▶ PWR4IEC

User Manual

Thank you for purchasing this product.

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge Protection Device Recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

Contents

Introduction

The PWR4IEC is an outlet-level metered and switched smart PDU. The unit features 1 x IEC C14 inlet for power (110-250V at up to 10A) and 4 x IEC C13 output outlets for supply to high-power consumption devices.

The PDU supports TCP/IP and RS-232 control, with a redundant TCP/IP port as a back-up. Front panel buttons for manual switching of power to individual outlets, and a single mains switch for overall system power.

The PWR4IEC supports advanced power management features including scheduling, sequencing and power consumption. The relay connections (x5) can also be used for automatic control of power to both inlet and individual outlet stages when triggered from 3rd party control platforms or BMS systems. Remote access and monitoring can be set-up and achieved via the web-GUI.

FEATURES:

- Single C14 IEC inlet with 4x C10 IEC outlets

- Products supports 110-250V AC power input (up to 10A)

- Monitoring and metering of: voltage, current, power, and energy consumption

- Overload protection and interference filtering

- Advanced power management features including scheduling and power on/off sequencing

- Control via TCP/IP, RS-232, front panel buttons, or relays

- Dual TCP/IP network ports providing uninterrupted network service / access with SSL connectivity

- Relays for automated switching of inlet, and individual power outlets

- Provides remote monitoring with password authentication through web-GUI

- Support multiple network and IoT protocols

- 1U design for 19" rack mount integration - rack mounting kit included

Front Panel Description
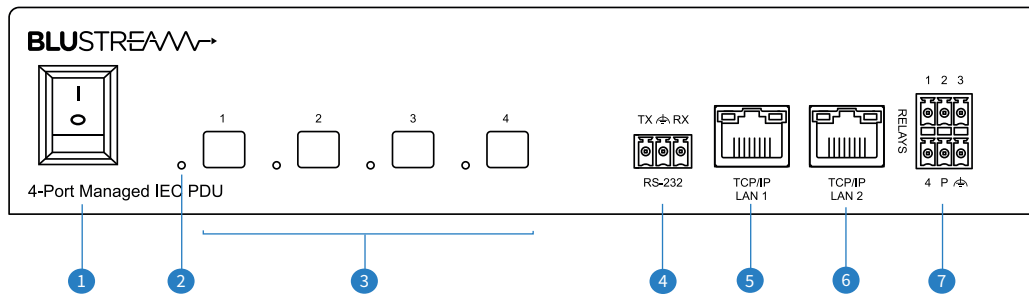
❶ Mains power switch

❷ Outlet power LED indicator - illuminated when outlet is powered

❸ Individual outlet power toggle buttons

❹ RS-232 port - for control of the PDU from a 3rd party control processor or PC (phoenix block included)

❺ LAN1 - Main TCP/IP - RJ45 connector for TCP/IP and web-GUI control of the PDU

❻ LAN2 - Redundant TCP/IP - RJ45 connector for redundant TCP/IP control of the PDU

❼ Relays - individual triggers for automated switching of individual outlets, or mains power to PDU

Rear Panel Description
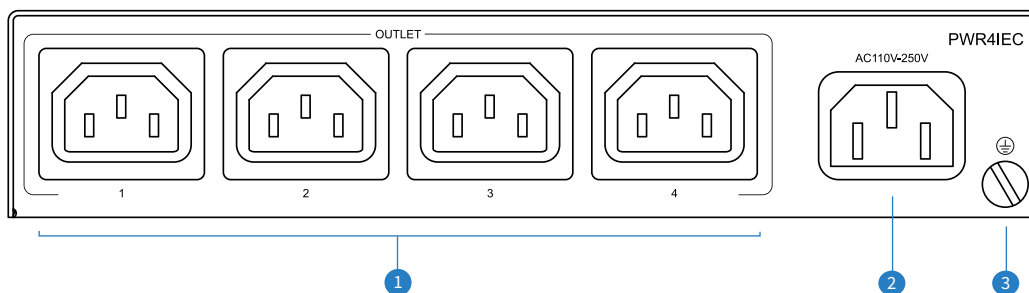
❶ Individual C10 IEC outlets

❷ Mains C14 IEC power inlet

❸ Ground / earth connection

Web-GUI Control

The following pages take you through the operation of this PDU's Web-GUI. You must connect the TCP/IP RJ45 socket to your local network, or connect directly to the LAN1 port of the PDU in order to access the products web-GUI.

By default the unit is set to DHCP, however if a DHCP server (eg: network router) is not installed the units IP address will revert to below details:

Default IP Address: 192.168.0.200   Default Username: blustream   Default Password: @Bls1234

* **Please note:** New password regulations requires passwords being set for products to be a minimum of 8 characters and contain a minimum of: 1x uppercase letter, 1x lowercase latter, 1x symbol and 1x number. On first login to the user interface, a new password will be required to be set that complies with the above.

