



Audio. Control. Power.

**POWER DISTRIBUTION UNIT**  
**PD14PMiD**

**Single and Dual Input  
14 Output Mains Distribution Units.**

**Handbook**

**TSL Products Limited.**

**Unit 1-2, First Avenue, Globe Park, Marlow, Buckinghamshire,  
SL7 1YA**

**Telephone +44 (0)1628 564610, [support@tslproducts.com](mailto:support@tslproducts.com)**

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## SAFETY INFORMATION

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### **Important safety information**

This manual contains information and warnings that must be followed by the user for safe operation and to keep the product in a safe condition.

### **General safety summary**

Use the product only as specified. Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. Carefully read all instructions. Retain these instructions for future reference.

Comply with local and national safety codes.

For correct and safe operation of the product, it is essential that you follow generally accepted safety procedures in addition to the safety precautions specified in this manual.

The equipment is intended for installation in a Restricted Access Area and is designed to be used by trained personnel only. This equipment is not suitable for use in locations where children are likely to be present.

Before use, always check the product with a known source to be sure it is operating correctly.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

When incorporating this equipment into a system, the safety of that system is the responsibility of the assembler of the system.

### **To avoid fire or personal injury**

**Use proper power cord.** Use only the power cord specified for this product and certified for the country of use.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

**Do not operate without covers.** Do not operate this product with covers or panels removed, or with the case open. Hazardous voltage exposure is possible.

**Do not operate in wet/damp conditions.** Be aware that condensation may occur if a unit is moved from a cold to a warm environment.

**Do not operate in an explosive atmosphere.**

## **WARRANTY, MAINTENANCE AND REPAIR**

All TSL equipment is guaranteed for one year from the date of delivery to the customer's premises. If the equipment is to be stored for a significant period, please contact TSL concerning a possible extended warranty period.

### **Failure during warranty**

If any TSL product should fail or become faulty within the warranty period, first please check the PSU fuses.

All maintenance work must be carried out by trained and competent personnel.

If equipment has to be returned to TSL for repair or re-alignment, please observe the following overleaf:

### **Technical support information**

E-Mail address: support@tslproducts.com

Telephone Support Number for the UK and Europe: +44 (0) 1628 564610

Telephone Support Number for the USA only: +1 818 898 3380

### **TSL Returns Procedure**

Please telephone +44 (0)1628 564610 and speak to a Support Engineer who will provide a Returns Number. This will enable us to track the unit effectively and will provide some information prior to the unit arriving.

For each item, this unique Returns Number must be included with the Fault Report sent with the unit.

A contact name and telephone number are also required with the Fault Report sent with the unit.

### **Fault report details required.**

- Company:
- Name:
- Address:
- Contact Name:
- Telephone No:
- Returns Number:
- Symptoms of the fault (to include switch setting positions, input signals etc):

### **Packing**

Please ensure that the unit is well packed as all mechanical damage is chargeable. TSL recommends that you insure your equipment for transit damage.

The original packaging, when available, should always be used when returning equipment.

**If returned equipment is received in a damaged condition, the damage should be reported both to TSL and the carrier immediately.**

# 1 Installation

Installation of this equipment should be in accordance with BS7671.

In particular, this includes regulation 460-01-02, which states that each source of supply should have a main switch provided, with a durable warning notice permanently fixed in such a position that any person seeking to operate any of these main switches will be warned of the need to operate all such switches to achieve isolation of the installation. It is not recommended to use the unit with different phase inputs.

**Note: The Neutrik inlet connectors must not be engaged (connected) or disengaged (disconnected) when the unit is under load or live.** Damage to the inlet connectors may occur due to the high currents involved under these circumstances.

Note the PDU internally has either 20A or 32A fuses, depending on model variant, in each incoming feed; and also 500mA fuses for the internal power supplies. Note that internal fusing is present in the Live circuit only.

It is recommended that any branch circuit protection device is rated at 125% of the maximum continuous load current.

Unless otherwise stated TSL equipment may be installed at any angle or position within an ambient operating temperature range of 5° ~ 30° C .

The RJ45 connector is for use only with an Ethernet 10/100 system.

## CAUTION:

Always disconnect equipment connected to a powered PDU before performing any maintenance. Potentially hazardous voltages are present even after the operation or removal of a fuse.

## Earthing/Grounding

In all cases, the frame of the equipment must be earthed on installation.

The earth pin on the mains inlet connector is connected to the metal frame of the equipment, to 0 volts on the internal DC PSU and to signal ground, unless otherwise stated. All metal panels are bonded together with individual earthing points on each panel. Rack mounted equipment must be earthed (grounded). Note the Neutrik inputs also carry an earth wire to the units internal earthing system as described above.

## Mounting

Careful consideration of the equipment location and mounting in racks must be made. In particular, consideration must be given to the stability of free-standing racks by mounting heavy equipment low in the rack. The rear of the unit should be supported in the rack.

## Ventilation

Due consideration for cooling requirements must be given when mounting the equipment. The equipment contains an internal temperature sensor.

## General

If equipment is installed in a closed unit, consideration must be given to providing forced air cooling in order that the maximum recommended ambient temperature is not exceeded.

## Power Distribution Unit - PD14PMiD



## 2.0 Description

### Part Number Definitions:

<b>PD14PMiD-32A</b>	32 Amp Power Distribution Unit with output monitoring & SNMP alarms over IP networks.
<b>PD14PMiD-20A</b>	20 Amp Power Distribution Unit with output monitoring & SNMP alarms over IP networks.
<b>PD14PMiD-CO-32A</b>	32 Amp Dual input Power Distribution Unit with auto-failover, manual changeover, SNMP changeover with output monitoring & SNMP alarms over IP networks.
<b>PD14PMiD-CO-20A</b>	20 Amp Dual input Power Distribution Unit with auto-failover, manual changeover, SNMP changeover with output monitoring & SNMP alarms over IP networks.

### Features:

- 19" 1RU form factor, available in 20A or 32A versions.
- 14 individually fused IEC outlets with State control of each outlet, and power status/fuse failure front and rear panel indicators
- Dual Input Seamless Auto Failover with zero crossing point switching
- Front panel colour LCD UI for local monitoring and control
- Secure/Encrypted web browser access (HTTPS) for remote control and monitoring, plus SNMP monitoring & alarms (optional control)
- Optional HTTP access feature for internal LAN use.
- Reporting of critical power parameters including:
  - Current, voltage and power factor measurement for each outlet
  - Input voltage and total current/power measured, and cumulative active power consumption
  - Earth leakage current measurement
  - Over/under current LED indicators and SNMP alarms (configured per outlet)
- Sequential, immediate, or user configured delayed start up
- Power loss/restore configuration (All-off/All-on/Last-state)
- Internal temperature sensor with adjustable alarm limits
- External environment monitoring (Temperature/Humidity measurement via 1-wire sensor.)
- Matching 20A or 32A Neutrik powerCON connectors supplied

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## 3.0 Introduction

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The PD14PMiD is a 14-output power distribution unit with either single or dual inputs, intended for racks where equipment needs a constant uninterrupted Mains power supply. This 1RU unit is designed to fit into a rack in any position. The inlets are via Neutrik powerCON connectors, and cable mounted connectors are supplied free with each unit.

