX01-
11	STARX12+	StARX12-	STARY01+
12	STARY11+	GND	STARX02+
13	STARY11-	STARY02-	STARX02-
14	STARX11+	STARX11-	STARY02+
15	STARY10+	+5V	STARX03+
16	STARY10-	STARY03-	STARX03-
17	STARX10+	STARX10-	STARY03+
18	STARY09+	-2V	STARX04+
19	STARY09-	STARY04-	STARX04-
20	STARX09+	STARX09-	STARY04+
21	STARY08+	GND	STARX05+
22	STARY08-	STARY05-	STARX05-
23	STARX08+	STARX08-	STARY05+
24	STARY07+	+5V	STARX06+
25	STARY07-	STARY06-	STARX06-
26	STARX07+	STARY07-	STARY06+
27	GND	GND	GND
28	STARX+	-5.2V	STARY+
29	STARX-	GND	STARY-
30	GND	-5.2V	-5.2V
31	CLK100+	-2V	SYNC100+
32	CLK100-	GND	SYNC100-

4 Power Supply UEP6021

4.1 Power Connector Board (Round Contacts)



Pin 10,11,13...18: 6mm, 120A max.
Pin 1...9+12: **8mm, 240A max**
Ret. Return from common ground rail at backplane

Voltages and Pin outs in Standard VME application

U0	**5V (2... 7V) ≤ 230A**	U1	+12V (7... 24V) < 92A
U2	+15V (7... 24V) < 92A	U3	**3,3V (2... 7V) ≤ 230A**
U4	-5,2V (2... 7V) ≤ 230A	U5	-12V (7... 24V) < 92A
U6	-15V (7... 24V) < 92A	U7	-2V (2... 7V) < 115A

Voltages and Pin outs in Standard VME64x application

U0	**5V (2... 7V) ≤ 230A**	U1	+12V (7... 24V) < 92A
U2	+48V (30... 60V) < 92A	U3	**3,3V (2... 7V) ≤ 230A**
U4		U5	-12V (7... 24V) < 92A
U6	-15V (7... 24V) < 92A	U7	

Voltages and Pin outs in Standard VXI application

U0	**5V (2... 7V) ≤ 230A**	U1	+12V (7... 24V) < 92A
U2	+24V (12... 30V) < 92A	U3	
U4	-5,2V (2... 7V) ≤ 230A	U5	-12V (7... 24V) < 92A
U6	-24V (12... 30V) < 92A	U7	-2V (2... 7V) < 115A

4.1.1 Sense and Signal Connector-SUB D 37

		19	TEMP RETURN
37	TEMP 0	18	TEMP 1
36	TEMP 2	17	TEMP 3
35	TEMP 4	16	TEMP 5
34	TEMP 6	15	TEMP 7
33	BIN EEPROM: IIC SDA	14	BIN EEPROM: IIC SCL
32	BIN EEPROM:+5V	13	VME LOGIC: SYSRESET
31	BIN EEPROM: GND	12	VME LOGIC: ACFAIL
30	VME LOGIC GND	11	VME LOGIC: SYSFAIL
29	U0 SENSE -	10	U0 SENSE + (VME: +5V)
28	VW SENSE (reserved)	9	VW SENSE (reserved)
27	VX SENSE (reserved)	8	VX SENSE (reserved)
26	U4 SENSE +	7	U4 SENSE -
25	U7 SENSE +	6	U7 SENSE -
24	U2 SENSE -	5	U2 SENSE + (VME: 48V)
23	U6 SENSE +	4	U6 SENSE -
22	U1 SENSE -	3	U1 SENSE + (VME: +12V)
21	U5 SENSE +	2	U5 SENSE – (VME: -12V)
20	U3 SENSE -	1	U3 SENSE + (VME: +3.3V)

4.1.2 Fan tray and Control Connector SUB D9

		5	CAN_H
9	CAN_L	4	CAN GND
8	RXD	3	TXD
7	+15V (for fan only)	2	+15V (for fan only)
6	-15V (for fan only)	1	-15V (for fan only)

The CANbus Logic is an option. Data exchange between fan tray and power supply has been done by use of serial connection via RXD and TXD.

4.2 Control and Adjustment of 6021 Power Supply

Control of the Power Supply 6021 via CAN-Bus (optional)

The CAN Bus Signals are provided on the 9 Pin DSUB **situated at the power box:**

CAN_H: Pin 5

CAN_L: Pin 9

CAN_GND: Pin 4

The software protocol is described in a separate document (Part No *00183)

CANbus is an independent port. It may be used to operate the power supply separately or in combination with the fan tray inside the bin

Control of the Power Supply 6021 without PC or Control panel (display)

There is a on/off input and a status output function .

Remote On: 9 Pin DSUB: Close a "make" contact or switch between Pin 8 (Serial Data In, RXD) and Pin 2 or 7.

Status Output: 9 Pin DSUB: Connect a LED between Pin 3 (Serial Data Out, TXD) and Pin 1 or 6.

Control of the Power Supply 6021 via Fan tray

Many power supply parameters may be changed via the alphanumeric control of the connected fan tray.

The general procedure is:

- Hold the POWER and MODE switches up simultaneously until the display shows „Config: Wait....“ and „Config: Ready !“. Then release both switches.

- Follow the instructions given above below 2.2.4

- After finishing the parameter programming, leave the submenu or configuration menu (POWER switch down).

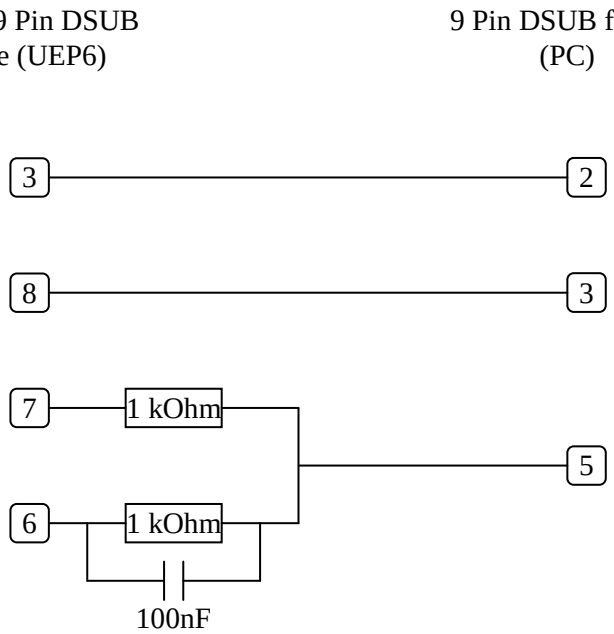
Table 1 List of manual Programming Features

Mode	associated parameter submenu	Description
Any Voltage (e.g. +5V or U0)	Ilim	Output Current limit
	Uadj	Output voltage fine adjustment. The same function as the switches in the power supply
	Unom	Output voltage coarse adjustment.
	Imax	Monitoring: Maximum current for good status.
	Umin	Monitoring: Minimum voltage for good status.
	Umax:	Monitoring: Maximum voltage for good status.
Power	Auto Power On No Auto Power On	Automatic switch on of the power supply after come back of the mains
	Switch Off Normal Switch Off Delay	Delayed switch off: You have to push the POWER switch down for 5 seconds until the power supply switches off

4.2.1 Connection of a Personal Computer to the Power Supply UEP6021

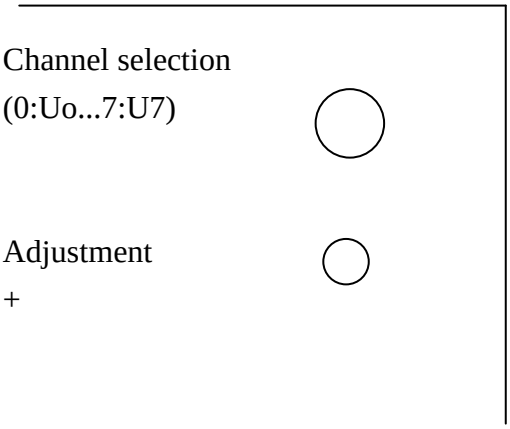
This connection is intended to service functions only. Because of the direct connection between the PC and the power supply, the ripple and noise of the outputs will increase!

Requirements are a PC running Windows, the control program UEP6 and a simple adapter ("Dongle"). The power supply is connected to the COM port of the PC. For more details, view the document *00461.A0.



4.2.2 Output Voltage Adjustments

All output voltages can be adjusted manually via the two rotary switches situated on the power supply top. Note that the status window with the programmed U_{max} and U_{min} level should be set accordingly. Otherwise the unit will trip off if one of these levels exceed. Normally this procedure is used if some fine adjustments becomes necessary, otherwise it is recommended to use the fan tray switches or the remote control.