Web-GUI Control - Dashboard

When initially accessing the web-GUI of the PWR4IEC, the Dashboard page is shown as below. This page shows the current System Status and the Outlet Status displaying: Total Current, Power, Voltage, Consumption and Power Factor and Frequency details. The Outlet Status will define these individual metrics for each device connected to the individual outlet ports. No system amends can be made from the Dashboard.
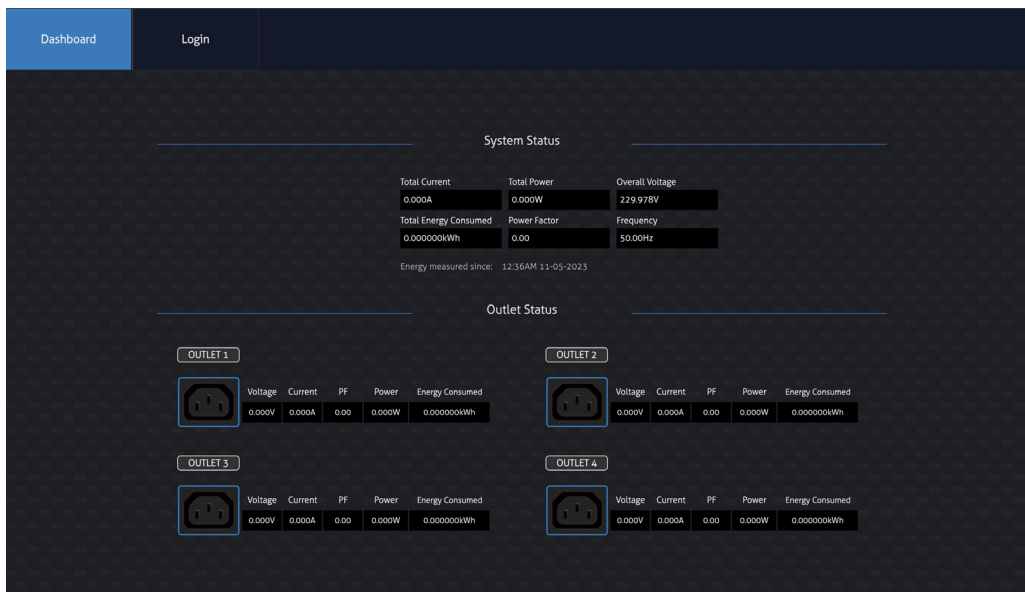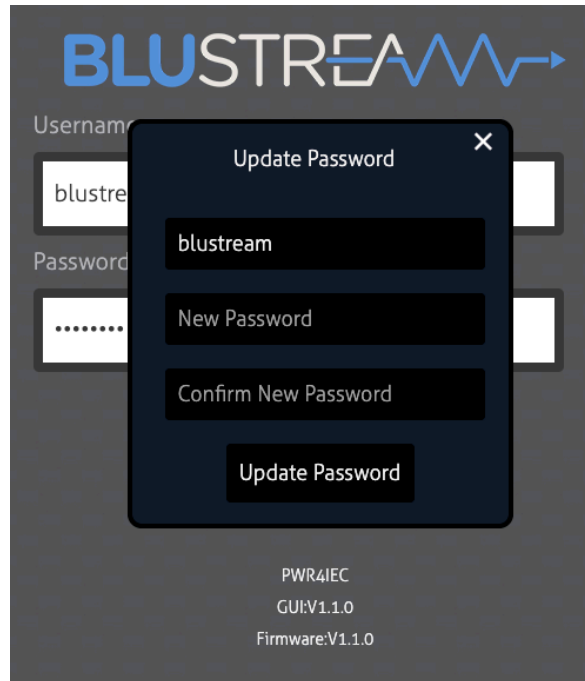

Web-GUI Control - Login

The Login Page allows for the Administrator to access the system configuration and maintenance area of the web-GUI. The Login credentials are noted at the top of this page. The Login Page will also show the current firmware levels running on the PWR4IEC unit.
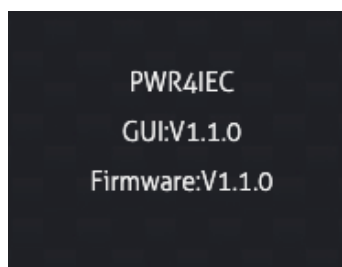
Web-GUI Control - Password Change

On first login to the PWR4IEC, the default password as noted on the previous page must be updated to a new unique password for the product. The new password must be a minimum of 8 characters in length, and contain a minimum of: 1x uppercase letter, 1x lowercase latter, 1x symbol and 1x number. On first login to the user interface, a new password will be required to be set that complies with the above. Please note the new password down, and store in a safe place as the system cannot be accessed without it. A factory reset must be carried out in the event of the Admin password being lost.

Web-GUI Control - Dashboard

Once logged in as the Administrator, the Dashboard has some control options available from within the GUI.
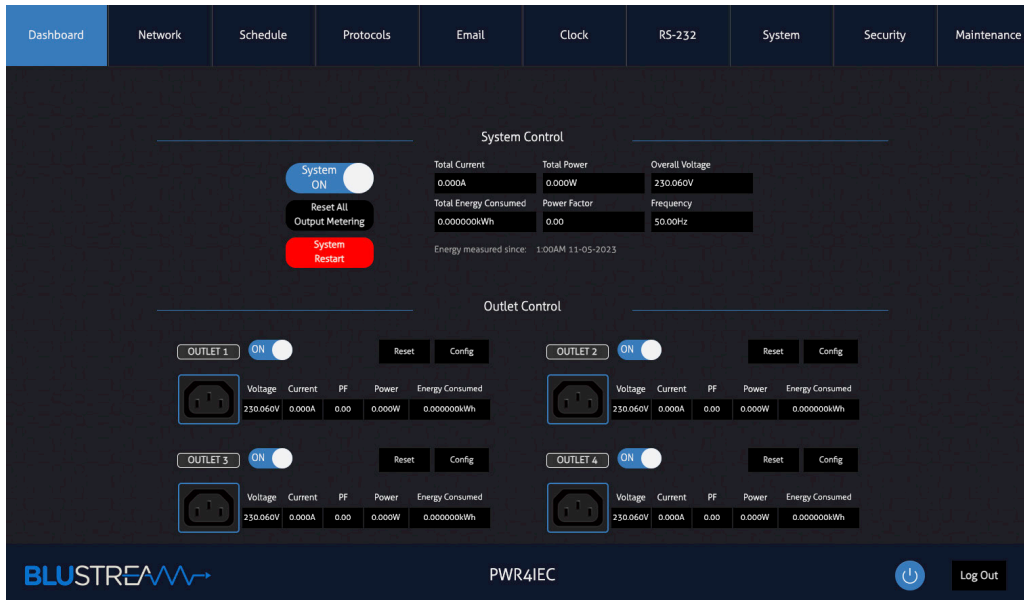
The ability to power the unit on and off can be carried out from any page of the user interface using the power button in the bottom right hand corner of the GUI.