The two power inputs supply a set of master changeover interlocked input relays with control circuitry to detect power presence. In the event of a failure of the input in use the unit will seamlessly switch over to the backup supply within 40ms, leaving mains resilient (~two cycles) equipment unaffected by the change.

The unit also has Primary backup control capability so that when the Primary power is restored the unit will switch back to the original source. This ensures that any backup power source isn't used unnecessarily.

Alternatively, input selection can be controlled from the front panel switches, and internal supply management software.

Each of the 14 outlets is fused on the front panel with a 10A HCT fuse. A green power LED adjacent to each numbered fuse indicates the status of each outlet: Green good; Amber outside of user operational thresholds, Red output enabled and fuse blown, Off – output disabled.

Output power to the 14 IEC outlets is via double pole interlocking input relays.

## 4.0 Operation (Front Panel)

The following information describes the operation of the PD14PMiD-CO dual input changeover products; however, most features and functions will also apply to the single input products.

Wire the supply inputs to A and B from the appropriate sources.

**NB: Ensure you comply with the safety instructions in section 1 of this manual.**

Wire the outputs as required.



The unit can be operated from the front panel using the rotary encoder next to the display. Each monitoring mode can be selected by rotating the encoder to either side and selections can be made in menus by pressing it.

### Front Panel LED Indications:

- **Power:**
  - **GREEN:** Power on input & available to the outputs.
  - **AMBER:** Power on input but in standby.
  - **RED:** No power on input.
- **LAN:**
  - **GREEN:** LAN connected & active.
  - **OFF:** Not connected.
- **Output LEDs 1-14 (Front and Rear Panel):**
  - **GREEN** - Circuit on and fuse OK.
  - **AMBER** - Circuit on and output error (e.g. Over Current threshold).
  - **RED** - Circuit on and fuse failed.
  - **OFF** - Circuit off.



When the current overall load exceeds 80% or reaches the maximum, the corresponding LED will be lit.

- **80% Load:**
  - **AMBER:** 80% of current load reached or exceeded
- **100% Load:**
  - **RED FLASHING:** 100% of current load reached or exceeded

### Input Over Current Protection

The PD14PMiD includes an over current protection feature that will automatically switch off the selected input relay should the following input current thresholds be breached:

Input current between 100 – 110% for 10 minutes

Input current above 110% for 10 seconds

If an over current shutdown has occurred, the LCD display will show an over current warning and the last value recorded for voltage and current prior to shutdown. The input status LEDs will show **AMBER** to indicate input power is present but the unit is in standby mode, and the power **OFF** button will show a **RED** LED to indicate the outputs have shutdown.

Press and hold the active input's input select button for >3s to recover from an over current shutdown. The source of the load causing the over current situation should first be identified and removed before recovering the unit, otherwise the unit will re-enter the over current protection state and repeat the shutdown.

**SNMP Trap messages** are also sent by SNMP Agent as Unrequested messages to SNMP Manager.

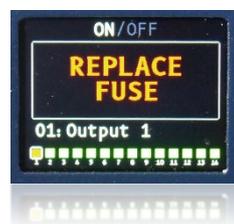
- When the Over-Current Shutdown occurs, the iPDU input Voltage drops below: `G_Cfg.tlsMIB_mdu.mduVoltageFloor (100V)` which triggers alarm = `TRAP_VOLTAGESTATUS (8)`.
- On recovery (a manual press on RLA or RLB or SNMP request), the Voltage exceeds 100V, which also triggers an alarm for `TRAP_VOLTAGESTATUS (8)`.

## Output Fuse Protection



In the event of a fault on any output which causes a front panel fuse to blow the LED associated with that output will be **RED** if the outlet is switched ON.

Whenever such a condition occurs the fault must be rectified prior to refitting the fuse.



The LCD front panel status indicator will show an output fault condition, and the display will also show a warning message when the faulty output is selected (see section 4.2.2).

## LAN Status



The LAN LED indicates the status of the Ethernet connection. A **GREEN** LED shows that the LAN is connected and active, while LED **OFF** indicates the loss of LAN connection.

### 4.1. Input A/B select (PD14PMiD-CO)

The tricolour LEDs A (left) & B (right) above the *POWER SELECT* buttons show 3 states:



- **GREEN** – Power on input & available to the outputs
- **AMBER** – Power on input but in standby
- **RED** – No power on input.

## Input Selection

Either Input **A** or **B** can be selected, and this status is indicated by either of the *Input Status* LEDs.

To change the active input, long press an Input button (left = A, right = B) for at least 4 seconds until the appropriate **GREEN** LED is lit above its corresponding button.

## Primary/Secondary Mode



To set the Primary input - which is the preferred active input – hold and press the **OFF** button together with the desired input (either A or B) until the **BLUE** button LED illuminates.

In this mode the unit will stay on the Primary Input either until this source fails, or the input state is changed.

On Primary input failure the unit will switch to the Secondary input to provide a continuous output, and the **BLUE** LED will blink to indicate the Primary source is not selected. Once the Primary input source is restored the unit will automatically switch back to it (Note, it will not automatically return to a nominated input following state change).

Primary/Secondary mode can be disabled by pressing both input A & B buttons together until the **BLUE** button LED switches off. When in non-Primary mode the unit will still automatically switch to the second input should the currently selected one fail, however once the original input source is restored the unit will not switch back to it, but continue to use the currently selected input source.

A **RED** input status LED indicates that there is no power present. i.e., check source or power cord etc.

## Standby Mode

To place the unit into standby mode press and hold the **OFF** button for approximately 4 seconds until a click indicates the relays have disengaged. The OFF button LED will show **RED** indicating the output power is switched off, and inputs A and B LEDs will indicate an amber state to show that the power is available but not active. All output LEDs will also be OFF.



Note: If the OFF button is held for up to 12 seconds (until the LCD blanks and relays disengage) the unit will perform a hard reboot.

## Software Reset

In the event the unit displays a software issue, it can be rebooted without having to power down by performing a soft reset. Press the Active Input A or B until the LCD blanks (about 4 seconds) then release. The iPDU will reboot in the same Configuration.

**Soft Reset: Resets the CPU only. Outputs remain latched to their ON/OFF states.**

## Reset to default settings

It is possible to return the unit to its default 'Factory' settings with the following procedure:

Press the Active Input A or B until the LCD blanks (about 4 seconds) then continue to press for a period of 3 to 6 seconds before releasing. This will trigger a soft reboot with all Config Parameters reset to default values.

