

1000W MTCA.4 Low Noise Power Supply

Improvements & Updates



Thomas Berner

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

Burscheid / Germany



Main Features of MTCA.4 Power Supply

- **1000W** power supply according to MTCA.4 standard
- Efficiency: 89% !
- Low noise and ripple : **< 4mV peak to peak (0 - 20 MHz)**
< 40mV peak to peak (0-350MHz)
- Wide range AC input 90 - 264 VAC / 50 - 60 Hz
- Integrated MTCA.4 Digital Power Controller
- DC Outputs:
 - 16 channels 12V/8.4A (payload power) max. 1000W total
 - 16 channels 3.3V/0.2A (management power)
- USB interface for remote monitoring/control
- Hotswap Button
- MTCA.4 Double height - double width size
- MTCA.0 (doubled height must fit)
- Dimensions: 187.3 mm x 170.0 mm x 59.4 mm
(7.37" x 6.69" x 2.89")



Front panel controls and indicators

Fault LED
and Hotswap
Button

Micro USB port
for remote
monitoring

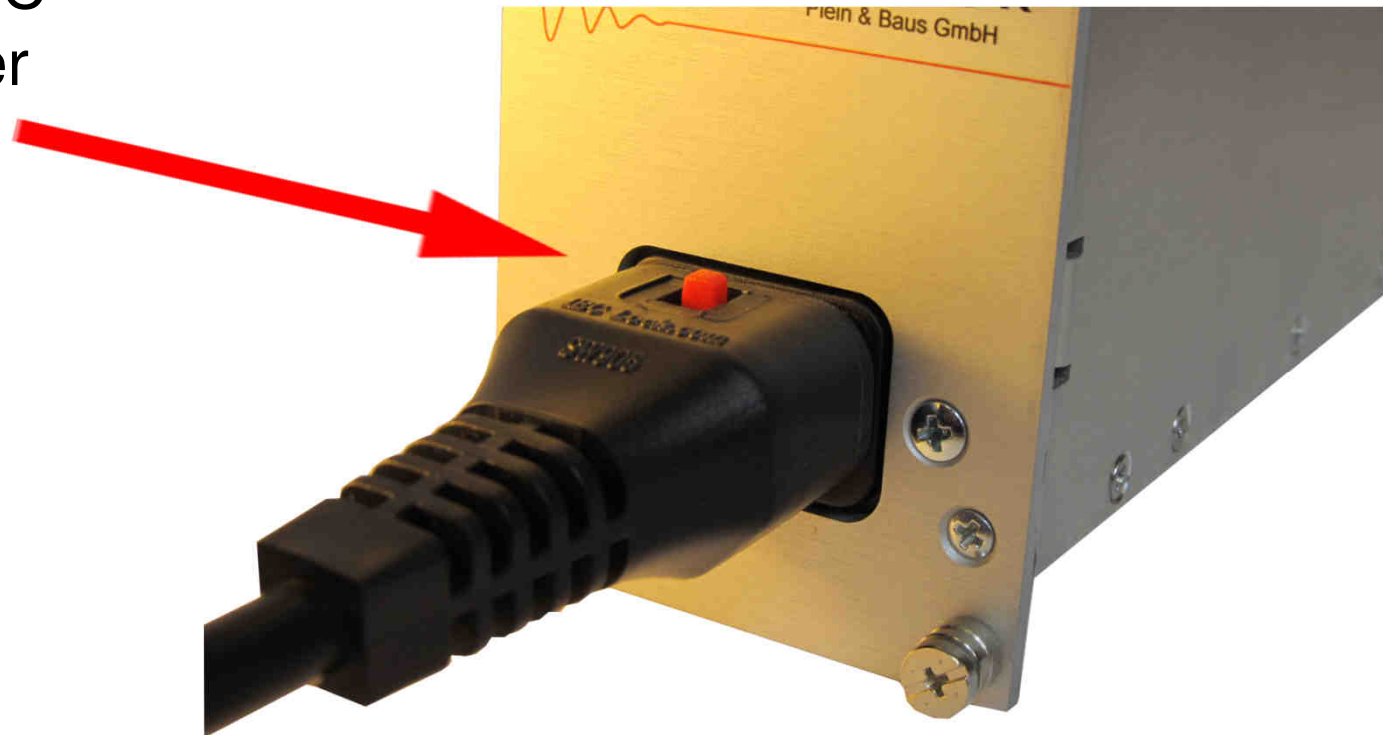


PFC and
Status
LEDs

Exchangeable
mains fuse
(10A standard
for 230/240
VAC)