The System power can be toggled from the large switch in the top left of the Dashboard window. This will power on / off all outputs, but not power down the unit.

The Reset Output Metering will clear the adjacent fields.

A System Restart will cut the power to each output individually (output 1, then 2, then 3, then 4), restarting each output once the power has been cut.

Clicking on the IEC connection diagram on the web-GUI gives the user the ability to upload individual customised .png logos (or images) for the device connected to the outlet of the PWR4IEC when in Idle,Cconnected or Warning states. **Please note**: max file size is 10Kb, and should be no more than 80x80 pixels in size.
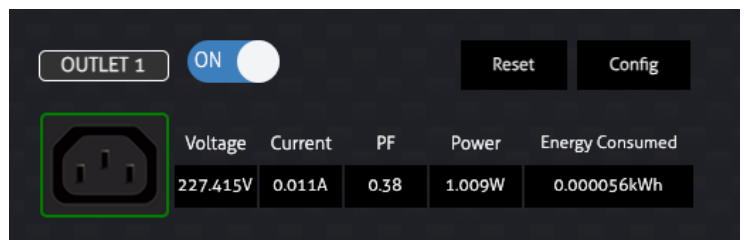
Where a device is connected to the output of the PWR4IEC, and drawing power, the image of the IEC connector will be highlighted in green. The individual energy consumption data for that device can be found here. The Config button allows for the outlet to be named (which will update the Dashboard with the name given), and specify the re-power delay, power off delay and duration of the reset for the meters as required.
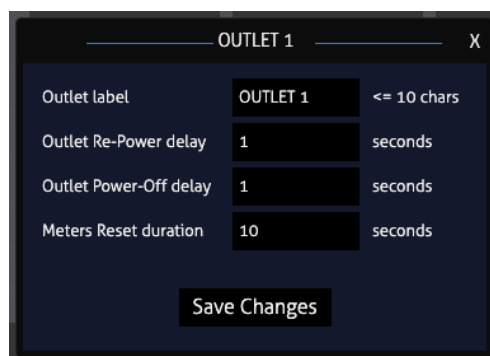
Web-GUI Control - Network

The Network tab allows for customisable network configuration of the PWR4IEC for both LAN ports of the unit, IPvX settings, and security functions.

Individual settings for the Main (LAN1) and Redundant (LAN2) ports can be configured for TCP/IP control, DHCP or Static IP addressing as required for the system. IPv6 settings are also configurable from the right hand part of the menu, updating both LNA connections into an IPv6 addressing connection. Each filed has a 'Save Changes' button at the bottom of each section - please ensure that the relevant button is clicked as each section is updated to update the credentials of the unit.

Secure network connectivity can be configured from the bottom part of this page allowing for server ports, TLS Versions and whether ICMP Pings are to be replied to.

The PWR4IEC contains beacon address functionality that allows for the UI to be accessed if the IP address is not known. This is set to pwr4iec.local by default, but can be changed to a different address (if required) in the bottom right corner of this menu.

Web-GUI Control - Scheduling

The PWR4IEC contains the ablity to configure schedules to suit the needs of the installation. This could be used for both power saving where equipment doesnt need to be powered during times when not in use, or, as a way to systematically reboot devices that may lock up after long periods of inactivity (for example - satellite receivers).

The scheduling feature allows for the user to move the dots to create time periods where the product/s attached to the individual outlets (or all outlets), can be powered on and off without the need for a 3rd party control system to issue power commands.
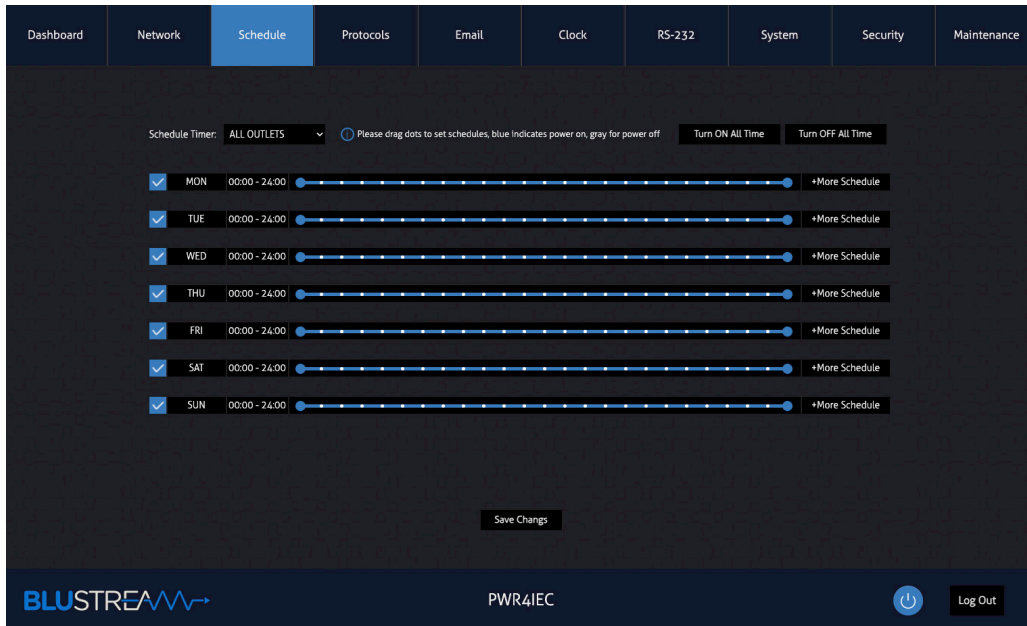
The scheduling works over a 24 hour period across a 7 day window. Multiple schedules can be set up per day, per outlet, by adding in more schedules if more than one (on/off) time period is needed. The sliders can be used to change the time, likewise, clicking on the time next to the day label will allow for minute-by-minute scheduling. Once the schedule has been set, use the 'Save Changes' button at the bottom of the page.