Mode Selection	Function
0-7	Adjust Voltage of U0-U7
A	CAN Address (low, Bit 0-3)
B	CAN Address (high, Bit 4-6)
C	CAN General Call Address (low, Bit 0-3)
D	CAN General Call Address (high, Bit 4-6)
E	CAN Transmission Speed Index

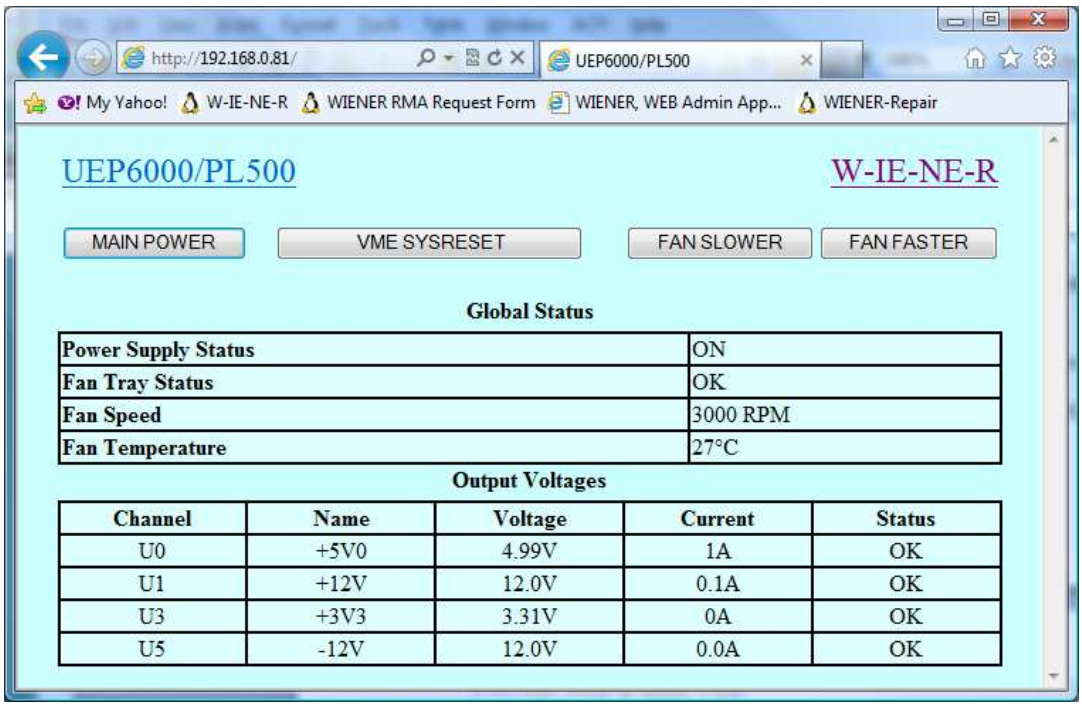
4.3 CANbus

For software protocol see separate manual No. *00183

5 Ethernet Remote Monitoring and Control

All WIENER crates with Ethernet ports allow simple monitoring and control via a web browser which shows status as well as all supply voltages, fan speed and temperatures. It is possible to switch the crate on or off, send a system Reset (VME: SYSRES) and change the fan speed within the web browser window. All active controls as on/off and change fan speed will require a user name and password. The user name is "private" and default password also "private" (can be changed via SNMP).

The network configuration as IP address (0.0.0.0 default = DHCP), net mask and ports can be changed via the front panel display and switches or in case the crate is outfitted with USB port with the WIENER MUSEcontrol program.



For full control of crate and power supply parameters or to implement the crate into a slow control system WIENER is providing a SNMPv2c (**S**imple **N**etwork **M**anagement **P**rotocol) compliant protocol. We suggest NetSNMP as an open source SNMP program which will be used in the further description. Please see http://net-snmp.sourceforge.net/ for more details.

5.1 SNMP communication protocol

Please download and install netSNMP (32-bit version!!! can be downloaded from file.wiener-d.com) on the control computer. In order to perform SNMP calls from any WIENER product the WIENER-CRATE-MIB.TXT file must be stored somewhere on the PC doing the calls, by default that location should be /usr/share/snmp/mibs (Windows: C:\usr\share\snmp\mibs).

The most commonly used netsnmp calls are:
snmpwalk – returns groups of parameters / items
snmpget – returns a specific parameter (read)
snmpset – sets a specific parameter (write)
Please see the Net-snmp description and help files for detailed instructions and options. All parameters defined for the WIENER Mpod system as well as crates and other power supplies are contained within the WIENER-CRATE-MIB.txt file.
A fast an easy way to begin using SNMP is to use command line arguments. The command line arguments specified in this document are based on netSNMP. The command line syntax is the same for both windows and Linux (and MAC OSX).

For all WIENER-CRATE-MIB library calls a quick help text can be shown by using

snmptranslate -On -Td WIENER-CRATE-MIB::xxxx

Example:

snmptranslate -On -Td WIENER-CRATE-MIB::outputName

.1.3.6.1.4.1.19947.1.3.2.1.2

outputName OBJECT-TYPE

-- FROM WIENER-CRATE-MIB

-- TEXTUAL CONVENTION DisplayString

SYNTAX OCTET STRING (1..4)

DISPLAY-HINT "255a"

MAX-ACCESS read-only

STATUS current

DESCRIPTION "A textual string containing a short name of the

output. If the crate is equipped with an alphanumeric

display, this string is shown to identify a output channel."

::= { iso(1) org(3) dod(6) internet(1) private(4) enterprises(1) wiener(19947) c
rate(1) output(3) outputTable(2) outputEntry(1) 2 }

A first communication with a WIENER VME/VXI/VXS crate or PL5xx power supply can be done using the snmpwalk to confirm the existence of the power supply at the given IP address.
snmpwalk -Cp -Oqv -v 2c -M $path -m +WIENER-CRATE-MIB -c public $ip

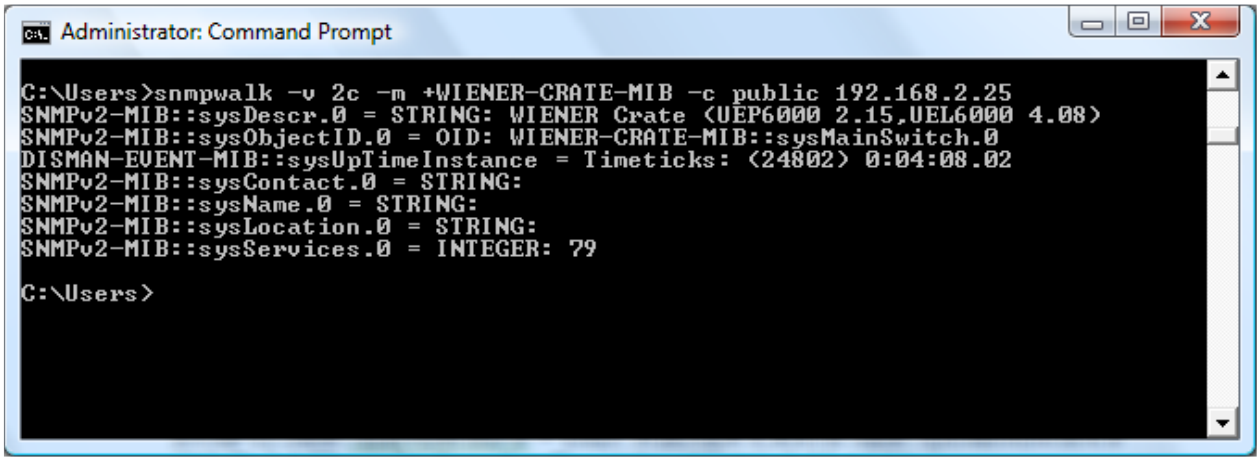
with:

snmpwalk: This command will retrieve a block of information.

-v 2c: This parameters specifies which version of the SNMP to use. WIENER devices use SNMP 2C.
-M $path: This parameter should be replaced with the path to the WIENER-CRATE-MIB.txt file. It is not needed in case the default path is used.
-m +WIENER-CRATE-MIB: This parameter tells the command to look at the WIENER-CRATE-MIB to resolve the OID name.
-c public: This specifies which community of values can be accessed.
$ip: This should be replaced with the IP address of the MPOD crate.

Example for crate with IP address 192.168.0.81:

C:\ >snmpwalk -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81
SNMPv2-MIB::sysDescr.0 = STRING: WIENER Crate (UEP6000 2.15, UEL6000 4.18, UEL6E -BL 1.40)
SNMPv2-MIB::sysObjectID.0 = OID: WIENER-CRATE-MIB::sysMainSwitch.0
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (12935) 0:02:09.35
SNMPv2-MIB::sysContact.0 = STRING:
SNMPv2-MIB::sysName.0 = STRING:
SNMPv2-MIB::sysLocation.0 = STRING:
SNMPv2-MIB::sysServices.0 = INTEGER: 79



A list of all available parameters or sub-parameters as for instance channels can be obtained using the command snmpwalk with the parameter "crate". To get all parameters use:

snmpwalk -Cp -Oqv -v 2c -M $path -m +WIENER-CRATE-MIB -c public $ip crate

example:

C:\ >snmpwalk -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 crate

Returns for a VME64x 6023 crate:

WIENER-CRATE-MIB::sysMainSwitch.0 = INTEGER: on(1)
WIENER-CRATE-MIB::sysStatus.0 = BITS: 80 00 mainOn(0)
WIENER-CRATE-MIB::sysVmeSysReset.0 = INTEGER: 0
WIENER-CRATE-MIB::sysHardwareReset.0 = INTEGER: 0
WIENER-CRATE-MIB::outputNumber.0 = INTEGER: 4
WIENER-CRATE-MIB::outputIndex.u0 = INTEGER: u0(1)
WIENER-CRATE-MIB::outputIndex.u1 = INTEGER: u1(2)
WIENER-CRATE-MIB::outputIndex.u3 = INTEGER: u3(4)
WIENER-CRATE-MIB::outputIndex.u5 = INTEGER: u5(6)
WIENER-CRATE-MIB::outputName.u0 = STRING: +5V0
WIENER-CRATE-MIB::outputName.u1 = STRING: +12V
WIENER-CRATE-MIB::outputName.u3 = STRING: +3V3
WIENER-CRATE-MIB::outputName.u5 = STRING: -12V
WIENER-CRATE-MIB::outputGroup.u0 = INTEGER: 0
WIENER-CRATE-MIB::outputGroup.u1 = INTEGER: 0
WIENER-CRATE-MIB::outputGroup.u3 = INTEGER: 0
WIENER-CRATE-MIB::outputGroup.u5 = INTEGER: 0
WIENER-CRATE-MIB::outputStatus.u0 = BITS: 80 outputOn(0)
WIENER-CRATE-MIB::outputStatus.u1 = BITS: 80 outputOn(0)
WIENER-CRATE-MIB::outputStatus.u3 = BITS: 80 outputOn(0)
WIENER-CRATE-MIB::outputStatus.u5 = BITS: 80 outputOn(0)
WIENER-CRATE-MIB::outputMeasurementSenseVoltage.u0 = Opaque: Float: 4.990000 V
WIENER-CRATE-MIB::outputMeasurementSenseVoltage.u1 = Opaque: Float: 11.980000 V
WIENER-CRATE-MIB::outputMeasurementSenseVoltage.u3 = Opaque: Float: 3.310000 V
WIENER-CRATE-MIB::outputMeasurementSenseVoltage.u5 = Opaque: Float: 11.990000 V
WIENER-CRATE-MIB::outputMeasurementCurrent.u0 = Opaque: Float: 1.210000 A
WIENER-CRATE-MIB::outputMeasurementCurrent.u1 = Opaque: Float: 0.090000 A
WIENER-CRATE-MIB::outputMeasurementCurrent.u3 = Opaque: Float: 0.000000 A