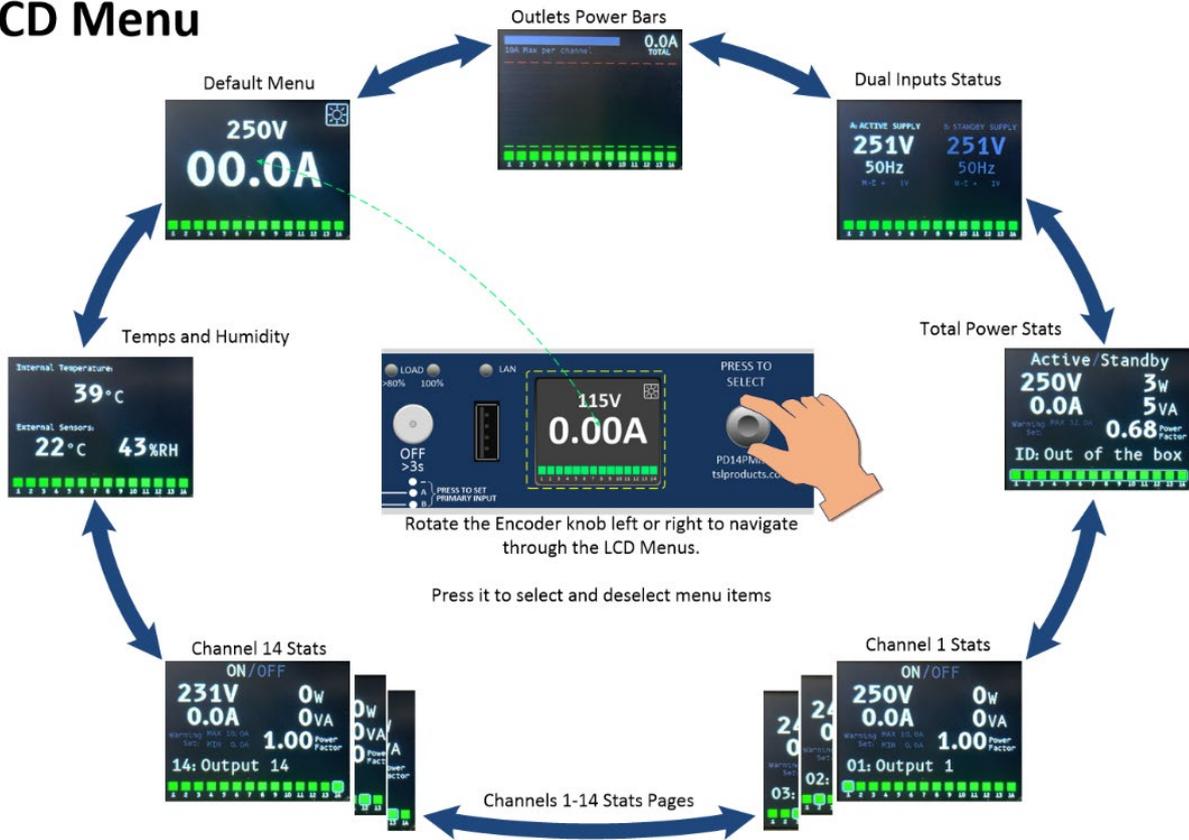
Note: This includes the default IP address to 192.168.100.235, which may mean reconfiguration of the web browser settings is required.

Release the Active Input A or B button before 7 seconds (after LCD blanks) to avoid a Hardware reset and the associated output interruption. However, if the Active Input A or B button is pressed for longer than 7 seconds, the unit will perform a hardware reset with default Config parameters.

## 4.2. LCD Menu Structure

Rotating the encoder Left/Right, cycles through all the menus in a loop as described below.

### LCD Menu



## 4.3. Monitoring modes

### 4.3.1. Home page



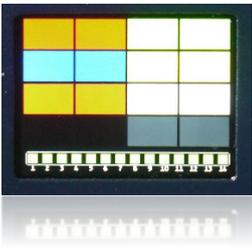
#### Network Settings

Allows the unit's IP settings to be configured.



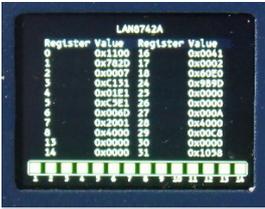
#### Unit Information

Gives an overview of the unit's attributes, such as its MAC address, Serial Number, Firmware and Boot versions.



### Colour Palette

The active colour palette of the unit is displayed here.  
Note: This feature is not operational yet.



### LAN8742 Reg

All LAN8742 registers and their corresponding values are displayed here.

### 4.3.2. Output pages



By rotating the encoder to the right, the output switches and settings can be accessed for each individual output, 1 to 14.

The output channel can be selected by pushing the rotary encoder while the output is highlighted. Each parameter can be adjusted by rotating the encoder and selecting it.

This includes the Output Name, Output State - ON/OFF, and Lower/Over Current threshold settings.

All other settings can be adjusted from the web page described in [Chapter 5](#) of this document.

For example, to switch an output **OFF**, first press the encoder and rotate to select **ON/OFF** then push to select the menu.



Rotate the encoder until **OFF** is highlighted then push the encoder to select.



Rotate until **SET** is highlighted then push the encoder to select.



The output will now switch **OFF**. The output indicator will turn off to show this as will the front and rear output LEDs

To switch the output on again follow the above procedure highlighting **ON** then **SET**.

### 4.3.3. Temperature monitoring



This page shows the internal temperature of the unit, and if connected, the ambient external temperature and relative humidity percentage measured by an external sensor.

### 4.3.4. Current Load



In this mode, the current load of each output channel can be monitored with the overall load displayed in the top right corner of the display.

**Note:** Each output must not exceed 10 amps!



Any outlets with over current alarms will be displayed as **AMBER**.

### 4.3.5. Input voltage monitoring



This monitoring mode displays the voltage and AC frequency of each mains input with the active supply being highlighted and indicated.

This display also shows the Neutral to Earth leakage voltages of each input source.

If Primary Mode is enabled it will be displayed here

### 4.3.6. Voltage and Current overview



On this page, the voltage of the active input and the sum of the current load for all outputs are displayed. Display brightness can also be adjusted in this mode, as indicated by the icon on the top right corner.



Push the encoder to select, then rotate it to adjust the brightness to the desired level. Push again to exit menu.

To exit from any of these menus, press the rotary encoder a second time.

## 5.0 Operation (Web User Interface)

### 5.1. Using the Web User Interface over an Ethernet connection

POWER STATUS	VALUE
Cumulative Power (kWh)	12.1
Input A Frequency (Hz)	50
Input A Voltage (V)	240
Input B Frequency (Hz)	50
Input B Voltage (V)	240
Output Voltage (V)	240
Total Output Current (A)	0
Total Output Power (W)	0
Total VA (VA)	0
Power Factor	1.00
Unit Temperature (°C)	43
External Humidity (%)	51
External Temperature (°C)	21
Remote Unit	Not Connected

Firmware version: PD14PM-ID-CO-32A-V1.05.2  
 Build date: Feb 29 2024 14:46:52  
 Bootloader version: 1.01  
 MAC address: 74:5F:AE:58:8D:AF  
 Serial number: 6000047  
 GitHash version: 7a95a39a41717b8367fb39ab322bdf8b7004361

The unit presents two control interfaces: web interface (HTTP) and SNMP interface which can both be accessed using the Ethernet port on the rear of the unit.