Web-GUI Control - Protocols

The PWR4IEC has the ability to communicate over multiple different procols including SNMP, Telnet, MQTT, SSH and Modbus. Each protocol has a sub menu inside the Protocols tab allowing for fine-tuning of these communication methods to the PWR4IEC. See below web-GUI images of the configuration options:

SNMP - Simple Network Management Protocol:
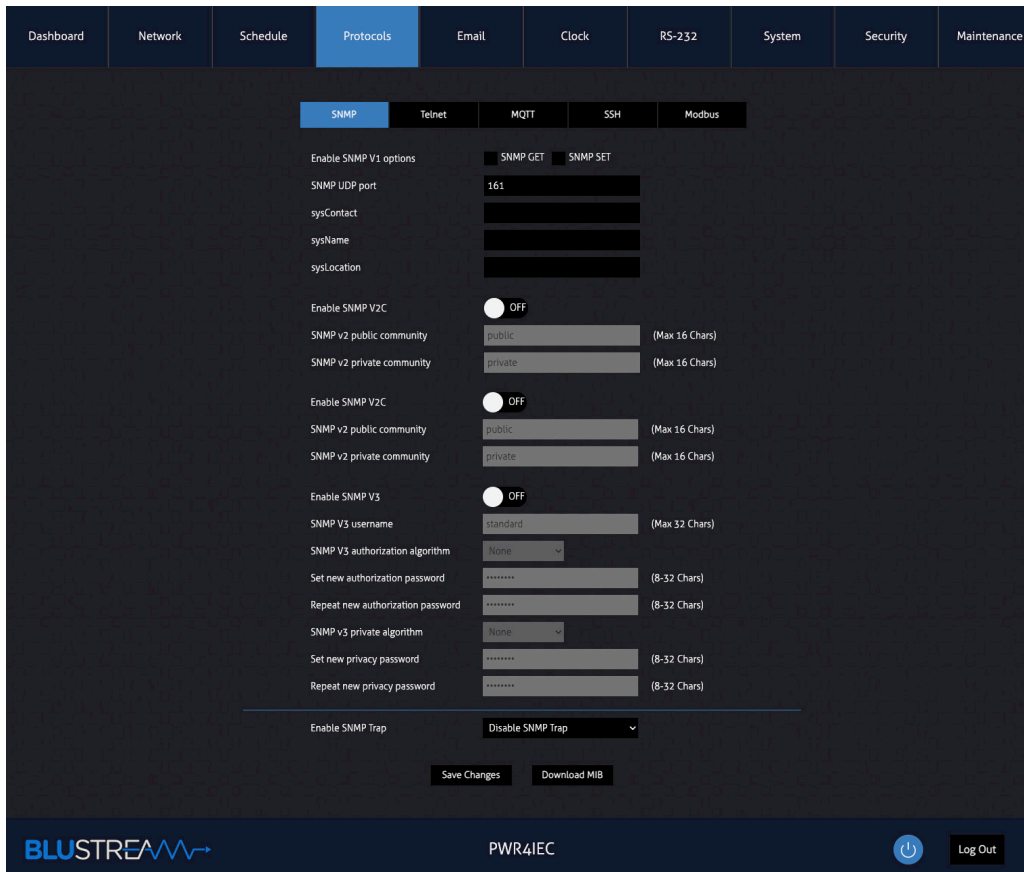
Telnet:

Web-GUI Control - Protocols

MQTT - Message Queuing Telemetry Transport:

Dashboard	Network	Schedule	Protocols	Email	Clock	RS-232	System	Security	Maintenance

SNMP	Telnet	MQTT	SSH	Modbus

Enable MQTT	OFF	
Broker Status	Broker DNS ready, connected since 761s	
	Last publish 8s ago, last incoming subscription 0s ago	
Broker Host		
Broker TCP Port	1883	(Default:1883.)
Enable SSL/TLS	OFF	
SSL CA file	C://	Browse
SSL certificate file	C://	Browse
SSL Key file	C://	Browse
Use credentials	OFF	
Username		
Password		
Client ID for PWR4IEC status	1	Specify Client ID for monitoring status.
Topic for PWR4IEC status		Use topic to monitor status of the PWR4IEC.
Client ID for PWR4IEC control	2	Specify Client ID for 3rd-party control.
Topic for PWR4IEC control		Use topic to send commands to the PWR4IEC using 3rd party control.
Client ID for PWR4IEC feedback of control commands	3	Specify Client ID for control feedback.
Topic for PWR4IEC feedback of control commands		Use topic to monitor control feedback from the PWR4IEC using 3rd party control.
Quality of Service (QoS)	● QoS 0 (at most once) ○ QoS 1 (At least once)	
Keep-alive ping interval	60	seconds (Min.10 seconds)
Publish device data summary interval	10	seconds (0 for disabled)