WIENER-CRATE-MIB::outputMeasurementCurrent.u5 = Opaque: Float: 0.040000 A
WIENER-CRATE-MIB::outputMeasurementTemperature.u0 = INTEGER: ok(-128)
WIENER-CRATE-MIB::outputMeasurementTemperature.u1 = INTEGER: ok(-128)
WIENER-CRATE-MIB::outputMeasurementTemperature.u3 = INTEGER: ok(-128)
WIENER-CRATE-MIB::outputMeasurementTemperature.u5 = INTEGER: ok(-128)
WIENER-CRATE-MIB::outputSwitch.u0 = INTEGER: on(1)
WIENER-CRATE-MIB::outputSwitch.u1 = INTEGER: on(1)
WIENER-CRATE-MIB::outputSwitch.u3 = INTEGER: on(1)
WIENER-CRATE-MIB::outputSwitch.u5 = INTEGER: on(1)
WIENER-CRATE-MIB::outputVoltage.u0 = Opaque: Float: 5.000000 V
WIENER-CRATE-MIB::outputVoltage.u1 = Opaque: Float: 12.000000 V
WIENER-CRATE-MIB::outputVoltage.u3 = Opaque: Float: 3.300000 V
WIENER-CRATE-MIB::outputVoltage.u5 = Opaque: Float: 12.000000 V
WIENER-CRATE-MIB::outputAdjustVoltage.u0 = INTEGER: 22
WIENER-CRATE-MIB::outputAdjustVoltage.u1 = INTEGER: 0
WIENER-CRATE-MIB::outputAdjustVoltage.u3 = INTEGER: 0
WIENER-CRATE-MIB::outputAdjustVoltage.u5 = INTEGER: 0
WIENER-CRATE-MIB::outputCurrent.u0 = Opaque: Float: 100.000000 A
WIENER-CRATE-MIB::outputCurrent.u1 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::outputCurrent.u3 = Opaque: Float: 115.000000 A
WIENER-CRATE-MIB::outputCurrent.u5 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::outputSupervisionBehavior.u0 = INTEGER: 1023
WIENER-CRATE-MIB::outputSupervisionBehavior.u1 = INTEGER: 1023
WIENER-CRATE-MIB::outputSupervisionBehavior.u3 = INTEGER: 1023
WIENER-CRATE-MIB::outputSupervisionBehavior.u5 = INTEGER: 1023
WIENER-CRATE-MIB::outputSupervisionMinSenseVoltage.u0 = Opaque: Float: 4.750000V
WIENER-CRATE-MIB::outputSupervisionMinSenseVoltage.u1 = Opaque: Float: 11.400000 V
WIENER-CRATE-MIB::outputSupervisionMinSenseVoltage.u3 = Opaque: Float: 3.130000V
WIENER-CRATE-MIB::outputSupervisionMinSenseVoltage.u5 = Opaque: Float: 11.400000 V
WIENER-CRATE-MIB::outputSupervisionMaxSenseVoltage.u0 = Opaque: Float: 5.250000V
WIENER-CRATE-MIB::outputSupervisionMaxSenseVoltage.u1 = Opaque: Float: 12.599999 V
WIENER-CRATE-MIB::outputSupervisionMaxSenseVoltage.u3 = Opaque: Float: 3.470000V
WIENER-CRATE-MIB::outputSupervisionMaxSenseVoltage.u5 = Opaque: Float: 12.599999 V
WIENER-CRATE-MIB::outputSupervisionMaxTerminalVoltage.u0 = Opaque: Float: 11.000000 V
WIENER-CRATE-MIB::outputSupervisionMaxTerminalVoltage.u1 = Opaque: Float: 15.000000 V
WIENER-CRATE-MIB::outputSupervisionMaxTerminalVoltage.u3 = Opaque: Float: 4.500000 V
WIENER-CRATE-MIB::outputSupervisionMaxTerminalVoltage.u5 = Opaque: Float: 15.000000 V
WIENER-CRATE-MIB::outputSupervisionMaxCurrent.u0 = Opaque: Float: 115.000000
AWIENER-CRATE-MIB::outputSupervisionMaxCurrent.u1 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::outputSupervisionMaxCurrent.u3 = Opaque: Float: 115.000000 A
WIENER-CRATE-MIB::outputSupervisionMaxCurrent.u5 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::outputConfigMaxSenseVoltage.u0 = Opaque: Float: 8.150000 V
WIENER-CRATE-MIB::outputConfigMaxSenseVoltage.u1 = Opaque: Float: 16.820000 V
WIENER-CRATE-MIB::outputConfigMaxSenseVoltage.u3 = Opaque: Float: 8.150000 V
WIENER-CRATE-MIB::outputConfigMaxSenseVoltage.u5 = Opaque: Float: 16.820000 V
WIENER-CRATE-MIB::outputConfigMaxTerminalVoltage.u0 = Opaque: Float: 11.000000 V
WIENER-CRATE-MIB::outputConfigMaxTerminalVoltage.u1 = Opaque: Float: 20.539999 V
WIENER-CRATE-MIB::outputConfigMaxTerminalVoltage.u3 = Opaque: Float: 10.759999 V
WIENER-CRATE-MIB::outputConfigMaxTerminalVoltage.u5 = Opaque: Float: 20.539999 V
WIENER-CRATE-MIB::outputConfigMaxCurrent.u0 = Opaque: Float: 115.000000 A
WIENER-CRATE-MIB::outputConfigMaxCurrent.u1 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::outputConfigMaxCurrent.u3 = Opaque: Float: 115.000000 A
WIENER-CRATE-MIB::outputConfigMaxCurrent.u5 = Opaque: Float: 23.000000 A
WIENER-CRATE-MIB::sensorNumber.0 = INTEGER: 8
WIENER-CRATE-MIB::sensorTemperature.temp1 = INTEGER: -128 deg C

WIENER-CRATE-MIB::sensorTemperature.temp2 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp3 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp4 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp5 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp6 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp7 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp8 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp1 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp2 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp3 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp4 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp5 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp6 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp7 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorWarningThreshold.temp8 = INTEGER: 45 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp1 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp2 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp3 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp4 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp5 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp6 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp7 = INTEGER: 127 deg C
WIENER-CRATE-MIB::sensorFailureThreshold.temp8 = INTEGER: 127 deg C
WIENER-CRATE-MIB::snmpCommunityName.public = STRING: "public"
WIENER-CRATE-MIB::snmpPort.0 = INTEGER: 161
WIENER-CRATE-MIB::firmwareUpdate.0 = ""
WIENER-CRATE-MIB::ipDynamicAddress.0 = IpAddress: 192.168.0.81
WIENER-CRATE-MIB::ipStaticAddress.0 = IpAddress: 192.168.0.81
WIENER-CRATE-MIB::macAddress.0 = Hex-STRING: 00 50 C2 2D C0 7B
WIENER-CRATE-MIB::communication.3.1.0 = INTEGER: 115200
WIENER-CRATE-MIB::communication.3.2.0 = INTEGER: 0
WIENER-CRATE-MIB::communication.3.3.0 = INTEGER: 8
WIENER-CRATE-MIB::communication.3.4.0 = INTEGER: 1
WIENER-CRATE-MIB::communication.3.5.0 = INTEGER: 0
WIENER-CRATE-MIB::psSerialNumber.0 = STRING: 3296019
WIENER-CRATE-MIB::psOperatingTime.0 = INTEGER: 8394120 s
WIENER-CRATE-MIB::fanSerialNumber.0 = STRING: 3096006
WIENER-CRATE-MIB::fanOperatingTime.0 = INTEGER: 33516651 s
WIENER-CRATE-MIB::fanAirTemperature.0 = INTEGER: 27 deg C
WIENER-CRATE-MIB::fanSwitchOffDelay.0 = INTEGER: 10 s
WIENER-CRATE-MIB::fanNominalSpeed.0 = INTEGER: 3000 RPM
WIENER-CRATE-MIB::fanNumberOfFans.0 = INTEGER: 3 Fans
WIENER-CRATE-MIB::fanSpeed.1 = INTEGER: 2940 RPM
WIENER-CRATE-MIB::fanSpeed.2 = INTEGER: 2910 RPM
WIENER-CRATE-MIB::fanSpeed.3 = INTEGER: 2977 RPM
WIENER-CRATE-MIB::numberOfAnalogInputs.0 = INTEGER: 0
WIENER-CRATE-MIB::digitalInput.0 = BITS: 10 00 d3(3)
WIENER-CRATE-MIB::digitalInput.0 = No more variables left in this MIB View (It is past the end of the MIB tree)

Further it is possible obtain the array of names or values for a specific parameter. The following command provides a list of all existing output channels:

snmpwalk -Cp -Oqv -v 2c -M $path -m +WIENER-CRATE-MIB -c public $ip outputVoltage

Example to read output set voltages:
C:\ >snmpwalk -v 2c -m +WIENER-CRATE-MIB -c public 192.168.2.25 outputVoltage

returns for a VME64x crate:
WIENER-CRATE-MIB::outputVoltage.u0 = Opaque: Float: 5.000000 V
WIENER-CRATE-MIB::outputVoltage.u1 = Opaque: Float: 12.000000 V
WIENER-CRATE-MIB::outputVoltage.u3 = Opaque: Float: 3.300000 V
WIENER-CRATE-MIB::outputVoltage.u5 = Opaque: Float: 12.000000 V

After obtaining information about the crate / power supplies or a list of channels and parameters, it is useful to be able to write or read particular data. This can be done using the **snmpget** and **snmpset** commands.

snmpget -Oqv -v 2c -M $path -m +WIENER-CRATE-MIB -c public $ip name.index

snmpset -v 2c -M $path -m +WIENER-CRATE-MIB -c admin $ip name.index format value

Via SNMP the status of the crate can be read and the crate can be switched on or off 1:

snmpget -v 2c -M $path -m +WIENER-CRATE-MIB -c public $ip sysMainSwitch.0

Example:
C:\ >snmpget -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 sysMainSwitch.0
WIENER-CRATE-MIB::sysMainSwitch.0 = INTEGER: OFF(0)
This indicates that the crate or power supply is currently off. To better understand the call above we will break it down by parameter:

snmpget: This command will retrieve a value about the crate or one of the channels it houses..
-v 2c: This parameters specifies which version of the SNMP to use. WIENER devices use SNMP 2C.
-M $path: This parameter should be replaced with the path to the WIENER-CRATE-MIB.txt file.
-m +WIENER-CRATE-MIB: This parameter tells the command to look at the WIENER-CRATE-MIB to resolve the OID name.
-c public: This specifies which community of values can be accessed.
$ip: This should be replaced with the IP address of the crate.
sysMainSwitch.0: This is the register you wish to retrieve.