The default IP address from the factory is **192.168.100.235**, with a subnet mask of **255.255.255.0**.

On connection via an internet browser (e.g. Microsoft Edge, Google Chrome) using either the default IP address, or one set from the front panel menu, the Home screen will be seen, showing an overview of the unit's current status which is constantly updated every few seconds. The unit is now on-line.

All webpages which grant access to the settings of the unit require a username and password.

The user can login via the 'Login' button on the Home page, or will be automatically asked to login when selecting a different menu such as 'Outputs' or 'Inputs' for example.

The default login credentials are the following:

The Username is **root**  
 The Password is **telsys**

These can be changed after the first successful login using the 'Change Password' menu.

## 5.2. The Home/Status Page

POWER STATUS	VALUE
Cumulative Power (kWh)	12.1
Input A Frequency (Hz)	50
Input A Voltage (V)	238
Input B Frequency (Hz)	50
Input B Voltage (V)	238
Output Voltage (V)	239
Total Output Current (A)	0
Total Output Power (W)	0
Total VA (VA)	0
Power Factor	1.00
Unit Temperature (°C)	43
External Humidity (%)	51
External Temperature (°C)	21
Remote Unit	Not Connected

Firmware version: PD14PM-ID-CO-32A-V1.05.2  
Build date: Feb 29 2024 14:46:52  
Bootloader version: 1.01  
MAC address: 74:5F:AE:58:80:AF  
Serial number: 6000047  
GitHash version: 7a95a39e41717b8367fb39ab322bdf0b7004361

The home page is shown when the unit's IP address is accessed and displays the cumulative active power in kilowatt hours, the mains frequency, temperature of the unit, total power consumed by the unit in Watts, VA, and current in amps with the power factor.

To navigate back to the Home page from any other webpage, click on the Home link or the TSL Logo at the top left of screen.

## 5.3. Inputs Page

This page allows the user to configure all the **GPI** alarms for the unit.

INDEX	INPUT NAME	POLARITY
1	<input type="text" value="GPI 1"/>	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed
2	<input type="text" value="GPI 2"/>	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed
3	<input type="text" value="GPI 3"/>	<input checked="" type="radio"/> Normally Open <input type="radio"/> Normally Closed

Any **GPI** name can be changed from the Input Name boxes.

The Input names may be changed from the default. Highlight the text & type new text.

The input circuit polarity may be set at either Normally Open, or Normally Closed as indicated.

Click on the **APPLY** button when done. To read the current state of the unit, click on the **READ** button.

Note: All pages should update automatically upon clicking on the Apply button. However, if the changed values do not show an expected update click on the **READ** button to retrieve the saved values from the unit's configuration memory.

## 5.4. Outputs Page

All configurable items in the boxes may be changed for this screen.

INDEX	OUTPUT NAME	SWITCH ON/OFF		OUTPUT STATUS	FUSE STATUS	LOWER CURRENT	OVER CURRENT	SNMP LOCK	DELAY (SECONDS)
		All On	All Off						
1	Output 1	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
2	Output 2	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
3	Output 3	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
4	Output 4	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
5	Output 5	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
6	Output 6	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
7	Output 7	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
8	Output 8	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
9	Output 9	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
10	Output 10	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
11	Output 11	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
12	Output 12	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
13	Output 13	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1
14	Output 14	<input checked="" type="radio"/>	<input type="radio"/>	●	● OK	0.0	10.0	<input type="checkbox"/>	1

This page shows the individual output statuses and configurations.

The output names may be changed.

Individual circuits may be remotely switched on or off (This can also be done via SNMP or using the API Post methods).

The Delay start up values can be adjusted from 0-256 seconds.

The **Delay** start up feature is enabled by selecting '**Delay**' in the Mode check box on the System page.

*Note: These delays are only effective on initial powering of the unit when the "Output Power Startup mode" is set to start in Delay mode.*

When an output has the SNMP Lock check box ticked, it will generate SNMP traps or alerts which can be captured using any SNMP trap capturing mechanisms.

### LED Indications:

- **Output Status 1-14:**
  - **GREEN:** Power switched ON & available to the outputs.
  - **GREY:** Power switched OFF & not available to the outputs.
- **Fuse Status 1-14:**
  - **GREEN:** Power switched ON and Fuse OK.
  - **RED:** Power switched ON and Fuse failed (ALARM).
  - **GREY:** Power switched OFF & Fuse status unknown (It doesn't mean the fuse has become open circuit).

Click on the **APPLY** button to save any changes.

### Restart Unit

### Restart Unit

In the event the unit displays a software issue, it can be rebooted without having to power down by clicking on the **Soft Reset** button.

The **Hard Reset** button will perform a complete reboot and restart the unit completely.

**Soft Reset: Resets the CPU only. Outputs remain latched to their ON/OFF states.**

**Hard Reset: Reboots the whole system as from a power off state.**

## 5.5. System page

**PD14PMiD**

**System General Parameters**

Unit ID: Sales PDU  
 IP Address: 192.168.1.150  
 MAC Address: 74:5F:AE:5B:8D:AF  
 Serial Number: 6000047  
 Unit Type: Dual  
 Unit Mode: 32A  
 Subnet Mask: 255.255.255.0  
 Gateway: 192.168.1.1

Unit Power On mode: Off  
 Output Power Startup mode: Immediate  
 Sequential Delay: 100 ms  
 Voltage Lower Alarm Level: 220 volts  
 Voltage Upper Alarm Level: 250 volts  
 Total Outputs Current Alarm Level: 32.0 amps  
 Current Level 80% LED: 25.0 amps  
 Current Level 100% LED: 32.0 amps  
 Equipment Temperature alarm limit: 50 °C  
 Allow unsecure webpage access:   
 Phase Lost: 7.0 ms  
 Display dimming timeout: 0 seconds (0 not set)  
 Display timeout home page: Voltage Current

**Read** **Apply**

All items in the boxes may be changed for this screen.

Power On modes:

- **Immediate** will switch on all circuits immediately.
- **Delay** will enable the Delay set in the Outputs screen.
- **Sequential** will allow circuit by circuit delay as set in the box.

Note: Power On modes only apply at start up, switching outputs via the webpage or SNMP controls will result in immediate changes.

Lower and upper voltage alarm thresholds can be set from this page.

If the input voltage and/or equipment temperature breaks either threshold, then an SNMP alarm is generated.

Press **APPLY** when done.