Save Changes

PWR4IEC   Log Out
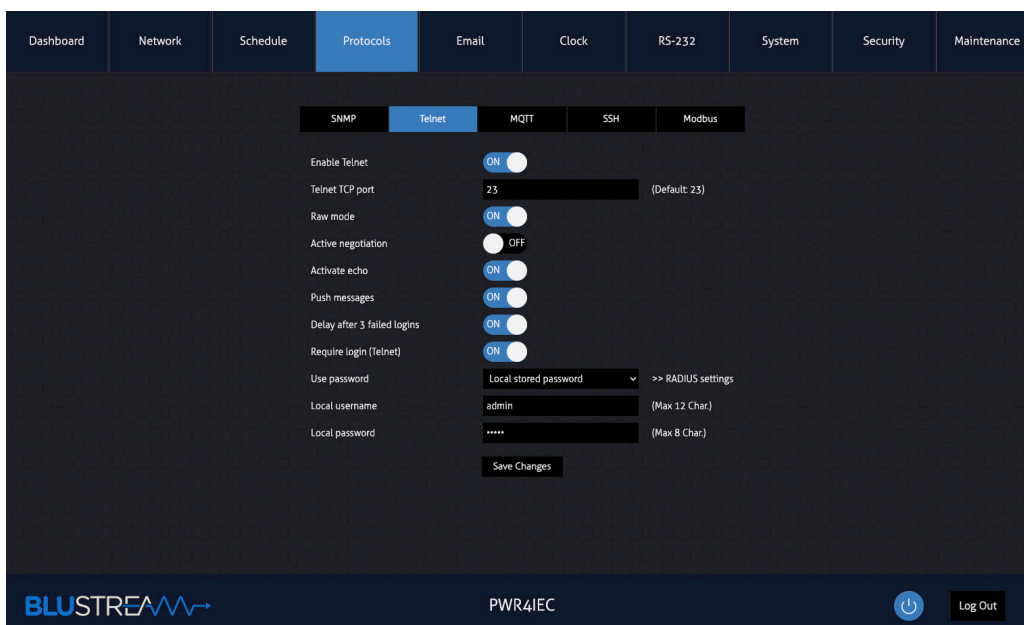
SSH - Secure Shell protocol:

Dashboard	Network	Schedule	Protocols	Email	Clock	RS-232	System	Security	Maintenance

SNMP	Telnet	MQTT	SSH	Modbus

Enable SSH	OFF	
SSH TCP port	22	(Default: 22)
Activate echo	ON	
Push messages	ON	
Require login (SSH)	ON	
Use password	Local stored password ▼	>> RADIUS settings
Local username	blustream	(Max 12 Char.)
Local password	•••••	(Max 8 Char.)
New SSH public key	ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDRDeV6o34DvNHhCJS9HsCymYRrYYAQCRvTMDWvSGilCo91Am0Jb4z5cu/Q H1517d1NpIoCPwURzalTpA0eIdkhojk	

Save Changes

PWR4IEC   Log Out

Web-GUI Control - Protocols

Modbus:

Web-GUI Control - Email

The PWR4IEC is capable of generating and sending a customised email alert, or daily system report as required. This can be configured in the Email settings page of the web-GUI. SMTP details need to be configured for emals to be generated - this can be configured on the left of the web page. System reports can be generated daily, or 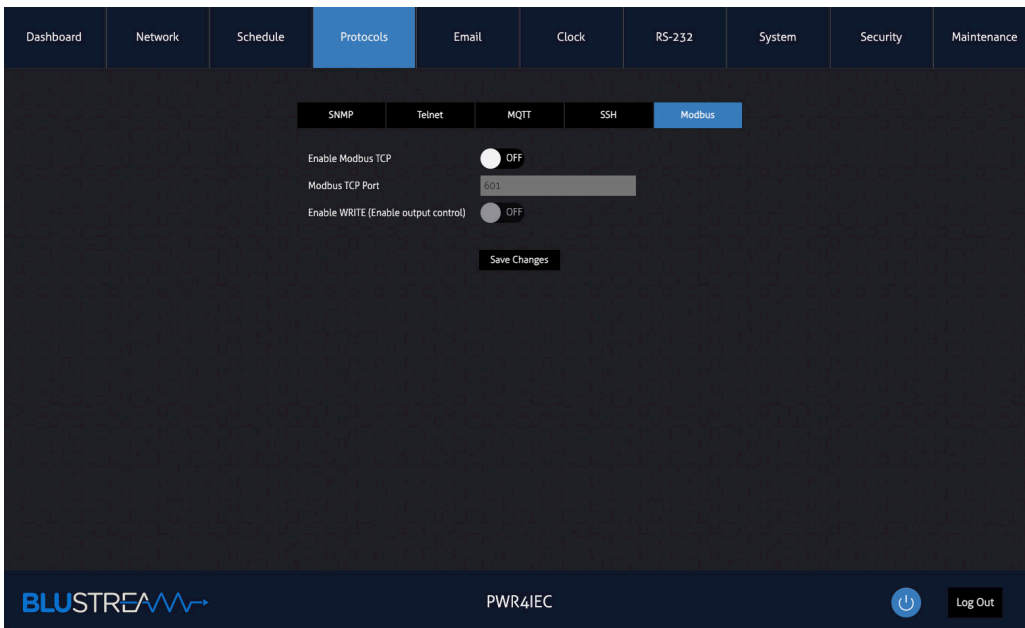only where an alarm has been triggered (i.e. when a device is not pulling power outside of any scheduled downtime, power outages, or power surges). Email content can be configured and tested from the left hand segment of the web-GUI page.
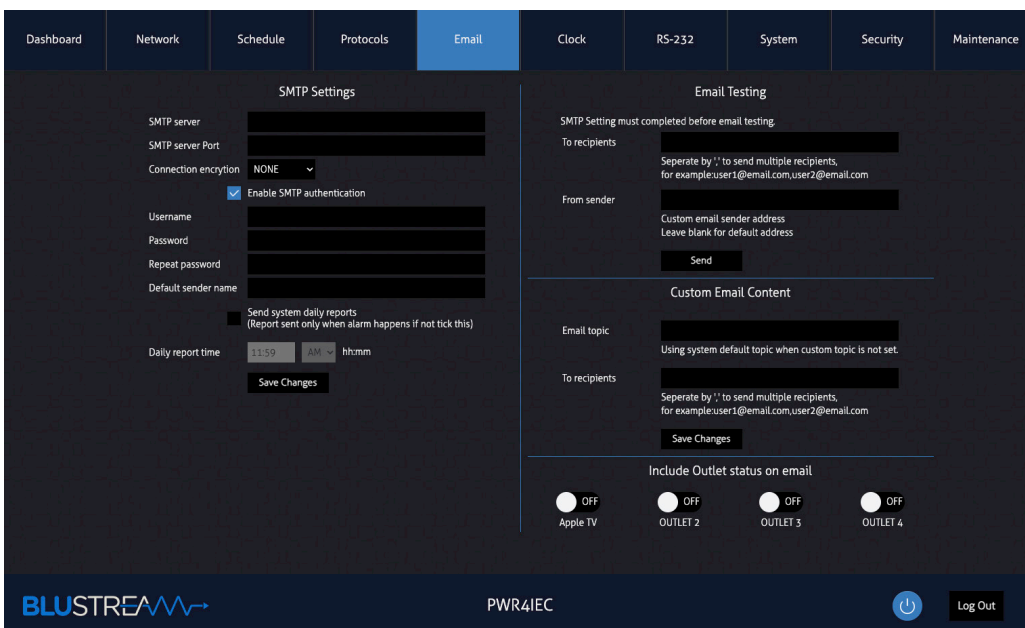
Emails can be generated for all outputs combined, or for any selected output as required.