Since we know from the call above that the crate is off, we may want to turn it on.

snmpset -v 2c - path -m +WIENER-CRATE-MIB -c COMMUNITY $ip sysMainSwitch.0 i 1
The following community groups are used:

- "**public**": for all read operations
- "**private**": to switch crate on or off
- "**admin**": to change parameters as fan speed or temperature limits

In case the wrong community code is used a "not writable" error message will be received.

Most of the parameters for snmpset are the same as snmpget, the new parameters are highlighted below.

i: Since sysMainSwitch.0 is an integer value, we specify the value to be an integer
1: This is the value we wish to write. In this case we write 'one' to set the main switch to on.

Example for VME 6023 crate:
C:\ >snmpset -v 2c -m +WIENER-CRATE-MIB -c private 192.168.0.81 sysMainSwitch.0 i 1
WIENER-CRATE-MIB::sysMainSwitch.0 = INTEGER: on(1)

For most of the write commands (snmpset) the access type has to be changed from public to private. A complete list of value names that can be written or read via SNMP can be found in the WIENER-CRATE-MIB but commonly needed values are:

Value Name	Type	Access	Comments
sysMainSwitch.0	Integer	R/W	ON/OFF
outputVoltage.u0 … u7	float	R/W	Channel set voltage
outputCurrent.u0 … u7	float	R/W	Channel set current limit
outputMeasurementSenseVoltage.u0 … u7	float	R	Measured channel Voltage
outputMeasurementCurrent.u0 … u7	float	R	Measured channel current
sensorTemperature.temp1 … temp8	integer	R	Measured temperature for optional sensors 1 to 8
fanAirTemperature.0	integer	R	Air inlet temperature
sensorWarningThreshold.temp1 …temp8	integer	R/W	Warning temperature limit (switch fans to full speed)
sensorFailureThreshold.temp1 … temp8	integer	R/W	Over temperature limit (switch power supply off)
fanNominalSpeed.0	integer	R/W	Set fan speed
fanSpeed.1… number of fans	integer	R	Measured speed of fan

WARNING:

Do not change the factory default settings for voltage and current parameters for WIENER UEPxxx power supplies and or power supplies used in or for VME / VXS / VXI or NIM and CAMAC chassis!!! Wrong settings can damage plugged in modules or other connected electronic circuits!!!

Changing fan speed to lower values may cause insufficient cooling and can damage plugged in modules!

Following examples are given to get information for power supply output channel u0 and to read / program temperature limits:

Read set voltage:
C:\ >snmpget -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 outputVoltage.001
WIENER-CRATE-MIB::outputVoltage.u0 = Opaque: Float: 5.000000 V

Read measured voltage:
C:\Users\Andreas Ruben>snmpget -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 outputMeasurementSenseVoltage.u0
WIENER-CRATE-MIB::outputMeasurementSenseVoltage.u0 = Opaque: Float: 5.000000 V

Read measured current:
C:\Users\Andreas Ruben>snmpget -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 outputMeasurementCurrent.u0
WIENER-CRATE-MIB::outputMeasurementCurrent.u0 = Opaque: Float: 3.640000 A

Read temperatures (crate is outfitted with 3 sensors at position 4,5 and 6:
C:\ >snmpwalk -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 sensorTemperature
WIENER-CRATE-MIB::sensorTemperature.temp1 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp2 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp3 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp4 = INTEGER: 25 deg C
WIENER-CRATE-MIB::sensorTemperature.temp5 = INTEGER: 25 deg C
WIENER-CRATE-MIB::sensorTemperature.temp6 = INTEGER: 27 deg C
WIENER-CRATE-MIB::sensorTemperature.temp7 = INTEGER: -128 deg C
WIENER-CRATE-MIB::sensorTemperature.temp8 = INTEGER: -128 deg C

Read specific temperature probe:

C:\ >snmpget -v 2c -m +WIENER-CRATE-MIB -c public 192.168.0.81 sensorTemperature.temp4
WIENER-CRATE-MIB::sensorTemperature.temp4 = INTEGER: 25 deg C

Set temperature warning level for probe 4
C:\>snmpset -v 2c -m +WIENER-CRATE-MIB -c admin 192.168.0.81 sensorWarningThreshold.temp4 i 50
WIENER-CRATE-MIB::sensorWarningThreshold.temp4 = INTEGER: 50 deg C

Set fan speed to 3100 RPM
C:\>snmpset -v 2c -m +WIENER-CRATE-MIB -c admin 192.168.0.81fanNominalSpeed.0 i 3100
WIENER-CRATE-MIB::fanNominalSpeed.0 = INTEGER: 3100 RPM

5.2 Change of IP address via SNMP

WIENER crates with Ethernet remote monitoring can be operated either with static IP address or in DHCP mode where the actual IP address is defined by the network router. DHCP is selected by setting the static IP address on the fan tray front panel to 0.0.0.0. Two SNMP ID's are used for the dynamic and static IP address:

WIENER-CRATE-MIB::ipDynamicAddress.0 = IpAddress: 192.168.0.81
WIENER-CRATE-MIB::ipStaticAddress.0 = IpAddress: 192.168.0.81

To change the Crate IP address via SNMP perform the following call (change as example to 192.168.0.56):

snmpset -v 2c -m +WIENER-CRATE-MIB -c guru 192.168.0.81 ipStaticAddress.0 = 192.168.0.56

WIENER-CRATE-MIB::ipStaticAddress.0 = IpAddress: 192.168.0.56

5.3 Change of community names / setting of passwords

For the communication with MPOD modules 4 types of SNMP communities are used, "**public**", "**private**" and "**admin**". By default the community names are equal to the community types.

snmpwalk -v 2c -m +WIENER-CRATE-MIB -c admin 192.168.0.81 snmpCommunityName

WIENER-CRATE-MIB::snmpCommunityName.public = STRING: "public"

WIENER-CRATE-MIB::snmpCommunityName.private = STRING: "private"

WIENER-CRATE-MIB::snmpCommunityName.admin = STRING: "admin"

snmpwalk -v 2c -m +WIENER-CRATE-MIB -c private 192.168.0.81snmpCommunityName

WIENER-CRATE-MIB::snmpCommunityName.public = STRING: "public"

WIENER-CRATE-MIB::snmpCommunityName.private = STRING: "private"

In order to secure the MPOD system communication the community names can be used as passwords and be changed accordingly. The following example shows how the change and test the community names. Using a wrong community name will result in a time out error. Please note, that especially the communities with write access (private, admin) should be protected.

snmpset -v 2c -m +WIENER-CRATE-MIB -c private 192.168.0.81 snmpCommunityName.private s seCrET

WIENER-CRATE-MIB::snmpCommunityName.private = STRING: "seCrET"

snmpwalk -v 2c -m +WIENER-CRATE-MIB -c private 192.168.0.81snmpCommunityName

Timeout: No Response from 192.168.0.80

snmpwalk -v 2c -m +WIENER-CRATE-MIB -c seCrET 192.168.0.80 snmpCommunityName

WIENER-CRATE-MIB::snmpCommunityName.public = STRING: "public"
WIENER-CRATE-MIB::snmpCommunityName.private = STRING: ""seCrET"

WIENER-CRATE-MIB::snmpCommunityName.admin = STRING: "admin"

5.4 SNMP Version 3

SNMPv3 adds security features to the SNMP protocol. The main enhancements compared to SNMP version 2c are

- user names instead of community names
- possible authentication (to be sure the data sent from the computer to the crate and vice versa is from an authorized user)
- possible privacy (encryption to avoid the data "on the wire" can be understand/modified by a not authorized entity)

5.4.1 Users

The SNMP v3 users are fixed and can not be changed. The name is related to the also existing SNMP v2c communities:

- public Read-Only access
- private All operations allowed by direct access of the front panel (e.g. switch on/off)
- admin Change of supervision limits
- guru Change of voltage/current settings (might damage electronics if done wrong)
- wiener This user is reserved for W-IE-NE-R tools for special setup operations

5.4.2 Authentication

The used authentication protocol is HMAC-MD5-96 (RFC3414). The initial password (authentication key, authKey) is "MySecret", identical for all users.

5.4.3 Privacy (Encryption)

The used encryption protocol is CBC-DES (RFC3414). The initial password (privacy key, privKey) is "MySecret" again, identical for all users.

5.4.4 Security Level

There are three possible security levels for each user:

- noAuthNoPriv No key for authentication or privacy required. This is similar to the SNMPv2c protocol using users instead of communities
- authNoPriv Use authKey for authentication, no privKey required
- authPriv Both authKey and privKey must be supplied. This is the default security level.

5.4.5 SNMP v3 Examples

Read sysDescr.0 with user "public", security level "authPriv", authentication protocol "MD5", authentication password "MySecret", privacy protocol "DES" and privacy password "MySecret":

```
$ snmpget -v 3 -u public -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 sysDescr.0
SNMPv2-MIB::sysDescr.0 = STRING: WIENER Crate (UEP6000 2.22, UEL6 4.23.2731.0, UEL6-BL 2.2733.0)
```

Showing the SNMPv3 user table, using the same security settings as before.