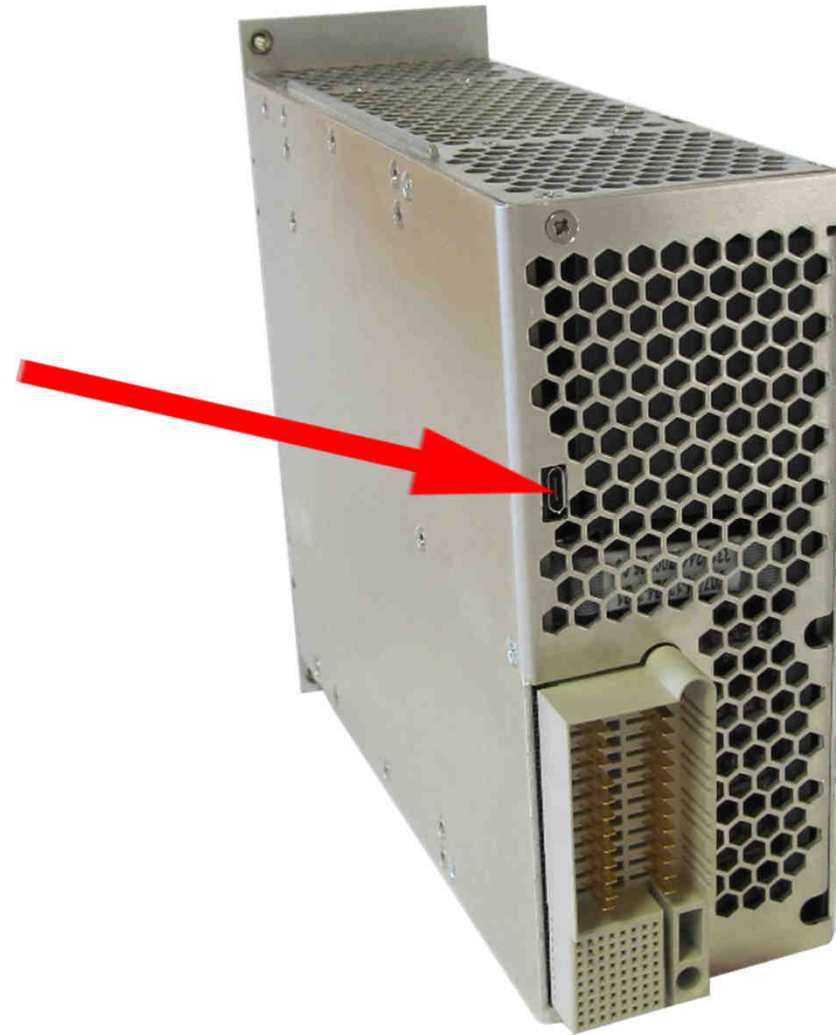
Front panel controls and indicators

Lockable IEC
mains power
connector



Rear panel controls and indicators

Micro USB socket
for firmware
restoration
independent from
the MTCA.4 crate
environment



Noise & Ripple further improved

Measured with TDS5034 Tektronix BW = 20MHz / 350MHz
@ output channel 1 of MTCA4 connected with 50R-BNC cable on WIENER -testunit
according to IEEE-1515-2000

