

## PL512 Power Supply System

PL512 is a high sophisticated, high density, programmable 12-channel floating low-voltage power supply system. Using the remote monitoring and control features it can be used to supply external load-channels with high power consumption also over long distances. Dynamic behavior programmable via USB port (long-moderate-short sensed distances to loads). Voltages, currents, temperatures and output power are programmable and controlled by the internal processor. Illegal modes as well as failure will be detected.

### PL512 Features

- Up to 12 independent, potential free outputs, total up to 3 kW DC output power
- Fully controlled, programmable trip levels
- Programmable voltages and thresholds on voltages, currents and temperatures
- Extremely low noise and ripple
- CE conform EN 50 081/82 part 1 (EN 50 022 B), safety in accordance with EN 60 950
- Sinusoidal mains current EN 61000-3-2
- Ethernet and USB interfaces for remote monitoring and control, with software
- 94V – 265VAC world-wide auto-range AC input, with power factor correction, CE
- Web interface, SNMPv2 protocol
- Optional alphanumeric display
- Optional with Power fail- and System Reset- Signal
- Optional with Interlock input
- Floating range: +/-100V (default, optimal for low noise), optional up to +/- 500V
- Optional direct water cooling with same size as air cooled ones

**PL512** consists of:

- **Power Bin:** 19" bin hosting a power box
- **Power Box** containing a PFC mains input module, a control card and slots for up to 6 modules (MDH/MDL types, dual channel, 250W) for a maximum of 12 channels. The power box includes the Ethernet/USB combo card and can be outfitted with an optional display (**EX version**) as well as individual channel interlock feature (**I option**)
- **Power Modules** to be inserted in **Power Box slots** for a maximum of 6 modules / 12 channels

#### PL512 19" Enclosures (Power Bin)

| Type                    | Dimensions       | Features             |
|-------------------------|------------------|----------------------|
| <b>PBN512 – 3U RASO</b> | 3U x 19" x 445mm | Folded metal case    |
| <b>PBN512 – 4U</b>      | 4U x 19" x 445mm | Aluminum side panels |

#### PL512 19" Power Box for insertion in Power Bin

| Type               | Dimensions       | Features  |
|--------------------|------------------|---|
| <b>PBX512</b>      | 3U x 19" x 445mm | Ethernet, USB, "Easy Lever" extraction mechanism          |
| <b>PBX512 – EX</b> | 3U x 19" x 445mm | Display, Ethernet, USB, "Easy Lever" extraction mechanism |



## Standard MDH/MDL power modules

| Type               | optimal Voltage range | Channels | Peak output / Channel         |
|--------------------|-----------------------|----------|-------------------------------|
| <b>MDL – 07/24</b> | 7V ... 24V            | 2        | +/- 11,5A / 275W (550W total) |
| <b>MDH – 02/07</b> | 2V ... 7V             | 2        | +/- 30A / 210W (420W total)   |
| <b>MDH – 07/16</b> | 7V ... 16V            | 2        | +/- 20A / 250W (500W total)   |

DC Output connections: 4mm (M4-80A).

Sense and temperature sensor connections: 9 pin Sub D female connector for group of 4 channels, senses wired to terminals on back side.

Channels can be operated in Master-Slave mode for paralleling of two ore more outputs (current boosting).



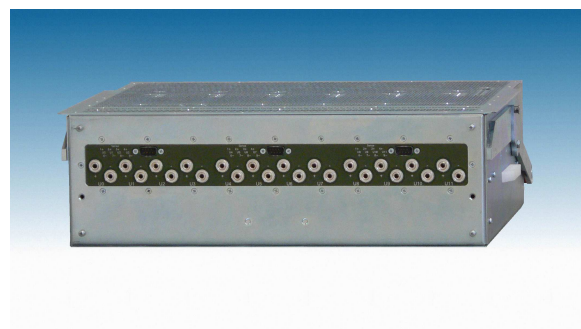
PL512 consisting of PBN512 – 4U and PBX512 - EX