Web-GUI Control - Clock

For accurate feedback of faults and for scheduling to work as required, the internal clock of the PWR4IEC must be set manually, or taken from an NTP server. The PWR4IEC contains an internal battery for times where the unit may not be powered directly, or during a mains power outage, to keep the clock in sync.
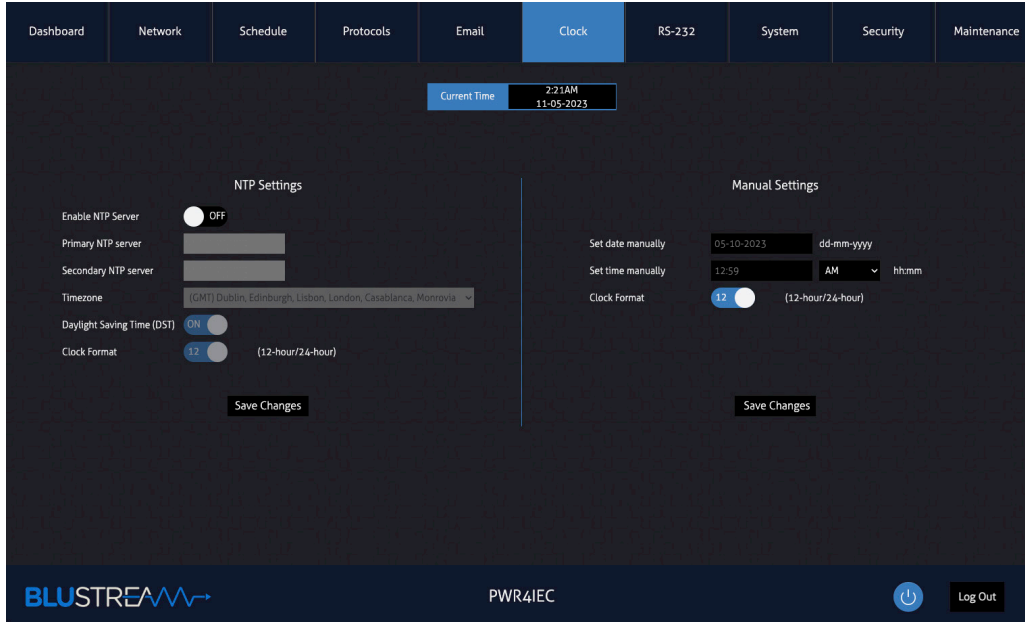
Web-GUI Control - RS-232

