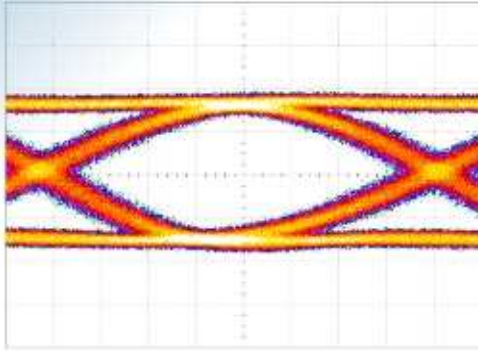




SHF Communication Technologies AG,
Wilhelm-von-Siemens-Str. 23 E • 12277 Berlin • Germany
Phone ++49 30 / 772 051 69 • Fax ++49 30 / 770 29 848
E-Mail: automation@shf.de Web: <http://www.shf.de>



Datasheet VMERACK21





Revision History

Revision	Changes	Date	Author
2	-	March 3 rd in 2009	Schammer
3	Change of the power supply data Correction of ordering informations	July 15 th in 2010	Schammer



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1. General

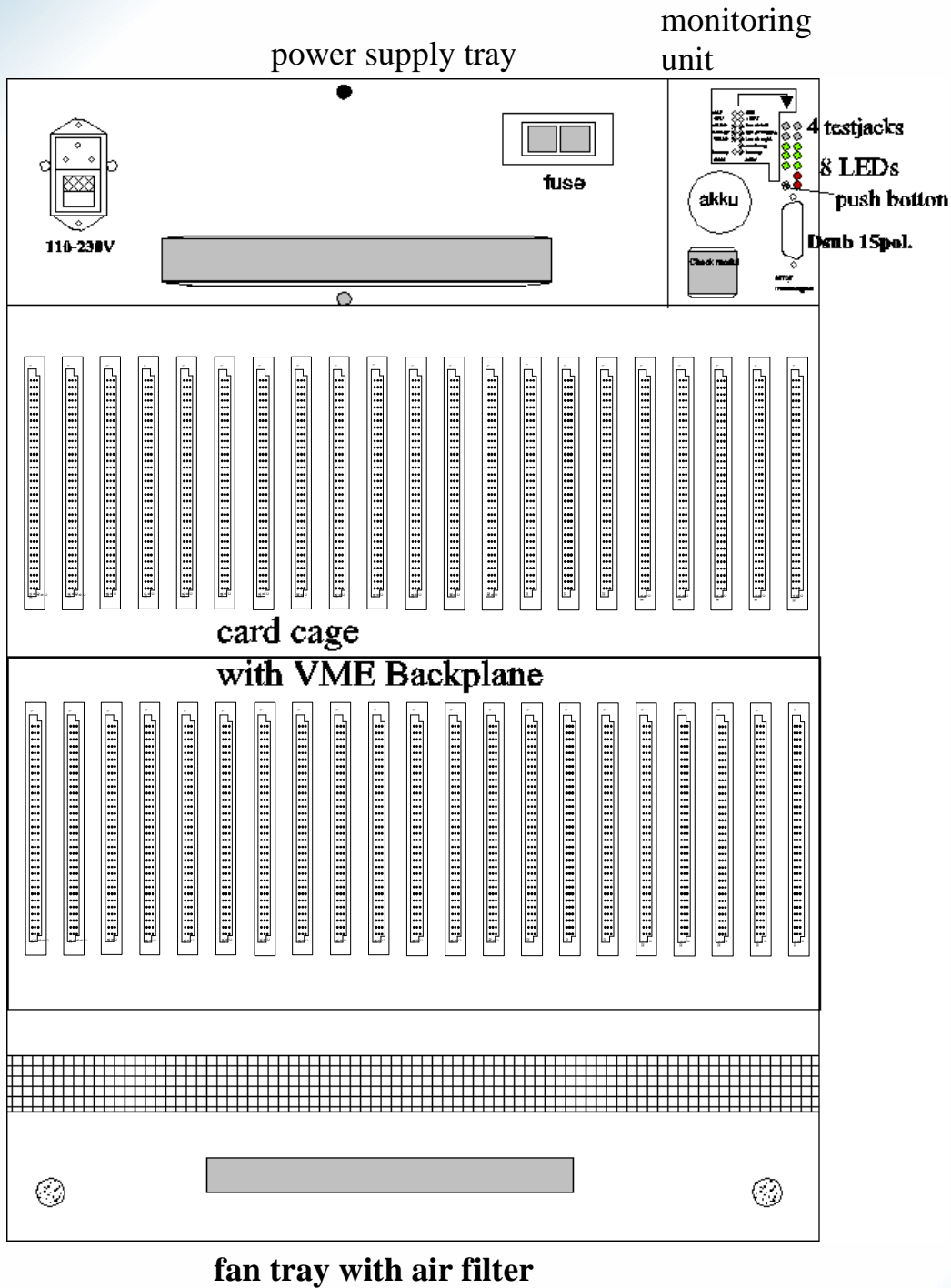
The VMERACK21 sub rack is a shielded, fully closed enclosure with the following features:

- VMEbus sub rack with 21 slots with the J1 and J2 VMEbus boards
- Front connection components for the periphery of the boards
- Power supply unit for the VMEbus supply with +5V , +12V and -12V
- Power supply 230VAC, 110VAC
- Rechargeable battery pack for the J1 VMEbus board (connection b31)
- Three fitted axial fans on a tray, easy exchangeable
- Monitoring voltage failure for +5V , +12V and -12V
- Error monitoring by LED and relays



2. Functional Description

The front view of the VMERACK21 sub rack has the following layout:





2.1. Design

The VMERACK 21 sub rack is a shielded, fully closed enclosure with a height of 480mm, a width of 450mm (with flange, approx. 485mm) and a depth of 310mm. The plug connectors (power connector and the periphery plug connectors of the boards) protrude around 70mm, the cable tray about 110mm on the front side. The enclosure, with 6 height units (1 height unit = 44.45mm), contains the card cage with J1 (above) and J2 (below) VMEbus boards with 21 slots each with a width of 4 divisions (1 division = 5.08mm). The power supply unit with 2 height units is located above the card cage. The power supply unit supplies the VME backplane and the fans with regulated DC voltages +5V and $\pm 12V$ and charges the batteries. These batteries supply the standby voltage for the relevant boards in the event of power failure. Below the VMEbus card cage, three axial fans are fitted which are activated as soon as the supply voltage is switched on. The ac-fail signal goes low about 20 milliseconds before the 5V will disappear.

2.2. Voltage Supply 230V/110V

The voltage supply unit is fitted with a Mitra AC/DC converter in order to supply the boards in the VMEbus sub rack. The power supply delivers +5V/75A for the supply of the J1 and J2 VMEbus boards, +12V/10A and -12V/6A for the supply of the J1 VMEbus board and the three axial fans. The reference points of the power units GND (0V) are connected to each other and to the enclosure as well as to the PE-connection of the inlet connector. The input fuse is fast acting (not user accessible). Furthermore there is a back-up fuse in the racks accomplished as an automatic circuit breaker, which can be reset by pressing a push-button. These fuses have nominal values of 3.5A for the 230V-version or 10A for the 110V-version respectively.

A fitted inlet connector with integrated two-pole switch and power filter is provided on the front panel of the voltage supply unit for the supply. This connector has the following connections:

Top	PE	Earth (connected to the enclosure and the GND of the power units)
Left	L1	Phase
Right	N	Neutral conductor

The sub rack comes with a cable (approx. 4m in length) with an integrated cable coupling for connection. The cable insulation is cut back at the connection end. The wires have the following colours:

- L1** black or brown
- N** blue
- PE** yellow/green.

2.3. Accumulator

Three rechargeable batteries ($U = 3 \times 1.2V$), size AA/AM3 (round cells or batteries according to IEC LR06) are used for the standby supply via the b31 connection of the J1 VMEbus board. These batteries are located in a battery compartment with a screw-on lid on the front side of the voltage supply unit. The three batteries are taped together to form a battery block so that they can be easily removed from the battery compartment. Replacement batteries should also be taped together in the same manner. The batteries should be replaced during operation so that no data are lost in the relevant boards.



A controller supervises the charge state of the accumulators and achieves a maintenance charging. But the controller is not able to detect the capacity of the accumulators over time. That's why it should be exchanged periodically. Depending on the operating temperature the exchange interval should be between 3 and 5 years.

Missing or high-resistance accumulators are detected and signaled by the red LED "battery error". This can be acknowledged by pressing the push button "battery reset". If the LED lights up again after a short time, the accumulators have to be exchanged.

3. Monitoring Function

The monitoring unit supervises

- All controlled voltages $+5V \pm 5\%$, $\pm 12V \pm 10\%$
- All three fans
- Air temperature between fans and card cage $< 50^{\circ}C$
- Charge status of the batteries (!but not the capacity)

There are 3 potential free relays with SPDT contacts available at the 15pin DSUB connector. These error states are:

Pin

8 - 7 closed: one of the 3 voltages is out of the limit

7 - 6 closed: all 3 voltages are within the limits

5 - 4 closed: temperature $t > 50^{\circ}C$.

4 - 3 closed: temperature $t < 50^{\circ}C$.