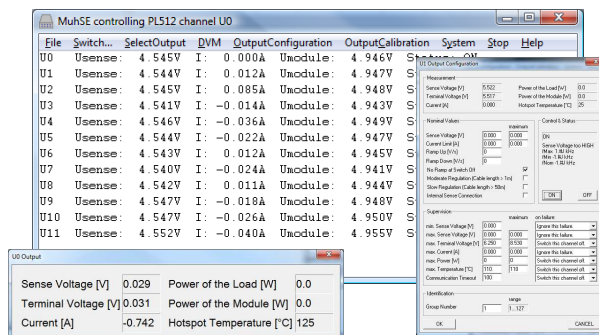
Rear View on power terminal



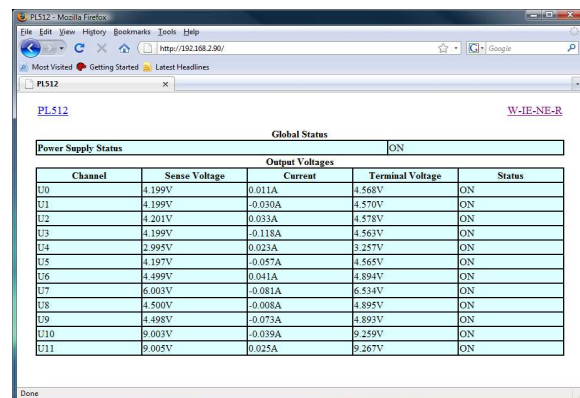
PBX512 – EX power box without bin



Rear side of PBX512 – EX power box



MUSEcontrol software and WEB interface



## PL 512 Power Supply Technical Data

### Regulation (fast circuit for short sensed distance)

#### Static:

|           |        |                                    |
|-----------|--------|------------------------------------|
| MDH (20A) | <0.05% | +/-100% load, +/- full mains range |
| MDL, MDH  | <0.1%  | +/-100% load, +/- full mains range |

#### Dynamic (0,5 m wire)

|          |        |             |
|----------|--------|-------------|
| MDL, MDH | <100mV | +/-25% load |
| MDL, MDH | <0.7%  | +/-25% load |

### Recovery time (0,5 m wire) +/-25% load within +/-1% deviation within +/-0.1% dev.

|          |       |       |
|----------|-------|-------|
| MDL, MDH | 0.0ms | 1.0ms |
|----------|-------|-------|

Conditions: Current slope <1000A/ms, 20mF per 100A parallel to load

### Regulation (slow circuit for long sensed distance)

#### Static:

|          |        |                                    |
|----------|--------|------------------------------------|
| MDL, MDH | <0.05% | +/-100% load, +/- full mains range |
|----------|--------|------------------------------------|

**Dynamic deviation** depends on current slope resp. filter capacitors at load side only

### Recovery time (40 m wire) 5V at load side, V drop < 2V within +/-10% deviation within +/-1% deviation

|     |        |       |
|-----|--------|-------|
| MDH | <150ms | 250ms |
| MDL | <150ms | 320ms |

**Regulation timing** adaptable to dynamic conditions (induced by cable length, voltage drops, sinker and filter capacities at load side)

### DC output characteristics

|                       |                     |   |
|-----------------------|---------------------|---|
| <b>Sense range</b>    | <b>compensation</b> | limited to < 10V or nom voltage (except special versions)                 |
| <b>Sense mode</b>     |                     | closed loop and continuously controlling regulator to load                |
| <b>Floating Range</b> |                     | +/-100VDC , low noise version (default), optional +/- 500V(increased CMN) |

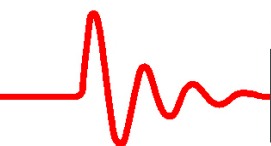
### Noise and ripple

|                             |                    |           |
|-----------------------------|--------------------|-----------|
| <b>0.5 m wire (&lt; 7V)</b> | <10mV peak to peak | 0-20 MHz  |
| <b>0.5 m wire (&gt; 7V)</b> | <15mV peak to peak | 0-20 MHz  |
| <b>10 m wire</b>            | <3mV peak to peak  | 0-300 MHz |