The usmUserTable summarizes all USM (user security model) relevant settings.

```
$ snmpwalk -v 3 -u public -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 usmUserTable
SNMP-USER-BASED-SM-MIB::usmUserSecurityName."..M...P.-.."."guru" = STRING: guru
SNMP-USER-BASED-SM-MIB::usmUserSecurityName."..M...P.-.."."admin" = STRING: admin
SNMP-USER-BASED-SM-MIB::usmUserSecurityName."..M...P.-.."."public" = STRING: public
SNMP-USER-BASED-SM-MIB::usmUserSecurityName."..M...P.-.."."wiener" = STRING: wiener
SNMP-USER-BASED-SM-MIB::usmUserSecurityName."..M...P.-.."."private" = STRING: private
SNMP-USER-BASED-SM-MIB::usmUserCloneFrom."..M...P.-.."."guru" = OID: SNMPv2-SMI::zeroDotZero
SNMP-USER-BASED-SM-MIB::usmUserCloneFrom."..M...P.-.."."admin" = OID: SNMPv2-SMI::zeroDotZero
SNMP-USER-BASED-SM-MIB::usmUserCloneFrom."..M...P.-.."."public" = OID: SNMPv2-SMI::zeroDotZero
SNMP-USER-BASED-SM-MIB::usmUserCloneFrom."..M...P.-.."."wiener" = OID: SNMPv2-SMI::zeroDotZero
SNMP-USER-BASED-SM-MIB::usmUserCloneFrom."..M...P.-.."."private" = OID: SNMPv2-SMI::zeroDotZero
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."admin" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."public" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."wiener" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."private" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthKeyChange."..M...P.-.."."guru" = ""
SNMP-USER-BASED-SM-MIB::usmUserAuthKeyChange."..M...P.-.."."admin" = ""
SNMP-USER-BASED-SM-MIB::usmUserAuthKeyChange."..M...P.-.."."public" = ""
SNMP-USER-BASED-SM-MIB::usmUserAuthKeyChange."..M...P.-.."."wiener" = ""
SNMP-USER-BASED-SM-MIB::usmUserAuthKeyChange."..M...P.-.."."private" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnAuthKeyChange."..M...P.-.."."guru" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnAuthKeyChange."..M...P.-.."."admin" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnAuthKeyChange."..M...P.-.."."public" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnAuthKeyChange."..M...P.-.."."wiener" = ""
```

```
SNMP-USER-BASED-SM-MIB::usmUserOwnAuthKeyChange."..M...P.-.."."private" = ""
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-."."admin" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-."."public" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-."."wiener" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-."."private" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivKeyChange."..M...P.-."."guru" = ""
SNMP-USER-BASED-SM-MIB::usmUserPrivKeyChange."..M...P.-."."admin" = ""
SNMP-USER-BASED-SM-MIB::usmUserPrivKeyChange."..M...P.-."."public" = ""
SNMP-USER-BASED-SM-MIB::usmUserPrivKeyChange."..M...P.-."."wiener" = ""
SNMP-USER-BASED-SM-MIB::usmUserPrivKeyChange."..M...P.-."."private" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnPrivKeyChange."..M...P.-."."guru" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnPrivKeyChange."..M...P.-."."admin" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnPrivKeyChange."..M...P.-."."public" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnPrivKeyChange."..M...P.-."."wiener" = ""
SNMP-USER-BASED-SM-MIB::usmUserOwnPrivKeyChange."..M...P.-."."private" = ""
SNMP-USER-BASED-SM-MIB::usmUserPublic."..M...P.-."."guru" = ""
SNMP-USER-BASED-SM-MIB::usmUserPublic."..M...P.-."."admin" = ""
SNMP-USER-BASED-SM-MIB::usmUserPublic."..M...P.-."."public" = STRING: "Test_2014-12-21_13:52:58_6789012"
SNMP-USER-BASED-SM-MIB::usmUserPublic."..M...P.-."."wiener" = ""
SNMP-USER-BASED-SM-MIB::usmUserPublic."..M...P.-."."private" = ""
SNMP-USER-BASED-SM-MIB::usmUserStorageType."..M...P.-."."guru" = INTEGER: permanent(4)
SNMP-USER-BASED-SM-MIB::usmUserStorageType."..M...P.-."."admin" = INTEGER: permanent(4)
SNMP-USER-BASED-SM-MIB::usmUserStorageType."..M...P.-."."public" = INTEGER: permanent(4)
SNMP-USER-BASED-SM-MIB::usmUserStorageType."..M...P.-."."wiener" = INTEGER: permanent(4)
SNMP-USER-BASED-SM-MIB::usmUserStorageType."..M...P.-."."private" = INTEGER: permanent(4)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."guru" = INTEGER: active(1)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."admin" = INTEGER: active(1)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."public" = INTEGER: active(1)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."wiener" = INTEGER: active(1)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."private" = INTEGER: active(1)
SNMP-USER-BASED-SM-MIB::usmUserStatus."..M...P.-."."private" = No more variables left in this MIB View (It is past the end of the MIB tree)
```

5.4.6 Changing the Passwords

Changing password keys with normal snmpget/snmpset commands is quite complicated, but using the snmpusm program from Net-SNMP.org makes it comfortable.

You need to know the old password to change the new password.

The best way to understand the syntax is to look at the following examples (must be executed in the correct sequence to work correct). For the full details of the snmpusm command please look at the man page of www.net-snmp.org.

Change PRIV password with user guru for user admin from MySecret -> newsyrupA

```
$ snmpusm –v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret -Cx 192.168.91.222 passwd MySecret newsyrupA admin
```

Change PRIV password with user guru for user guru (himself) from MySecret -> newsyrup

```
$ snmpusm –v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret -Cx 192.168.91.222 passwd MySecret newsyrup
```

Change AUTH password with user guru for user admin from MySecret -> newsyrupA

```
$ snmpusm –v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X newsyrup  -Ca 192.168.91.222 passwd MySecret newsyrupA admin
```

Change AUTH password with user guru for user guru (himself) from MySecret -> newsyrup

```
$ snmpusm –v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X newsyrup  -Ca 192.168.91.222 passwd MySecret newsyrup
```

Now change AUTH and PRIV passwords together with user guru for user admin from newsyrupA -> MySecret

```
$ snmpusm –v 3 -u guru    -l authPriv -a MD5 -A newsyrup -x DES -X newsyrup  192.168.91.222 passwd newsyrupA MySecret admin
```

And finally change AUTH and PRIV passwords together with user guru for user guru (himself) from newsyrup -> MySecret

```
$ snmpusm –v 3 -u guru    -l authPriv -a MD5 -A newsyrup -x DES -X newsyrup  192.168.91.222 passwd newsyrup MySecret
```

5.4.7 Changing the Security Level

The factory default security level is set to authPriv (the strictest setting).

This setting can be retrieved and changed (relaxed) by modifying the usmUserTable. According to the SNMP-USER-BASED-SM-MIB (RFC3414) the settings can not be changed back from usmNoAuthProtocol (or usmNoPrivProtocol) to smoething more restrictive. The only way to do this is to restore the default SNMP settings.

First get the values of the usmUserPriv protocol

```
$ snmpwalk -v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222  usmUserPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."admin" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."public" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."wiener" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."private" = OID: SNMP-USER-BASED-SM-MIB::usmDESPrivProtocol
```

You need the compete OID of the usmUserPrivProtocol to access it with the snmpset command. The previous output shows only dots for some not printable OID parts of the (textual) OID. To get the complete values, repeat the command and add the –On option:

```
$ snmpwalk -v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 -On usmUserPrivProtocol
.1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.4.103.117.114.117 = OID: .1.3.6.1.6.3.10.1.2.2
.1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.5.97.100.109.105.110 = OID: .1.3.6.1.6.3.10.1.2.2
.1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.6.112.117.98.108.105.99 = OID: .1.3.6.1.6.3.10.1.2.2
.1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.6.119.105.101.110.101.114 = OID: .1.3.6.1.6.3.10.1.2.2
.1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.7.112.114.105.118.97.116.101 = OID: .1.3.6.1.6.3.10.1.2.2
```

Now we have the OIDs for the following snmpset commands.

To disable privacy for user guru, use the command

```
$ OID_PRIV=".1.3.6.1.6.3.15.1.2.2.1.8.11.128.0.77.235.3.0.80.194.45.202.164.4.103.117.114.117"
$ snmpset   -v 3 -u guru     -l authPriv   -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 $OID_PRIV = SNMP-USER-BASED-SM-MIB::usmNoPrivProtocol = SNMP-USER-
BASED-SM-MIB::usmNoPrivProtocol
SNMP-USER-BASED-SM-MIB::usmUserPrivProtocol."..M...P.-.."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmNoPrivProtocol
```

Next do the same procedure with usmUserAuthProtocol.

First get the values of the usmUserPriv protocol

```
$ SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."admin" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."public" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."wiener" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."private" = OID: SNMP-USER-BASED-SM-MIB::usmHMACMD5AuthProtocol
```

You need the compete OID of the usmUserAuthProtocol to access it with the snmpset command. The previous output shows only dots for some not printable OID parts of the (textual) OID. To get the complete values, repeat the command and add the –On option:

```
$ snmpwalk -v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 -On  usmUserAuthProtocol
.1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.4.103.117.114.117 = OID: .1.3.6.1.6.3.10.1.1.2
.1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.5.97.100.109.105.110 = OID: .1.3.6.1.6.3.10.1.1.2
.1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.6.112.117.98.108.105.99 = OID: .1.3.6.1.6.3.10.1.1.2
.1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.6.119.105.101.110.101.114 = OID: .1.3.6.1.6.3.10.1.1.2
.1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.7.112.114.105.118.97.116.101 = OID: .1.3.6.1.6.3.10.1.1.2
```

Now we have the OIDs for the following snmpset commands.