The PWR4IEC can be controlled via RS-232 if no IP access / control is required or allowed. The RS-232 page allows for a test command to be sent to a linked product connected to the RS-232 port of the unit. The character set (ASCII or HEX), baud rate, command ending (LF, CR or both), and parity can be set for communication from a 3rd party control system. Individual commands can be sent from a processor via IP for additional control. The API for the PWR4IEC is available from the rear of this manual.
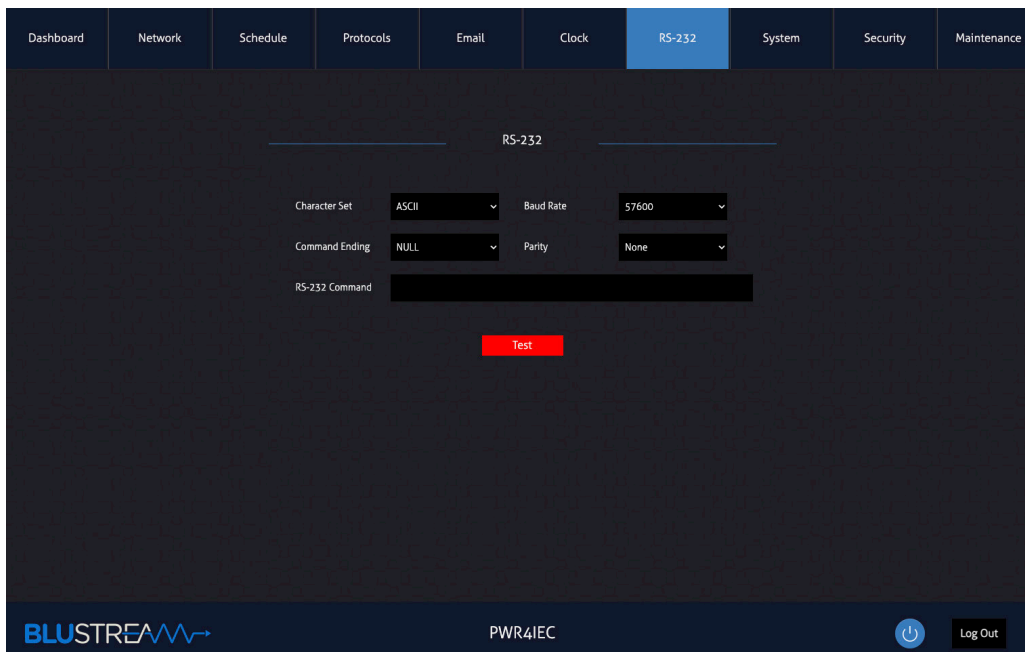
Web-GUI Control - System

The System tab allows the user to configure the way in which the PWR4IEC behaves.
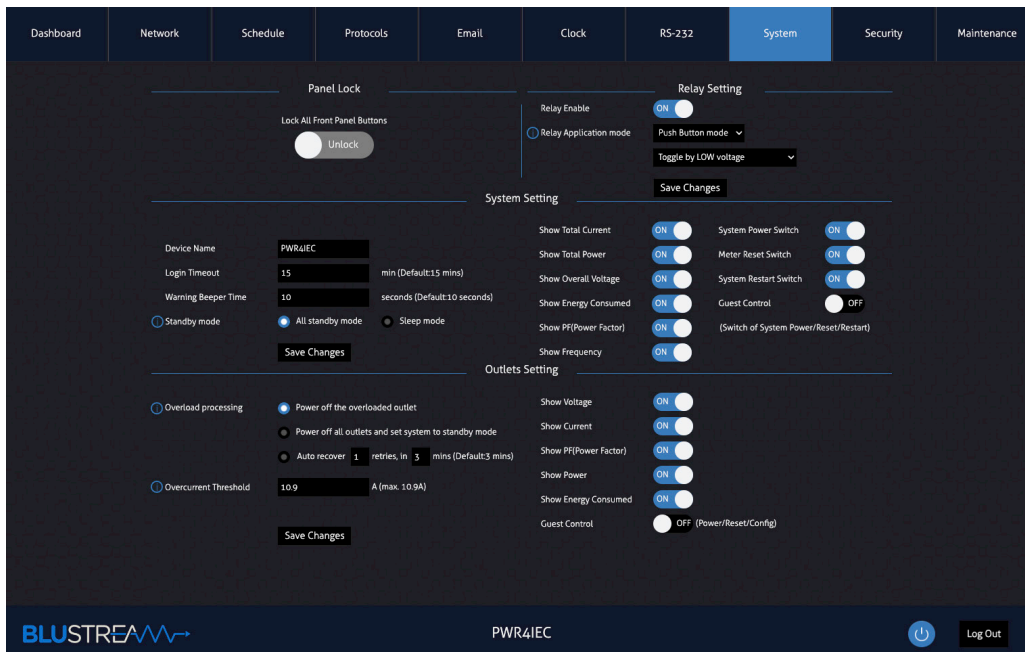
Panel Lock:

The panel lock function enables / disables the front panel buttons. The default position for this setting is enabled so the 4x buttons on the front panel can be pressed to toggle between the outlet being on or off. When the outlet is enabled, the associated LED will be blue, when the outlet is off, the LED is off. **Please note:** the mains power switch on the left of the front of the unit cannot be disabled.

Relay Setting:

There are 5x relays on the fornt panel of the PWR4IEC. 4x for the outlets, labelled 1, 2, 3 & 4. A fifth relay, labelled 'P' will trigger the mains inlet to power on/ off, affecting all outlets simultaneously. Push Button, or Dry Contact modes allow for a high or low voltage (as selected underneath) to trigger the inlet or outlet power on or off as required.

System Settings:

- Rename the device from the default (PWR4IEC)

- Login Timeout can be adjusted to automatically log out the user from the UI after a set period of time (default: 15 minutes)

- Where a warning has been triggered within the system (i.e. power surge), the Warning Beeper Time can be adjusted to sound for a set period of time (default: 10 seconds) - adjusting this to 0 will disable the audible warning

- Standby Mode allows for the unit to be put into standby. Depending on whether IP access is required, choose between All Standby or Sleep modes - see the info button for more information on GUI

- Toggles for Total Current, Total Power, Overall Voltage, Energy Consumed, Power Factor, Frequency, Power Switch, Master Reset, System Restart and Guest Control can be toggled on or off as required from the main Dashboard page

Outlet Setting:

- Overload Processing changes how the unit will behave when an overload has been experienced - see the info buttons for more information on GUI

- Overcurrent Threshold allows for the user to adjust the point at which the current exceeds a threshold to trigger an overload

- Toggles for Voltage, Current, Power Factor, Power, Energy Consumed and Guest Control can be toggled on or off as required from the main Dashboard page