Conditions at load side: parallel (X) 330µF and 1µF ceramic, 100nF HF conducting to case (Y) each line

### EMC compatibility

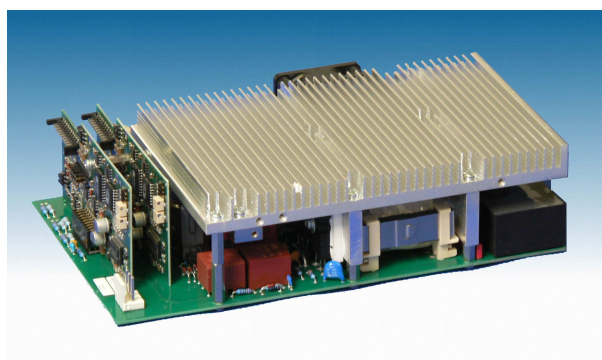
|   |                      |
|---|----------------------|
| <b>EN 61 000-6-3:2001</b>                           | [RF emission]        |
| <b>EN 55 022:1998 + Corr:2001 + A1:2000 Class B</b> | conducted noise      |
| <b>EN 55 022:1998 + Corr:2001 + A1:2000 Class B</b> | radiated noise       |
| <b>EN 61 000-3-2:2001</b>                           | harmonics            |
| <b>EN 61 000-3-3:1995 +Corr:1997 +A1:2001</b>       | flicker              |
| <b>EN 61 000-6-2:2001</b>                           | [immunity]           |
| <b>EN 61 000-4-6:1996 + A1:2001</b>                 | injected HF currents |



**EN 61 000-4-3:1996 + A1:1998 + A2:2001**  
**EN 61 000-4-4:1995 + A1:2001**  
**EN 61 000-4-5:1995 + A1:2001**  
**EN 61 000-4-11:1994 + A1:2000**  
**EN 61 000-4-2:1995 + A1:1998 + A2:2001**

radiated HF fields, "900MHz"  
 burst  
 surge  
 voltage variations  
 ESD

**Emission:** CE EN 50081-1 (EN 55 022-B)  
**Immunity:** CE EN 50082-1 or 2  
**Environment :** 0...50°C without derating, storage: -30°C till 85°C  
**Temperature coefficient:** < 0.2% / 10K  
**Stability:** <5mV or 0.1% within 24 h, <25mV or 0.3% within 6 months (condition const.)  
**Current limiting:** 100% of nominal values, programmable to lower values via Interface or display tableau. In case of overcurrent:  $I_{lim}$  defines a constant current level, if status  $U_{min}$  set to 0V for the concerned channel,  $I_{max}$  defines the global trip off setpoint independant of status voltage window monoton and synchron. 50ms ramping (factory settings), other slope and different timing programmable  
**Voltage rise:** discharge of output capacitors after DC off.  
**Voltage set:** Factory setting to 125% of nominal values  
**OV protection:** within 3ms if >2% (default) deviation from nominal or programmed values , after overload, overheat (temperature limits 90/110°C heat sink, 70°C ambient), overvoltage, undervoltage , all trip off points processor controlled and programmable / disabling  
**Status control:** High level or open: All outputs DC off (optional feature)  
**DC Off (trip off):** 90°C mains input, 110°C modules (heat sink), 70°C ambient internal  
**Interlock input:** 90°C mains input, 110°C modules (heat sink), 70°C ambient internal  
**Temperature limits:** 75% 2V/ -83%  $\geq 5V$ / -85%  $\geq 12V$ /-90%  $\geq 48V$  for 230VAC input voltage  
**Efficiency (pro Module):** >65,000 h (blower), electronics > 100,000 h at 40°C ambient  
**M T B F:**



Dual channel MDH power module