To disable authentication for user guru, use the command

```
$ OID_AUTH=".1.3.6.1.6.3.15.1.2.2.1.5.11.128.0.77.235.3.0.80.194.45.202.164.4.103.117.114.117"
$ snmpset -v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret 192.168.91.222 $OID_AUTH = SNMP-USER-BASED-SM-MIB::usmNoAuthProtocol
SNMP-USER-BASED-SM-MIB::usmUserAuthProtocol."..M...P.-.."."guru" = OID: SNMP-USER-BASED-SM-MIB::usmNoAuthProtocol
```

Ready! Verify the result by doing a snmpwalk usmUserTable, or try to access a value via snmpget without authentication and privacy:

```
$ snmpget -v 3 -u guru -l noAuthNoPriv  192.168.91.222 sysDescr.0
SNMPv2-MIB::sysDescr.0 = STRING: WIENER Crate (UEP6000 2.22, UEL6 4.23.2731.0, UEL6-BL 2.2733.0)
```

5.4.8 Creating a Save System

To get a save system, the authKeys and privKeys for all users must be changed, and the passwords must be kept confidential (don't forget the user "wiener").

The device EEPROM stores localized keys (if the user uses the same key for different hardware devices, the real key used for this device is altered in a random way, using the crates MAC address.) So if read access to one EEPROM is achieved, this does not disclose the non-localized keys used by the operator of the system.

Then SNMPv2 access via community strings must be disabled (you might omit "public" if you don't want do disable read only access). This can be done by changing the community string to a zero string (no characters, length 0). This can by done by using the following commands:

Test snmp community access (using community "private" here)

```
$ snmpget -v 2c -c private 192.168.91.222 sysDescr.0
SNMPv2-MIB::sysDescr.0 = STRING: WIENER Crate (UEP6000 2.22, UEL6 4.23.2731.0, UEL6-BL 2.2733.0)
```

Set all community strings to ""

```
$ snmpset  -v 2c -c wiener –m +WIENER-CRATE-MIB 192.168.91.222 snmpCommunityName.public = ""
snmpCommunityName.public = ""
$ snmpset  -v 2c  -c wiener –m +WIENER-CRATE-MIB 192.168.91.222 snmpCommunityName.private = ""
snmpCommunityName.private = ""
$ snmpset  -v 2c  -c wiener –m +WIENER-CRATE-MIB 192.168.91.222 snmpCommunityName.admin = ""
snmpCommunityName.admin = ""
$ snmpset  -v 2c  -c wiener –m +WIENER-CRATE-MIB 192.168.91.222 snmpCommunityName.guru = ""
snmpCommunityName.guru = ""
WIENER-CRATE-MIB::snmpCommunityName.private = ""
$ snmpset  -v 2c  -c wiener –m +WIENER-CRATE-MIB 192.168.91.222 snmpCommunityName.5 = ""
snmpCommunityName.5 = ""
```

Verify. There should be no response, the community is ignored.

```
$ snmpget -v 2c -c private 192.168.91.222 sysDescr.0
Timeout: No Response from 192.168.91.222.
```

5.4.9 Restoring Factory Defaults

If authentication keys got lost, or if a lesser security level is required, the only way is to set the device back to factory defaults.

If SNMP access is possible, use the command

```
$ snmpset -m +WIENER-CRATE-MIB -v 3 -u guru -l authPriv -a MD5 -A MySecret -x DES -X MySecret
192.168.91.222 sysFactoryDefaults.0 = 1
WIENER-CRATE-MIB::sysFactoryDefaults.0 = INTEGER: on(1)
```

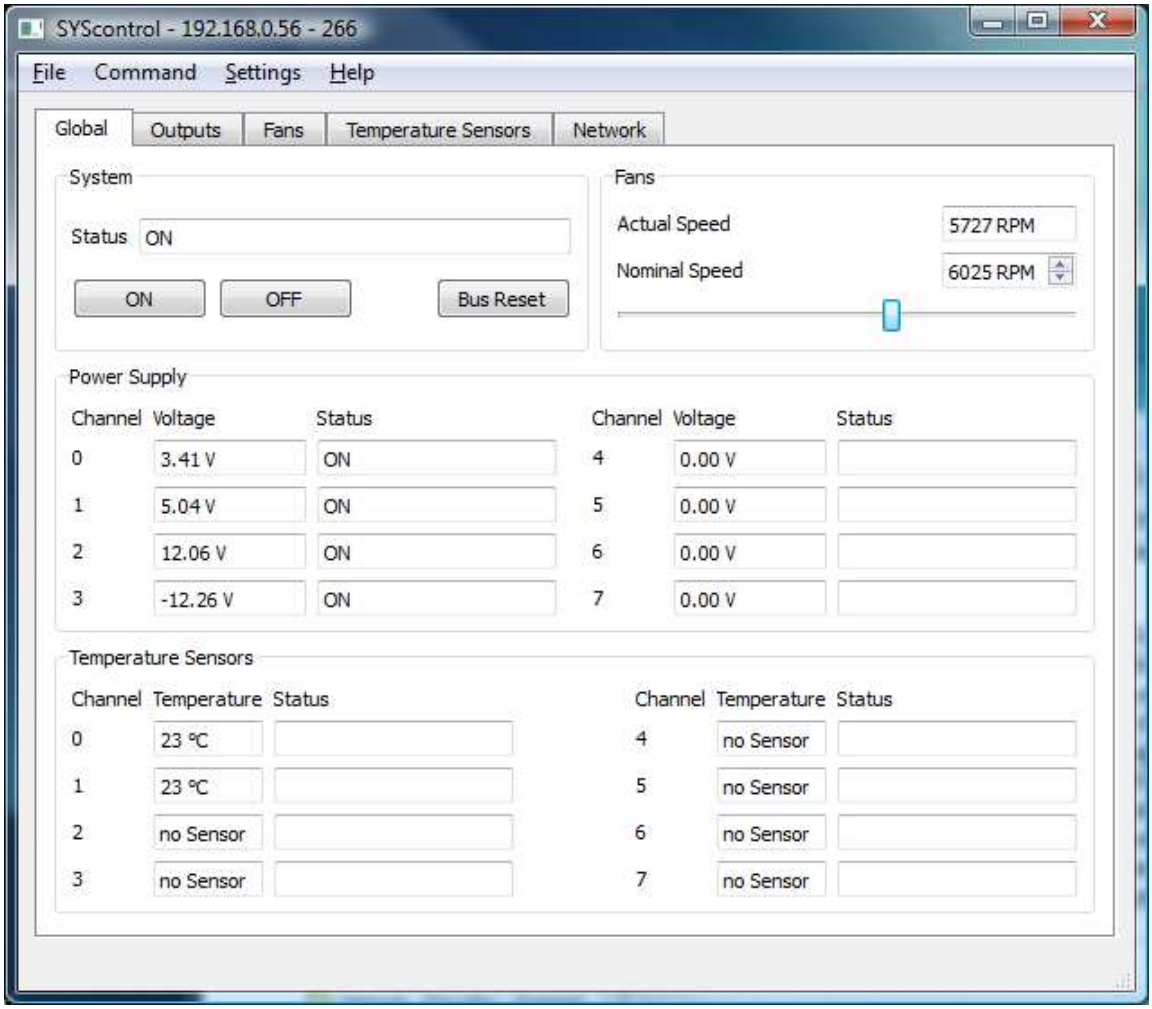
If no SNMP access is possible, you have to use the switches at the fan tray front panel (see 2.2.4)

- select the "TCPIP" menu
- switch to "Configuration…" mode
- select the "SNMP Defaults" submenu
- change "No" to "Yes"
- push up (OK)

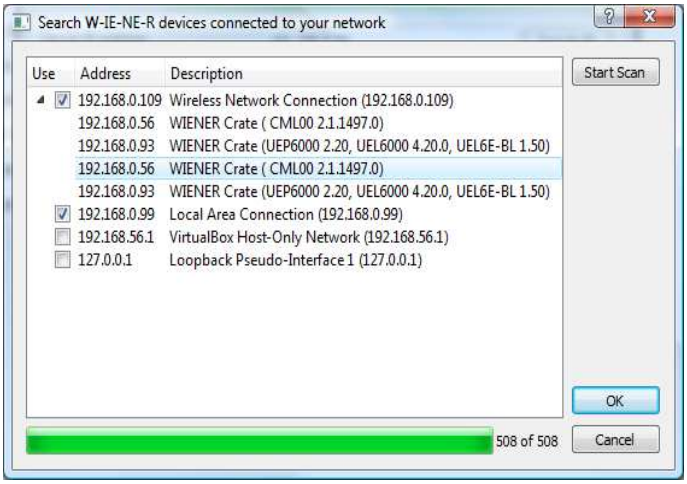
5.5 WIENER SYScontrol Software

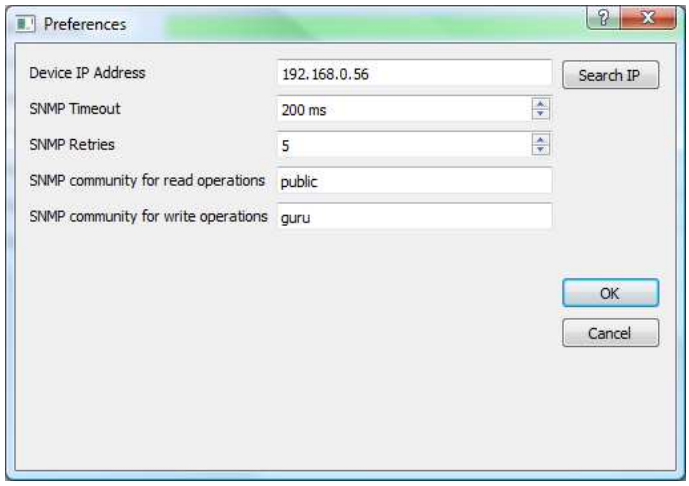
WIENER provides a user friendly SNMP based control program SYScontrol which can be downloaded from the file.wiener-d.com file server. SYScontrol requires NetSNMP to be installed and the WIENER-CRATE-MIB.TXT mib file to be copied into the right directory (see 5.1).