Revision	A3 (end of 2013)	A5 (Current Revision)	A3 (end of 2013)	A5 (Current Revision)	Change	Change
Load	3,6A	3,6A	60A	60A	3,6A	60A
Channel/ BW	[mV p-p]	[mV p-p]	[mV p-p]	[mV p-p]	[dB]	[dB]
CH1/ 350MHz	46,0	34,4	212,0	36,4	5,8	15
CH1/ 20MHz	3,84	3,68	3,92	3,44	1,4	3
CH8/ 350MHz	69,6	36,8	196,0	26	7,5	17,5
CH8/ 20MHz	11,8	3,36	15,6	4,0	3,9	12
CH16/ 350MHz	43,2	13,6	124,0	30,0	4,1	12
CH16/ 20MHz	2,24	1,52	8,4	1,12	9,4	19



GND leakage current further reduced

GND leakage current measured with current probe P6021 Tektronix
BW = 120Hz - 60MHz
Ambient noise with Mains unconnected = 3,22mA

Revision	A3 (end of 2013)	A5 (Current Revision)	A3 (end of 2013)	A5 (Current Revision)	Change	Change
Load	3,6A	3,6A	60A	60A	3,6A	60A
Channel/ BW	[mA p-p]	[mA p-p]	[mA p-p]	[mA p-p]	[dB]	[dB]
Screw near output connector	13,4	9,4	20,0	5,8	3,44	10,6
Front at top	53,6	8,8	47,2	13,9	3,6	11,1
Front at bot	30,8	7,2	28,4	9,2	3,1	9,8
Screw near by PFC-Heatsink			146,0	10,2	14,3	23



LabView software for auxiliary crate supervision

MTCA.4 AUXILIARY DIAGNOSTIC SUPERVISOR

STATUS

- RESET
- Power Modul OK
- Not Aus
- DCDC On
- Temperatur Warning
- Temperatur Alarm
- Temperatur Fail
- Temperatur Extra
- is Primary PM
- is Secondary PM
- OVP MP
- UVP MP
- OVP PP
- UVP PP
- EEPROM

12VHH: 11,56 V
12VPP: 12,51 V
3V3: 3,19 V
SMP: 4,97 V
SMPI: 5,09 V

CPU: 100%
Copper: 90%
Trafo: 80%
Cooler: 50%

PS1

12VPP RAILS: PP, PASSBLOCK, PG, OVC, Slow, Fast

3V3MP RAILS: MP, PASSBLOCK, PG, OVC, Slow, Fast

	Current	Power	Soft	Hard
MCH 1	3,0 A	37,7 W	3300 mA	3,7 A
MCH 2	0,0 A	0,0 W	5200 mA	5,7 A
CU 1	2,9 A	36,7 W	3300 mA	3,7 A
CU 2	2,9 A	36,6 W	3300 mA	3,7 A
AMC 1	0,0 A	0,0 W	3300 mA	3,7 A
AMC 2	3,1 A	38,5 W	3300 mA	3,7 A
AMC 3	3,1 A	38,8 W	4500 mA	4,9 A
AMC 4	0,0 A	0,0 W	4500 mA	4,9 A
AMC 5	3,1 A	38,6 W	4500 mA	4,9 A
AMC 6	4,6 A	57,3 W	5200 mA	5,7 A
AMC 7	4,6 A	56,8 W	5200 mA	5,7 A
AMC 8	4,6 A	57,8 W	5200 mA	5,7 A
AMC 9	4,6 A	57,2 W	5200 mA	5,7 A
AMC 10	0,0 A	0,0 W	5200 mA	5,7 A
AMC 11	0,0 A	0,0 W	5200 mA	5,7 A
AMC 12	4,6 A	56,9 W	5200 mA	5,7 A

USB Settings: USB Channel COM13, Transfers 302, Running Mode WIENER TEST

Current: 41,2 A
Power: 513 W



Summary

The WIENER 1000W MTCA.4 Power Supply provides:

- **1000W** power with an **efficiency of 89%** means low heat generation and longer lifetime.
- **Low noise and ripple** of less than **4mV** p-p (0-20MHz) for all load rates which enables the use of sensitive AMC's like ADC's
- **Minimized crosstalk** which protects sensitive AMC's against load changes by fans or other AMC's
- Additional features:
USB port for **auxiliary diagnostic supervision**



Thank you for listening.



New headquarter in Burscheid, Germany :