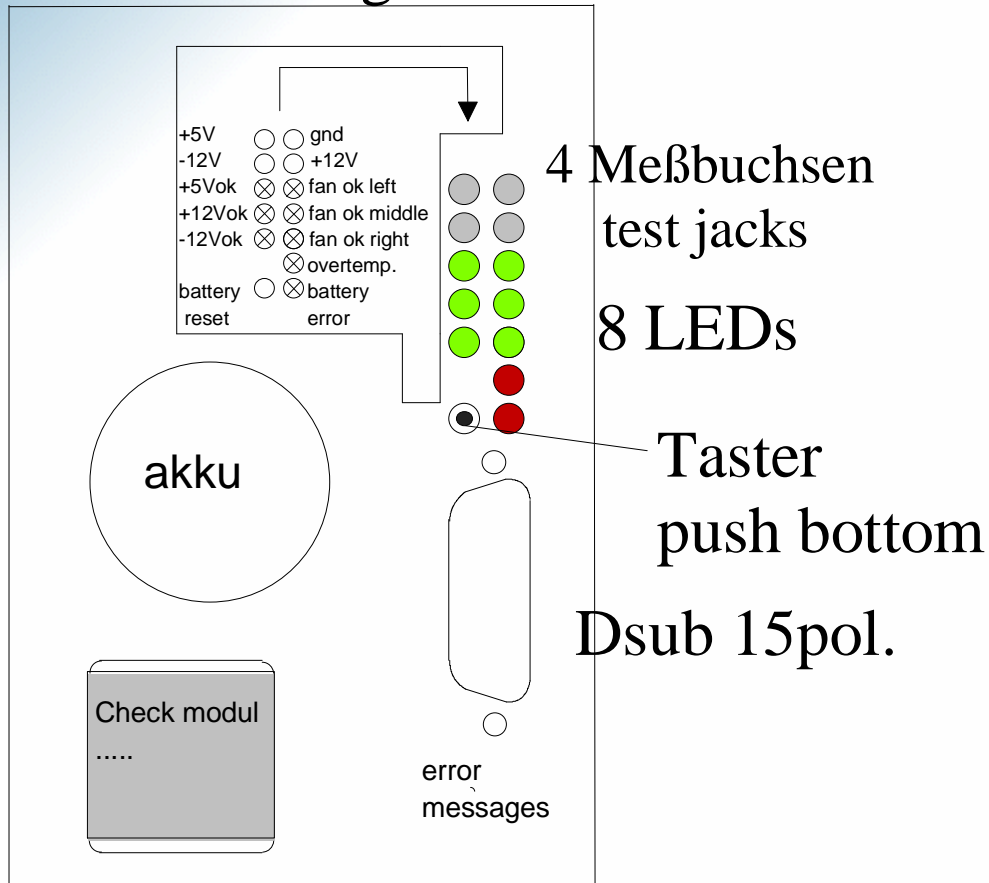
2 - 1 closed: one or more fans do not work

1 - 15 closed: all 3 fans do work properly

The contacts 8-7, 5-4 and 2-1 are closed if one of the fuses of the power supply was blown or the VMERACK21 is switched of.



Überwachungs baugruppe monitoring unit



At the monitoring unit are four 2mm test jacks located to measure the three different voltages: +5V, +12V and -12V. The left LED row shows green if all voltages are within the limits. The right LED row signals with green LEDs if all three fans are working. The upper red LED is on when the air temperature above the fans becomes greater than 50°C. The lower red LED is on when the accumulator is bad or not installed. This error can be quitted by pushing the push-bottom after replacing the accumulator.



4. VMEbus

The sub rack contains the **J1** (above) and **J2** (below) VMEbus boards with 21 slots with a slot distance of 4 divisions (4 x 5.08mm). The J1 VMEbus board (Rev. C) is terminated at slot 0 and 20 with active terminators (off-board). The J1 has a daisy-chain with auto closing at the connections b4/b5, b6/b7, b8/b9 und b10/b11. The connections are automatically shorted if no boards are inserted in the slots recommended.

**Connector pin assignment of the J1 VMEbus board:**

Row No.	Signal-name		
	Column a	Column b	Column c
1	D00	BBSY	D08
2	D01	BCLR	D09
3	D02	ACFAIL	D10
4	D03	BG0IN	D11
5	D04	BG0OUT	D12
6	D05	BG1IN	D13
7	D06	BG1OUT	D14
8	D07	BG2IN	D15
9	GND	BG2OUT	GND
10	SYSCLK	BG3IN	SYSFAIL
11	GND	BG3OUT	BERR
12	DS1	BR0	SYSRESET
13	DS0	BR1	LWORD
14	WRITE	BR2	AM5
15	GND	BR3	A23
16	DTACK	AM0	A22
17	GND	AM1	A21
18	AS	AM2	A20
19	GND	AM3	A19
20	IACK	GND	A18
21	IACKIN	SERCLK	A17
22	IACKOUT	SERDAT	A16
23	AM4	GND	A15
24	A07	IRQ7	A14
25	A06	IRQ6	A13
26	A05	IRQ5	A12
27	A04	IRQ4	A11
28	A03	IRQ3	A10
29	A02	IRQ2	A09
30	A01	IRQ1	A08
31	-12V	+5V STDY	+12V
32	+5V	+5V	+5V

96-pin socket connector J1 (top) GND = 0 V, reference point for +5 V and 12 V

Note: The reference point GND is connected with the VMERACK enclosure and that's why also with PE of the 110/230VAC supply.