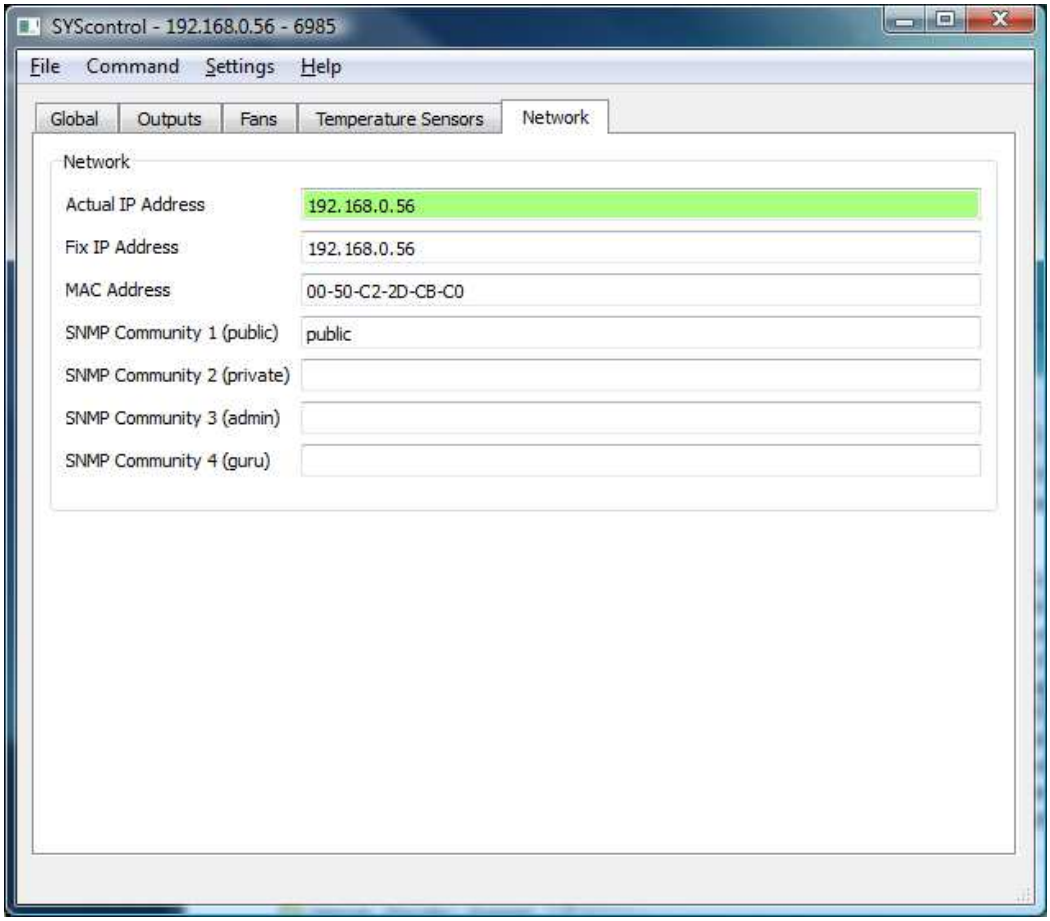
SYScontrol allows to scan a network for WIENER chassis and power supplies in order to determine the matching IP addresses. Further remote ON/OFF, fan control as well as setting of fan and temperature limits is possible.



Search for WIENER devices / set IP address for crate to be monitored:







5.6 MIB Browser

There are several commercial or open source MIB-Browser programs available which can be used for SNMP communication. These provide often a simple GUI and allow SNMP calls.

Following is a list of some free or open source MIB – browsers:

http://www.ireasoning.com/mibbrowser.shtml
http://www.serverscheck.com/mib_browser/
http://www.mibble.org/
http://www.ks-soft.net/hostmon.eng/mibbrowser/index.htm
http://www.tembria.com/products/snmpbrowser/index.html

6 Technical Details of 6021 Power Supplies

Mains input
H/K Sinusoidal: **CE** EN 61000, pow. fact. 0,98 (230VAC), 92...264VAC, 16/32A
Inrush current: limited to nominal input current, max.

Isolation Inp.- outp. **CE** EN 60950, ISO 380, VDE 0805, UL 1950, C22.2.950

H 1000... 3000W, **K** 2100... 6000W DC output power

Available modules		min. to max.	range	max. output
Type	MEH	2...	7V	115A / 550W
Type	MEH	7...	16V	46A / 550W
Type	MEH	12...	30V	23A / 550W
Type	MEH	30...	60V	13,5A / 650W
Type	MDH	2...	7V	(+/-) 30A / 210W (420W)
Type	MDH	6...	16V	(+/-) 23A / 300W (600W)
Type	MDH	7...	30V	(+/-) 11,5A / 300W.(600W)

3U box with H input, 6U box suitable for all inputs., above 16A AC input terminals with 2m power cord, fixed . Available output power depends on input voltage

Regulation

static:	MEH 550W/650W	<15mV	(+/-100% load, +/- full mains range)
	MDH	<0,05%	(+/-100% load, +/- full mains range)
	MDH 30V:	<0,1%	(+/-100% load, +/- full mains range)
dyn.:	MEH, MDH	<100mV	(+/-25% load)
	MDL 30V :	<0,7%	(+/-25% load)
Recovery time +/-25% load:		within +-1%	within +-0,1%
	MEH / MDH	0,2ms	0,5ms,
	MEH 30-60V	0,5ms	1,0ms
	MDH (11,5A):	0,0ms	1,0ms

Sense compens. range: difference between min. and max. output voltage

Noise and ripple MEH: <10mVpp, (0-20MHz) <2mVrms (0-30MHz)
MDH (30V): <15mVpp, (0-20MHz) <2mVrms (0-30MHz)

Operation temperature: 0....50°C without derating, Storage:-30°C ... +85°C

Temp.-coefficient: < 0,2% / 10K
Stability (conditions const.): 10mV or 0,1% / 24 hours, 25mV or 0,3% / 6 month

Current limits: adjustable to any lower level

Voltage rise characteristics: monotonic 50ms, processor controlled.

Protective equipment
Overvoltage crow bar : trip off adjusted to 125% of nominal voltage each output

DC Off (trip off): within 5ms if >2% deviation from adjusted nominal values, by reason of overload, overheat, overvoltage, undervoltage (bad status) and fan fail
if temperatures exceed 110°C heat sink, 70°C ambient

Trip off points adjustable, processor controlled. Output capacitors will be discharged by the crow bars if the power supply trips or when switched off.

Efficiency: 75% ... 85%, depends on used modules

Life time:	▪ Fans:	25°C ambient >85 000h	40°C >65 000 h
	▪ Power Supply electronics:	3U Box	40°C >130 000 h

6.1.1 EC Declaration of Conformity

EC-Declaration of Conformity acc. to Article 10.1 of the Directive 89/336/EEC (EMC-Directive)

EG-Konformitätserklärung nach Artikel 10.1 der Richtlinie 89/336/EWG (EMV-Richtlinie)
Déclaration de conformité CEE selon l'article 10.1 de la directive 89/336/CEE (Directive EMC)

Wir, **W-IE-NE-R Plein & Baus GmbH**
We, Müllersbaum 20
Nous, 51399 Burscheid-Hilgen

Name und Anschrift des Herstellers oder des in der EU niedergelassenen Inverkehrbringers
Name and address of the manufacturer or of the introducer of the product who is established in the EU
Nom et adresse du fabricant ou le la personne résidant dans la CEE qui introduit le sous-dit produit de la CEE

erklären in alleiniger Verantwortung, daß das Produkt
herewith take the sole responsibility to confirm that the product
soussignés déclarons de notre seule responsabilité que ce produit

Series 6000 LHC VME64x-Crate

Typenbezeichnung und ggf. Artikel-Nummer
Type designation and, if applicable, article no.
Type, nom et - si nécessaire - n° d'article du produit

mit den folgenden Normen bzw. normativen Dokumenten übereinstimmt
is in accordance with the following standards or standardized documents
est conforme aux normes ou spécifications Européennes suivantes

1.	**EN 61 000-6-3:2001**	**Störaussendung EMA [RF emission]**
	EN 55 022:1998	Störspannung [conducted noise]
	+ Corr:2001 + A1:2000 Kl. B	
	EN 55 022:1998	Störfeldstärke [radiated noise]
	+ Corr:2001 + A1:2000 Kl. B	
	EN 61 000-3-2:2001	Oberschwingungen [harmonics]
	EN 61 000-3-3:1995 +Corr:1997 +A1:2001	Spannungsschwankungen [flicker]
2.	**EN 61 000-6-2:2001**	**Störfestigkeit EMB [immunity]**
	EN 61 000-4-6:1996 + A1:2001	HF-Einströmung [injected HF currents]
	EN 61 000-4-3:1996 + A1:1998 + A2:2001	HF-Felder [radiated HF fields] incl. "900MHz"
	EN 61 000-4-4:1995 + A1:2001	Burst
	EN 61 000-4-5:1995 + A1:2001	Surge
	EN 61 000-4-11:1994 + A1:2000	Spannungs-Variationen [voltage variations]
	EN 61 000-4-2:1995 + A1:1998 + A2:2001	ESD

Folgende Betriebsbedingungen und Einsatzumgebungen sind vorauszusetzen
The following operating conditions and installation arrangements have to be presumed
Les conditions d'opération et d'installation suivantes sont à respecter

---

Dieser Erklärung liegt zugrunde der Prüfbericht
This confirmation is based on testreport
Cette confirmation est basée sur report de test

21106924_001 TÜV Rheinland Product Safety GmbH, 51101 Köln, Allemagne

---

Jürgen Baus, Techn. Director

Name, Anschrift, Datum und Unterschrift des rechtsverbindlich Verantwortlichen
Name, address, date and legally binding signature of the person being responsible
Nom, adresse, date et signature de la personne responsable

CERTIFICATE

TÜV

of Conformity
Low Voltage Directive 73/23/EEC
as last amended by EEC Directive 93/68/EEC

Registration No.: AN 60005031 0001

Report No.: 21106169 001

Holder:
Plein & Baus GmbH
Wiener Elektronik
Müllersbaum 20
51399 Burscheid
Deutschland

Product:
Schaltnetzteil
(Switching Power Supply)

Identification:

Type designation	: UEP 6021 - LHC9U				
Input voltage	: 100-240 V AC 50-60 Hz				
Output voltages	: +5 V	+3.3 V	+12 V	-12 V	48 V
Output current	: 300 A	100 A	10 A	10 A	12 A
Protection class	: I				
Serial No.	: Engin. sample				

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all revision of Annex I of Council Directive 73/23/EEC, in its latest amended version, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex III of the Directive.