*NB: Allow the page to refresh before clicking on the **READ** button to read back the modified settings.*

Note: Phase Lost control is Engineering related and should not need to be adjusted in normal operational use.

## 5.6. SNMP page

**PD14PMiD**

**SNMP Alarms**

Community Name: public  
 Community Name (Write): private  
 Trap Destination IP Address 1: 192.168.100.200  
 Trap Destination IP Address 2: 0.0.0.0  
 Trap Destination IP Address 3: 0.0.0.0  
 Trap Destination IP Address 4: 0.0.0.0  
 Trap Destination IP Address 5: 0.0.0.0

**Read** **Apply**

On this page, you can adjust the SNMP alarm settings.

The unit generates SNMP Trap Alarms to the IP addresses configured in the SNMP setup page when the following events occur:

- 1) A GPI input changes state.
- 2) A fuse fails or is replaced with a good fuse.
- 3) The internal unit temperature exceeds/drops below the threshold set in the System web page.
- 4) An output goes Over Current or Under Current as set from the Output page.
- 5) The input voltage breaks the upper or lower threshold values as set on the System page.

Click on **APPLY** when done.

*NB: Allow the page to refresh before clicking on the **READ** button to read back the modified settings.*

## 5.7. Status Page

This page shows the overall alarm status for the unit and refreshes every few seconds. The current sense option gives the user the additional capability to monitor the output current in Amps, the power in watts & VA, and the power factor for each output with the total shown for the PDU at the bottom.

Alarms for Voltage limits, Temperature, & overall unit current are set on the System page.

Alarms for over or under current for individual outputs can be set on the Outputs page.

The Status page also shows a summary of all the alarms for the unit where **GREEN** indicates no alarm operating, **RED** showing a critical alarm condition, or **AMBER** showing a warning alarm condition.

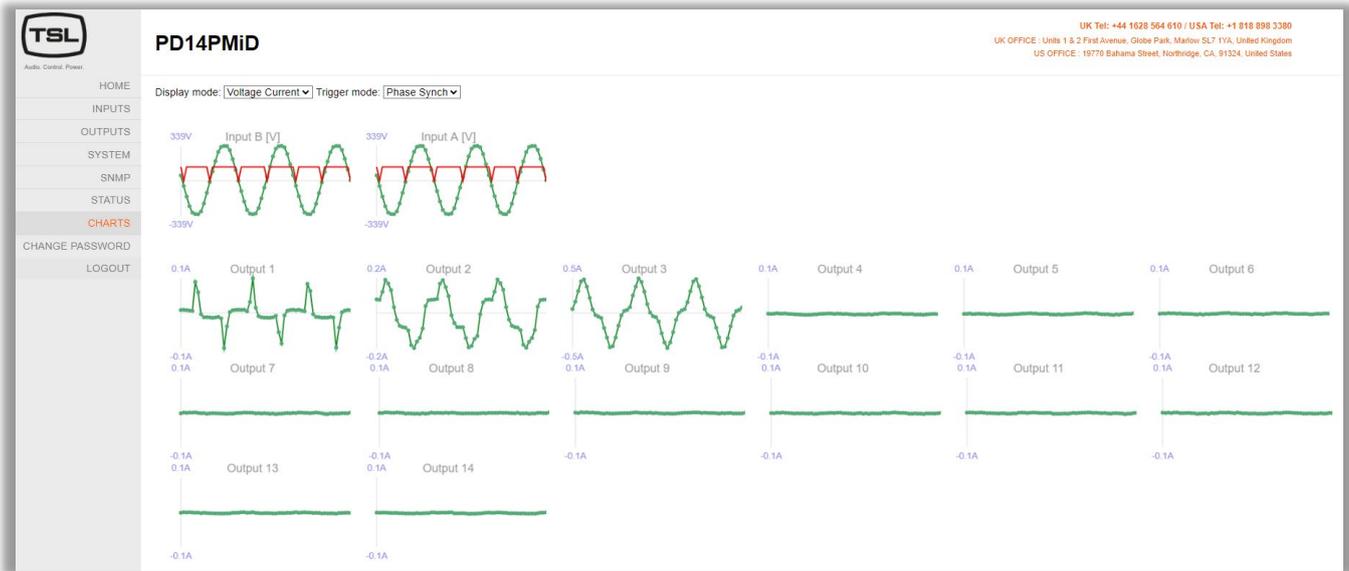
Example:

- Output 2 has a Fuse failure
- Output 3 showing an over current Alarm
- Output 5 is switched **OFF**
- Output 6 showing an under current Alarm

INDEX	OUTPUT NAME	STATUS	VA	WATTS	CURRENT	POWER FACTOR
1	Output 1	<span style="color: green;">●</span>	41.11	22.45	0.17	0.55
2	Output 2	<span style="color: red;">●</span>	0.00	0.00	0.00	1.00
3	Output 3	<span style="color: orange;">●</span>	84.66	79.91	0.35 (Over)	0.94
4	Output 4	<span style="color: green;">●</span>	33.75	30.20	0.14	0.89
5	Output 5	<span style="color: grey;">●</span>	0.00	0.00	0.00	1.00
6	Output 6	<span style="color: orange;">●</span>	80.73	62.64	0.34 (Under)	0.78
7	Output 7	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
8	Output 8	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
9	Output 9	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
10	Output 10	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
11	Output 11	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
12	Output 12	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
13	Output 13	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
14	Output 14	<span style="color: green;">●</span>	0.00	0.00	0.00	1.00
Total Power:			240	195	1.00	0.81

The Status page also includes a reset function for the Cumulative Active Power measurement to return the value to 0.0 if required.

## 5.8. Charts Page



Waveform charts of the Inputs and Outputs are shown on this page.

Inputs A and B are shown on the top with their sinewaves.

Outputs 1-14 sinewaves or signal shape generated under load are shown on the 14 graphs allocated for them in the lower section.

## 5.9. Change Password

The screenshot shows the 'CHANGE PASSWORD' form in the PD14PMiD interface. It includes a sidebar with navigation options like HOME, INPUTS, OUTPUTS, SYSTEM, SNMP, STATUS, CHARTS, CHANGE PASSWORD (highlighted), and LOGOUT. The main form area has the title 'PD14PMiD' and a sub-header 'Change Password'. It contains three input fields: 'Current Password', 'New Password', and 'New Password (repeat)', followed by an 'Apply' button.

This page allows the password to be configured.

By default the login credentials are:

The Username is **root**  
The Password is **telsys**

## 6.0 Pin-outs

Input

Neutrik powerCON connector – L – Brown (Phase), N – Blue (Neutral), E – Green/Yellow (Earth or Ground).