At the J2 VMEbus board only connection row "b" has a bus structure where lines for the addresses A24 ... A31 (b4 ...b11) and data D16 ... D31 (b14 ...b30) are terminated at slot 0 and 20 with active terminators.

Layout of the J2 VMEbus board:

Row No.	Signal-name		
	Column a	Column b	Column c
1	User (nc)	+5V	User (nc)
2	User (nc)	GND	User (nc)
3	User (nc)	Retry	User (nc)
4	User (nc)	A24	User (nc)
5	User (nc)	A25	User (nc)
6	User (nc)	A26	User (nc)
7	User (nc)	A27	User (nc)
8	User (nc)	A28	User (nc)
9	User (nc)	A29	User (nc)
10	User (nc)	A30	User (nc)
11	User (nc)	A31	User (nc)
12	User (nc)	GND	User (nc)
13	User (nc)	+5V	User (nc)
14	User (nc)	D16	User (nc)
15	User (nc)	D17	User (nc)
16	User (nc)	D18	User (nc)
17	User (nc)	D19	User (nc)
18	User (nc)	D20	User (nc)
19	User (nc)	D21	User (nc)
20	User (nc)	D22	User (nc)
21	User (nc)	D23	User (nc)
22	User (nc)	GND	User (nc)
23	User (nc)	D24	User (nc)
24	User (nc)	D25	User (nc)
25	User (nc)	D26	User (nc)
26	User (nc)	D27	User (nc)
27	User (nc)	D28	User (nc)
28	User (nc)	D29	User (nc)
29	User (nc)	D30	User (nc)
30	User (nc)	D31	User (nc)
31	User (nc)	GND	User (nc)
32	User (nc)	+5V	User (nc)

(nc) = not connected



5. Technical Specifications

230/110VAC SUPPLY

- Input voltage

230V power supply $U_e = 180\text{VAC}$ to 264VAC

110V power supply $U_e = 93.5\text{VAC}$ to 140VAC

Power consumption $P_e < 650\text{VA}$

$f_e = 47\text{Hz}$ to 63Hz

Automatic back-up fuses

$I = 3.5\text{A}$ for 230V-version

$I = 10\text{A}$ for 110V-version

- Output voltages

(Controlled DC voltages for VMEbus and fan)

UB5 = $+5\text{V} \pm 5\%$, $I_{\text{max}} = 75\text{A}$

UB12P = $+12\text{V} \pm 10\%$, $I_{\text{max}} = 10\text{A}$

UB12N = $-12\text{V} \pm 10\%$, $I_{\text{max}} = 6\text{A}$

Accumulators:

3x Ni-MH 1.2V/ $>1500\text{mAh}$ type P-220 C, size "Baby" respectively IEC R14 or C

MONITORING OUTPUT

potential-free relay contacts (SPDT)

Contact load:

AC voltage

Voltage $U_{\text{max.}} = 125\text{V}$

Switching capacity $P_{\text{max.}} = 50\text{VA}$

DC voltage

Voltage $U_{\text{max.}} = 60\text{V}$

Switching capacity $P_{\text{max.}} = 30\text{W}$

AMBIENT CONDITIONS

Ambient temperature 0°C to $+50^\circ\text{C}$

Storage temperature -40°C to $+85^\circ\text{C}$

Humidity Class F (DIN 40040)

FANS

Manufacturer: Papst

Type: Multifan 4312

Supply voltage: 12 V

Number: 3 fans on a tray

Life: approx. 70 000 h (approx. 8 years)

ELECTROMAGNETIC COMPATIBILITY

- Standard (pr) EN 50081-2 for noise emission

- Standard (pr) EN 50082-2 for noise immunity

MECHANICAL DESIGN

Dimensions sub rack Height 312 mm

(h □ d □ w) Width 320 mm (without flanges)

Total width 375 mm

Depth 245 mm

Weight 7kg



6. Ordering Information

Ordering information for VMERACK21 including power supply, fan unit, air filter, power cable, 3 rechargeable batteries and monitoring unit

Article No.:

VMERACK21-230: 7006034

VMERACK21-110: 7006035

Ordering information for spare parts

Article No. :

7007080 Power supply unit, switchable between 230 and 110VAC

7007070 Fan unit (incl. one air filter)

7007060 Air filter for fan unit

7007050 3 rechargeable batteries as pack

7007090 monitoring unit