Certification Body

TÜV Rheinland Product Safety GmbH – TÜV Rheinland – Zertifizierungsstelle

Cologne, 22.05.2003

Dipl.-Ing. H.-P. Pape

TÜV Rheinland Product Safety GmbH - Am Grauen Stein - D-51105 Köln

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

APPENDIX A: Technical Details of Fan Trays

Fan Tray Type	Facilities	No. of Blowers	Depth	Max. Air Flow
6020LX/3	Alphanum. display, CANbus, IEC	3 x DC	160 mm	>540m ^{3} / h
6020LX/3	Alphanum. display, IEC	3 x DC	160 mm **1)**	>540m ^{3} / h
6020LX/6	Alphanum. display, CANbus, IEC	6 x DC	340 mm **1)**	>1000m ^{3} / h
6020LX/6	Alphanum. display, CANbus, IEC	6 x DC	400 mm **1)**	>1000m ^{3} / h
6020 LX/4s	**Alphanum. display, CANbus, IEC**	4 x DC-Super	400 mm **1)**	>1500m ^{3} / h
6020 LX/6s	Alphanum. display, CANbus, IEC	6 x DC-Super	600 mm **1)**	>2200m ^{3} / h
6020 LX/9	Alphanum. display, CANbus, IEC	9 x DC	600 mm **1)**	>1600m ^{3} / h
	EX Series: Standard Fan Trays:			
6020 EX/3	A.-display, CANbus/TSP/IP/RS 232	3 x DC	160 mm **1)**	>540m ^{3} / h
6020 EX/6	A.-display, CANbus/TSP/IP/RS 232	6 x DC	340 mm **1)**	>1000m ^{3} / h
6020 EX/6	A.-display, CANbus/TSP/IP/RS 232	6 x DC	400 mm **1)**	>1000m ^{3} / h
6020 EX4s	A.-display, CANbus/TSP/IP/RS 232	4 x DC-Super	400 mm **1)**	>1500m ^{3} / h
6020 EX/6s	A.-display, CANbus/TSP/IP/RS 232	6 x DC-Super	600 mm **1)**	>2200m ^{3} / h
6020 EX/9	A.-display, CANbus/TSP/IP/RS 232	9 x DC	600 mm **1)**	>1600m ^{3} / h

1) fan trays for bottom air inlet only. Equipped with topped plenum chamber, 25mm high.

	Fan type 1134 574	Fan type 1450352 (Super Blower)
Static pressure at 3000rpm	8 mm H_2O column	14 mm H_2O column
Max. Speed	>3000 RPM	>3000 RPM
Power Consumption per fan	6-8W typical	12-15W Typical
Most gainful Operating Range:	2- 3,8mmH_2O column 100-160m^3/h	4- 5mmH_2O column 180-320m^3/h
Life time	>65 000h at 40°C	>80 000h at 40°C

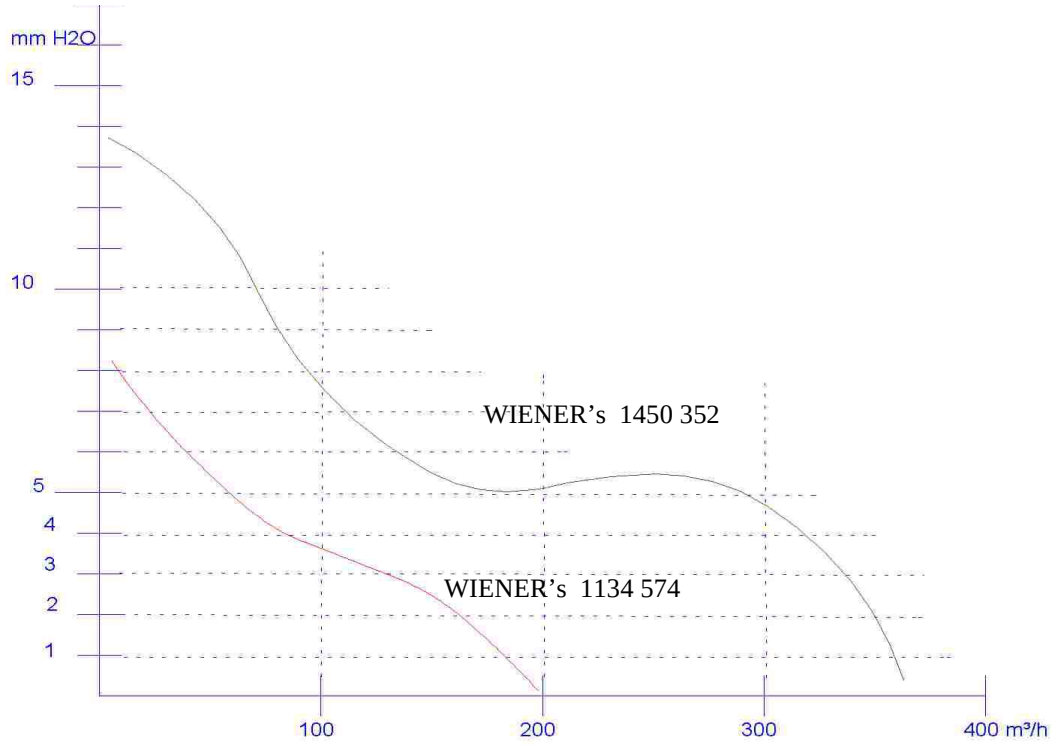
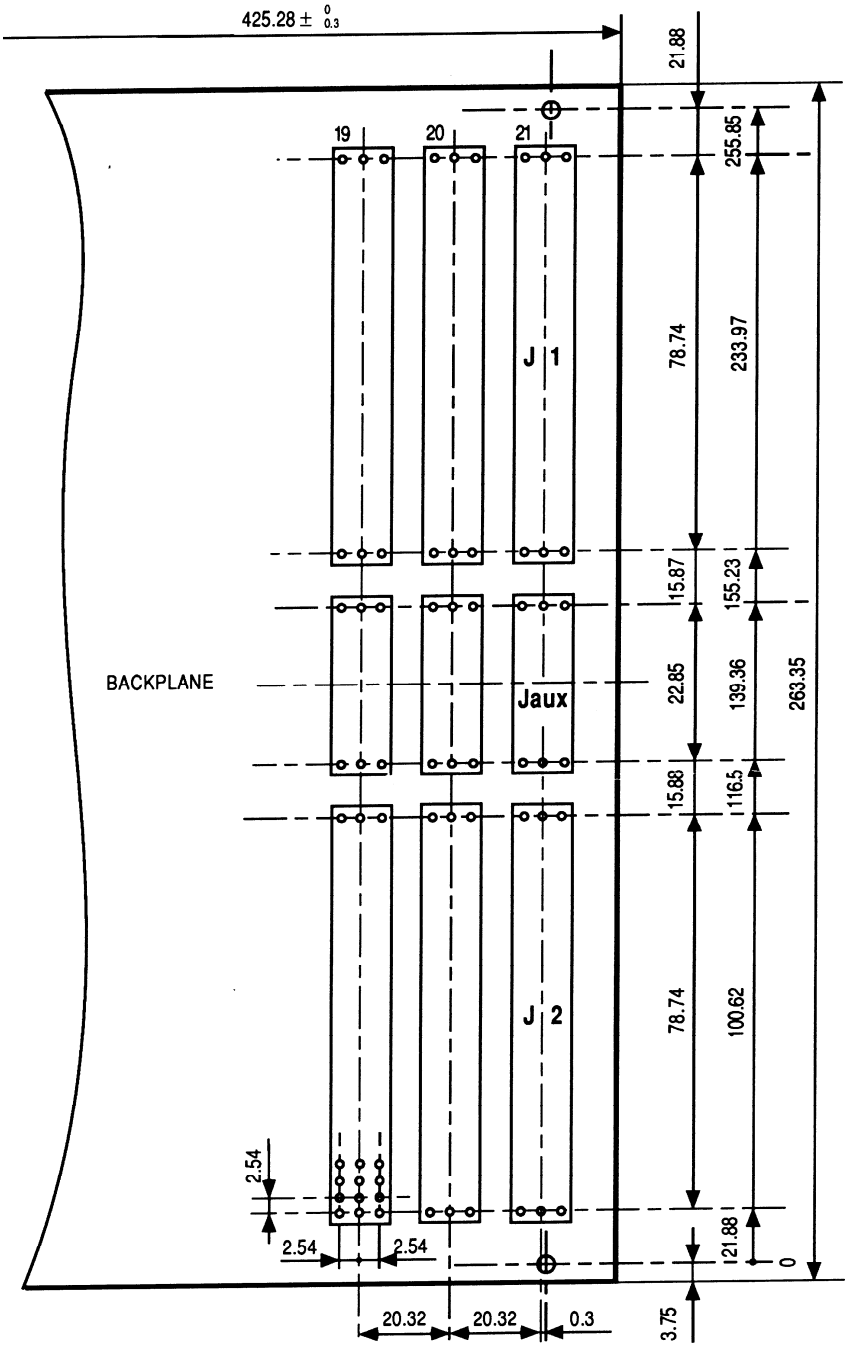


Diagram of different fan type efficiencies (refers to a single fan)

APPENDIX B: VME 430 Backplane, Situation of Jaux connector



Backplane Dimensions Front view

VMEbus Bin Type V 431

CERN - ECP
V 431 -
1992 . 12 . 03
E.Buchschacher

APPENDIX C: Power Bugs detailed, Customized Backplane

If for special customer designs more than the 64X standard voltages become necessary, the preferred dimensions of additional power bugs are shown below.

WIENER's Power Bug, item 1436 103.A0, is a press in type with 60A capability and outfitted with M3 thread.

While the connections for GND, +5V and +3 (3,3)V, counted from right to left, are in standard 64x position, the VY, VZ, VX, and VW with their returns offers the possibility to feed in additional potential free voltages (isolated from VME Ground, if necessary).

When the Jo or a special type of Jo have been foreseen to provide additional voltages to the modules, there should not be rear connector pins for I/O options (due to horizontal current rails) and the power bugs have to be placed between the Jo connectors.