GPI & Sensor Connector RJ45

GPI & SENSOR CONNECTOR RJ45 SOCKET			
1	RS422/485+	6	GPI2
2	RS422/485-	7	GPI3
3	GPI1	8	0V
4	One Wire 1		
5	0V		

## 7.0 Specification

	Single Supply Units		Dual Supply Units with Automatic Changeover	
<b>Model IDs (Full Features)</b>	PD14PMiD-20A	PD14PMiD-32A	PD14PMiD-CO-20A	PD14PMiD-CO-32A
<b>INPUTS</b>				
<b>Voltage</b>	110 / 240 V AC		110 / 240 V AC <i>(same nominal voltage expected on both inputs)</i>	
<b>Frequency</b>	60Hz / 50 Hz		60Hz / 50 Hz <i>(inputs should be the same nominal frequency and may be asynchronous)</i>	
<b>Current Rating</b>	20A	32A	20A	32A
<b>Power In Connector(s)</b>	1x Neutrik powerCON 20A	1x Neutrik powerCON 32A	2x Neutrik powerCON 20A	2x Neutrik powerCON 32A
<b>Internal Fuse(s)</b>	1x 20A (10x38mm hrc ceramic)	1x 32A (10x38mm hrc ceramic)	2x 20A (10x38mm hrc ceramic)	2x 32A (10x38mm hrc ceramic)
	<i>Note: Units are expected to be protected from over-current condition by upstream circuit breaker. The internal fuses are not intended to be user replaceable.</i>			
<b>OUTPUTS</b>				
<b>Voltage &amp; Frequency</b>	As connected input when active <i>(supply passthrough)</i>		As connected input when active <i>(selected active supply passthrough)</i>	
<b>Power Out Connectors</b>	14x IEC Type F (C13)			
<b>Output Fusing</b>	10A 5x20mm hrc ceramic <i>Each outlet is individually fused – Front panel replaceable in bayonet holder.</i>			
<b>OTHER CONNECTIONS</b>				
<b>USB Data</b>	USB Type A connector: <i>Used for loading of firmware from USB storage device</i>			
<b>Ethernet</b>	10/100 Ethernet (RJ45 – Lower): <i>network communications for WebUI, SNMP, API etc.</i>			
<b>Sensor Link</b>	Multi-purpose connector (RJ45-Upper): 1-Wire for External sensors, RS485 for unit-unit comms (multi-drop), 3x GPI Inputs			
<b>MECHANICAL</b>				
<b>Dimensions</b>	Width: 482.6mm (19.0") <i>(main body width: 445.0mm)</i> Height: 44.4mm (1.8") Depth: 364.0mm (14.3")			
<b>Weight</b>	2.85kg (approx.)			
<b>Colour</b>	TSL Blue (RAL-5011)			
<b>Earth Bonding</b>	M6 bonding stud on rear panel adjacent to inlet connector(s) M6 bonding stud on rear cable support arm (right side). <i>All panels are bonded to primary ground point on chassis top panel (internal)</i>			
<b>ENVIRONMENTAL</b>				
<b>Operating Temperature</b>	5-30°C (ambient) under max 32A load.			
<b>Humidity</b>	0 – 95 % RH non-condensing			
<b>Operating Altitude</b>	Suitable for use at altitudes not exceeding 2000m			

<< Continued on the next page... >>

	Single Supply Units	Dual Supply Units with Automatic Changeover
<b>INDICATORS &amp; BUTTONS</b>		
		
<b>Input Status Indicator(s)</b>	<p>1x LED on front panel above ON button Off = No power connected Red = Not currently used</p> <p>Amber = Power present – standby mode (Inlet relay open)</p> <p>Green = Power present – active mode (Inlet relay closed)</p>	<p>2x LEDs on front panel above Power Select buttons Off = No power connected</p> <p>Amber = Power present – standby mode (Inlet relay open)</p> <p>Green = Power present – active mode (Inlet relay closed)</p>
		<p>Examples of A / B status indicators:</p> <p>A:Off/B:Amber power connected on B only unit in standby</p> <p>A:Amber/B:Amber power connected on both unit in standby</p> <p>A:Green/B:Amber power connected on both unit in active mode using A A:</p> <p>Green / B: Red power connected on A only unit in active mode using A Invalid states which will not be seen are:</p> <p>A: Red/B:Red and A:Green/B:Green</p>
<b>On &amp; Power Select Buttons</b>	<p>1x Push button with blue LED on front panel Labelled: “ON”</p> <p>Button Action:</p> <p>Press &amp; hold (4s) = trigger active mode Once Active Press &amp; hold (4s until LCD blanks) = trigger CPU reset</p> <p>LED Indication:</p> <p>Not currently used</p>	<p>2x Push buttons with blue LED on front panel Labelled: “A” / “B” / “POWER SELECT” Button Action:</p> <p>Press &amp; hold (4s) = trigger active mode using this supply</p> <p>Once active Press &amp; hold (4s until LCD blanks) = trigger CPU reset</p> <p>Also pressed in combination to set changeover mode (see later)</p> <p>LED Indication:</p> <p>On (static) = Supply set as master and is active</p> <p>On (flashing) = Supply set as master but NOT active</p>
<b>Off Button</b>	<p>1x Push buttons with red LED on front panel Labelled: “OFF”</p> <p>Button Action:</p> <p>Press &amp; hold (4s) = trigger standby mode (Inlet relay will open, disconnecting power)</p> <p>Press &amp; hold (12s) = trigger CPU reset</p> <p>Also pressed in combination to set changeover mode (see later)</p> <p>LED Indication:</p> <p>On (static) = unit in standby mode</p>	
<b>Overcurrent indicators</b>	<p>2x LEDs on front panel above OFF button</p> <p>LEDs light when total current measurement is above defined thresholds.</p> <p>Labelled: “ &gt;80% ” = Amber LED – static</p> <p>“ 100% ” = Red LED – flashing</p> <p>Thresholds can be adjusted via SYSTEM page on WebUI to allow thresholds to reflect the current limits of the connected supply (e.g. 10A/13A/16A).</p>	
<b>LAN Indicator (Front)</b>	<p>1x LAN LED on front panel above USB connector</p> <p>Off = No network connected</p> <p>Green = Network connected (will flicker based on activity)</p>	

<< Continued on the next page... >>

**INDICATORS & BUTTONS (Continued)**

**1.77" TFT LCD 240 x 320 pixels (RGB)**

Change the displayed screen by turning the rotary encoder:

Screen	Display	Control/Adjust <i>(press encoder to enter adjust mode)</i>
1: Summary	<ul style="list-style-type: none"> <li>● Output voltage</li> <li>● Total current</li> <li>● 14x Output status Indicators <i>(colour coded as per screen 2)</i></li> </ul>	<ul style="list-style-type: none"> <li>● Screen brightness</li> </ul>
2: Bar Chart	<ul style="list-style-type: none"> <li>● Total current load <i>(value &amp; bar)</i></li> <li>● Output status and current loads displayed graphically</li> <li>● Channel colour coding: Dark Grey: Channel set to Off Dark Blue: Standby (Ch set On) Orange: Warning <i>(over/under cur.)</i> Red: Fuse Blown/Missing</li> </ul>	<none>
3: Supply Status	<ul style="list-style-type: none"> <li>● Input voltage</li> <li>● Input frequency</li> <li>● Voltage between Neutral-Earth <i>(displayed in small text)</i></li> <li>● A/B Master mode <i>(shown if set)</i></li> </ul>	<none>
4: Unit Status	<ul style="list-style-type: none"> <li>● Active/Standby state</li> <li>● Output Voltage, Total Current, Total Power, Total VA, Total Power Factor</li> <li>● Unit ID</li> <li>● Warning current set level <i>(small)</i></li> <li>● 14x Output status Indicators <i>(colour coded as per screen 2)</i></li> </ul>	<ul style="list-style-type: none"> <li>● IP Address <i>(via settings sub-page)</i></li> <li>● Unit ID</li> <li>● Warning current level <i>(high/low thresholds)</i></li> </ul>
5-18: Output Status Ch 1-14	<ul style="list-style-type: none"> <li>● Output On/Off state</li> <li>● Output Voltage, Current, Power, VA, Power Factor</li> <li>● Output ID</li> <li>● Warning current set level <i>(small)</i></li> <li>● 14x Output status Indicators <i>(colour coded as per screen 2)</i></li> </ul>	<ul style="list-style-type: none"> <li>● Output ID</li> <li>● Warning current level <i>(high/low thresholds)</i></li> <li>● On/Off State <i>(changing while unit is in standby mode will dictate what state the output will use when active mode is triggered)</i></li> </ul>
19: Sensors	<ul style="list-style-type: none"> <li>● Internal Temperature</li> <li>● External Temperature*</li> <li>● External Humidity* <i>Only values from 1<sup>st</sup> detected sensors will be displayed</i></li> <li>● 14x Output status Indicators <i>(colour coded as per screen 2)</i></li> </ul>	<none>

*An optional timeout can be configured on the System page of the WebUI.  
After the timeout period the display can be set to dim to minimum brightness and/or return to screen 1-4 as preferred.*

**Output Status Indicators**  
(Front & Rear)

14x LED on front panel above fuse holders & 14x LED on rear panel above outlet connectors  
 Off = No power connected  
 Red = Fuse Fail (blown or missing)  
 Orange = Power present – Warning state (over/under current)  
 Green = Power present

**RJ45 Indicators**  
(Rear)

2x LEDs labelled 'Ethernet' on RJ45 connector on rear panel  
 Green = Connected / Orange = Activity on network  
 2x LEDs labelled 'Sensor Link' on RJ45 connector on rear panel  
 not used – Orange LED will be lit in normal operation

AUTOMATIC CHANGEOVER (Dual Supply Units Only)	
<b>Mechanism</b>	Safety Interlocked double-pole relays
<b>Primary Method</b>	<ul style="list-style-type: none"> <li>• CPU Controlled (Automatic) – triggered on loss of measured supply voltage.</li> <li>• CPU Controlled (by request) – triggered via front panel button input</li> </ul>
<b>Changeover Interval</b>	20ms – 40ms
<b>Backup Method</b>	Hardware triggered automatically after period without zero crossing. <i>This is a fail-safe method should only ever trigger changeover if the CPU has failed</i>

## 8.0 TSL SNMP MIBs

The Unit generates SNMP trap alarms (.1.3.6.1.4.1.6853.2) to the IP addresses configured in the SNMP setup web page when the following events occur:

- A GPI input changes state.
- A fuse fails or is replaced with a good fuse.
- The internal unit temperature exceeds/drops above/below the threshold set in the SNMP web page.
- An output goes Over Current or Under Current as set in the Output web page,
- The input voltage exceeds/drops above/below the threshold values configured in the System web page.

### MIB Values:

Generic Alarms		
TSL MIB String	Name	Value Type, Set and/or Get
.1.3.6.1.4.1.6853.2.1	Equipment alarms description and version.	String (e.g. "PD14PM-iD-xx-V1.03") - (get)
.1.3.6.1.4.1.6853.2.2	Table of alarm entries.	Array of:
		1. alarmTableIndex (1..40)
		2. alarmType {internal(1), gpi(2), outputFail(3), psuFail(4), currentAlarm(5)}
		3. alarmIndex (Index 1..16 or 1..12 of the IO)
		4. alarmText alarm description
		5. alarmState. GPI: 1 = OK, 2 = Alarm, Outfuse: 1 = Fuse ok, 2 = Fuse failed, Current: 0= Below threshold 1= Within threshold 2= Above threshold
		6. alarmPolarity {notApplicable(1), normallyOpen(2), normallyClosed(3) } Alarm active polarity (notApplicable for non-gpi alarms)
		7. alarmData Additional alarm data of variable length, according to alarm type.
	(get + set)	
.1.3.6.1.4.1.6853.2.3	Total number of alarms in the table	Number (Int) - (get)
.1.3.6.1.4.1.6853.2.4	Physical location of the equipment generating the alarm.	String - (get + set)
.1.3.6.1.4.1.6853.2.5	Equipment temperature (in degrees Centigrade).	Number (Int) - (get)
.1.3.6.1.4.1.6853.2.6	Equipment temperature alarm point (degrees C).	Number (Int) - (get + set)

TSL Control Settings + Status Values		
TSL MIB String	Name	Value Type, Set and/or Get
.1.3.6.1.4.1.6853.3.1	Equipment alarms description and version.	String (e.g. "PD14PM-iD-xx-V1.03") - (get)
.1.3.6.1.4.1.6853.3.2	MDU power-on output sequence	Integer { simultaneous(1), sequential(2), delayed(3) } - (get + set)
.1.3.6.1.4.1.6853.3.3	Sequential mode delay between outputs	Integer - (get + set)
.1.3.6.1.4.1.6853.3.4	<b>Table of output controls</b>	Array of:
		1. mduOutputIndex - Output number, Integer(1..14) - (get).
		2. mduOutputState - MDU Output status INTEGER {off(1), on(2), locked-Off(3), locked-On(4) } -(get + set).
		3. mduOutputDelay - Output on delay from power on (Delay mode only) - (get + set).
		4. mduOutputlowerCurrent -Lower current limit for output - (get + set).
		5. mduOutputuppererCurrent - Upper current limit for output - (get + set).
		6. mduOutputCurrent - Output current - (get).
		7. mduOutputpowerFactor -Output power factor- (get).
		8. mduOutputVA - Output apparent power - (get).
		9. mduOutputWatts - Output real power - (get).
		10. mduOutputCal - Output current measure calibration data - (get + set).
.1.3.6.1.4.1.6853.3.5	Status of MDU power inlets	Integer {totalLoss(1), input1OK(2), input2OK(3), allOk(4) } - (get)
.1.3.6.1.4.1.6853.3.6	Voltage measure calibration data	Integer - (get + set)
.1.3.6.1.4.1.6853.3.7	Voltage measurement	Integer - (get)
.1.3.6.1.4.1.6853.3.8	Voltage lower limit	Integer - (get + set)
.1.3.6.1.4.1.6853.3.9	Voltage upper limit	Integer - (get + set)
.1.3.6.1.4.1.6853.3.10	Total current measurement	Integer - (get)
.1.3.6.1.4.1.6853.3.11	Current total limit	Integer - (get + set)
.1.3.6.1.4.1.6853.3.12	Auxiliary Relay 1 state	Integer - (get + set)
.1.3.6.1.4.1.6853.3.13	Auxiliary Relay 2 state	Integer - (get + set)
.1.3.6.1.4.1.6853.3.14	Master Mode	Integer - (get + set)
.1.3.6.1.4.1.6853.3.15	Input Relay set ON if available and status read.	Integer - (get + set)
		Set Values (0 to 2)
		Relays OFF
		Relay-A ON
		Relay-B ON
		Get Values (0 to 7) describes Available and Active state.
		PS_ACTIVE_NONE
		PS_ACTIVE_INPUT_A_OFF
		PS_ACTIVE_INPUT_A_ON
PS_ACTIVE_INPUT_B_OFF		
PS_ACTIVE_INPUT_B_ON		

	PS_ACTIVE_INPUT_AB_OFF
	PS_ACTIVE_INPUT_AB_A_ON
	PS_ACTIVE_INPUT_AB_B_ON

## 8.0 Unit Upgrade

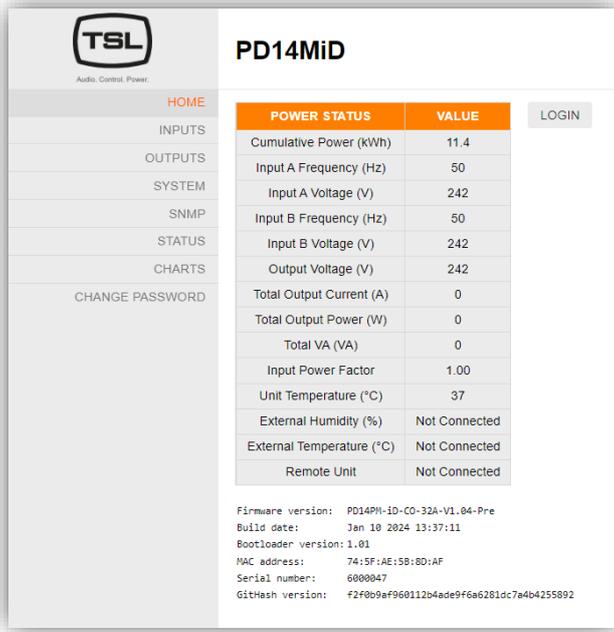
Firmware updates for the PD14PMiD may be available from time to time. The unit can be upgraded using the USB port on the Front Panel following the procedure below.

Contact <https://tslproducts.com/support/> for information on the latest Firmware versions.

Check the version of Firmware currently installed using either:



The unit information screen front panel menu



Or the unit's web interface Home page.

### 8.1. USB Drive Configuration

Using a suitable USB drive formatted to FAT32 copy the unit's upgrade file 'image.bin' to the USB drive's root directory.

### 8.2. Upgrading the unit – Method 1

- With the unit powered up, insert the USB drive into the USB socket on the front panel
- Push the active input button (A or B) for approx. 4 seconds until the display goes blank
- Release the active input button and wait until the USB drive's indicator (or LAN LED) has stopped flashing (normally after approximately 15 seconds).
- Remove the USB drive, the unit will now make a soft restart.

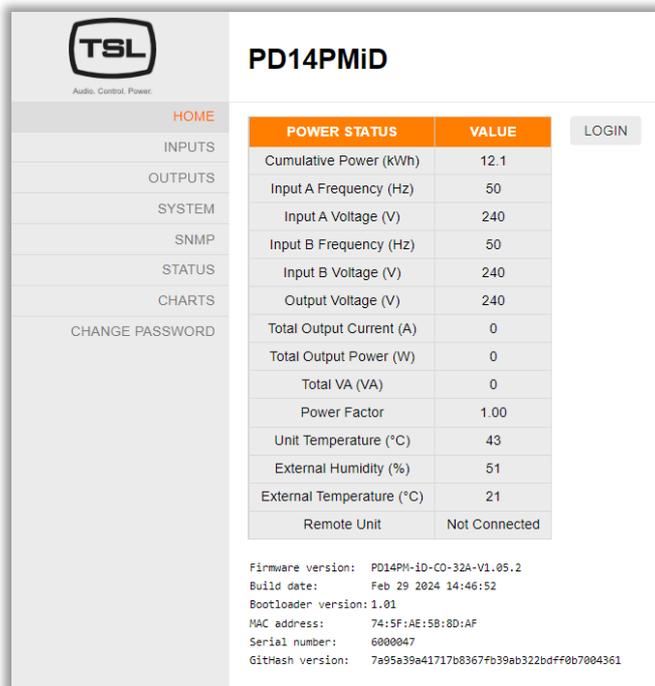
### 8.3. Upgrading the unit – Method 2

- With the unit powered down, insert the USB drive into the USB socket on the front panel
- Power up the unit and wait until the USB drive’s indicator (or LAN LED) has stopped flashing (normally after approximately 15 seconds).
- Remove the USB drive, the unit will now power up fully.

### 8.4. Check the software has upgraded successfully



Select the unit information screen front panel menu and check the Firmware version matches the expected upgrade version.

The image is a screenshot of the PD14PMiD web interface. On the left is a navigation menu with options: HOME, INPUTS, OUTPUTS, SYSTEM, SNMP, STATUS, CHARTS, and CHANGE PASSWORD. The main content area is titled 'PD14PMiD' and contains a 'POWER STATUS' table with columns for 'POWER STATUS' and 'VALUE'. A 'LOGIN' button is located to the right of the table. Below the table, there is a section for 'Firmware version' and other system details.

POWER STATUS	VALUE
Cumulative Power (kWh)	12.1
Input A Frequency (Hz)	50
Input A Voltage (V)	240
Input B Frequency (Hz)	50
Input B Voltage (V)	240
Output Voltage (V)	240
Total Output Current (A)	0
Total Output Power (W)	0
Total VA (VA)	0
Power Factor	1.00
Unit Temperature (°C)	43
External Humidity (%)	51
External Temperature (°C)	21
Remote Unit	Not Connected

Firmware version: PD14PM-ID-CO-32A-V1.05.2  
Build date: Feb 29 2024 14:46:52  
Bootloader version: 1.01  
MAC address: 74:5F:AE:58:8D:AF  
Serial number: 6000047  
GitHash version: 7a95a39a41717b8367fb39ab322bdf0b7004361

Alternatively, connect to the unit’s web interface Home page and check the Firmware version matches the expected upgrade version.