Web-GUI Control - Security

The Security page is split into two sub pages, toggled by the Admin Credentials or User Authorization tabs at the top of the page:

Admin Credentials:
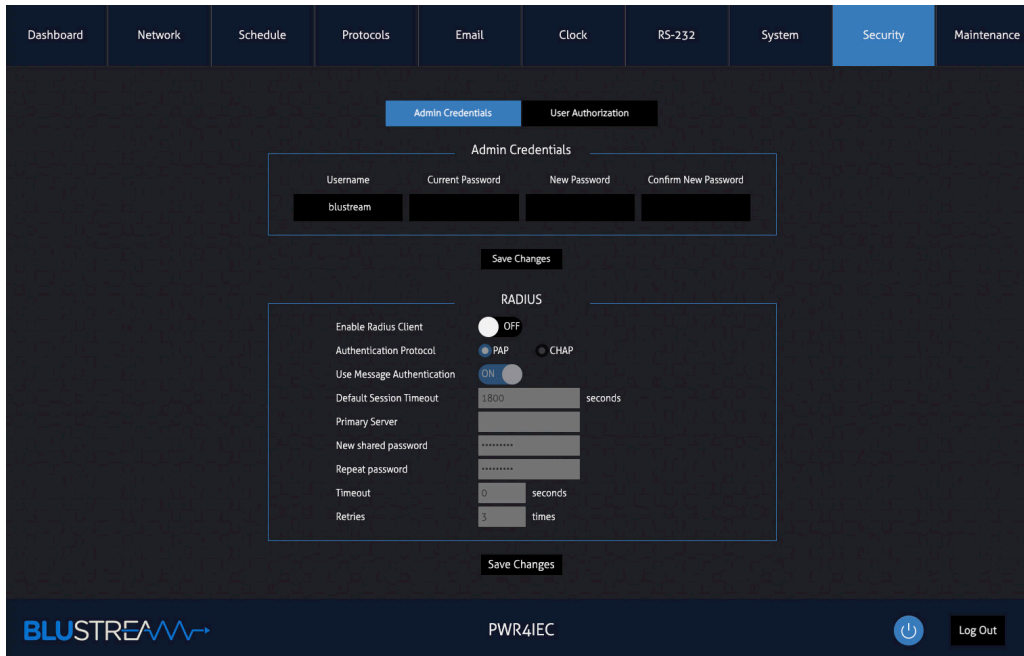
Change the Admin username and password credentials from those set on first log-in to the GUI.

Set up a RADIUS client (or Network Access Server) for 3rd party access with authentication to the PWR4IEC. Enter the required details into the fields after toggling the RADIUS client to 'on'.

User Authorization:
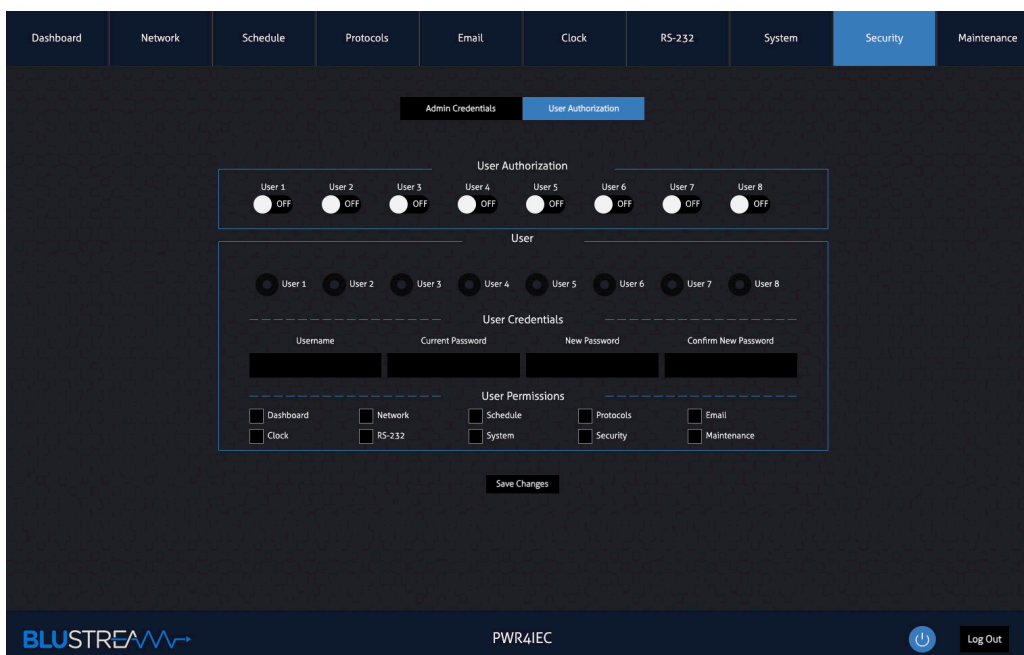
Up to 8x individual user log-ins can be created to allow for individual access to the PWR4IEC web-GUI with varying levels of access permissions. Toggle the individual User to ON, create the username, password, and set the User Permissions with the tick boxes for each user individually.

Web-GUI Control - Maintenance

The Maintenance page is for ongoing device maintenance items:

Device Information:

View the current firmware for both the Web-GUI and MCU (labelled Firmware) running on the device

System Logs:

All changes to the unit are logged in this section of the web-GUI. The log can be viewed, cleared, or exported to your laptop / computer.

Config Import:

Allows for the configuration settings to be imported to the unit, overwriting all previously configured settings on the unit

Config Export:

Export the configuration file for the unit for back-up, or for copying over to a new unit.
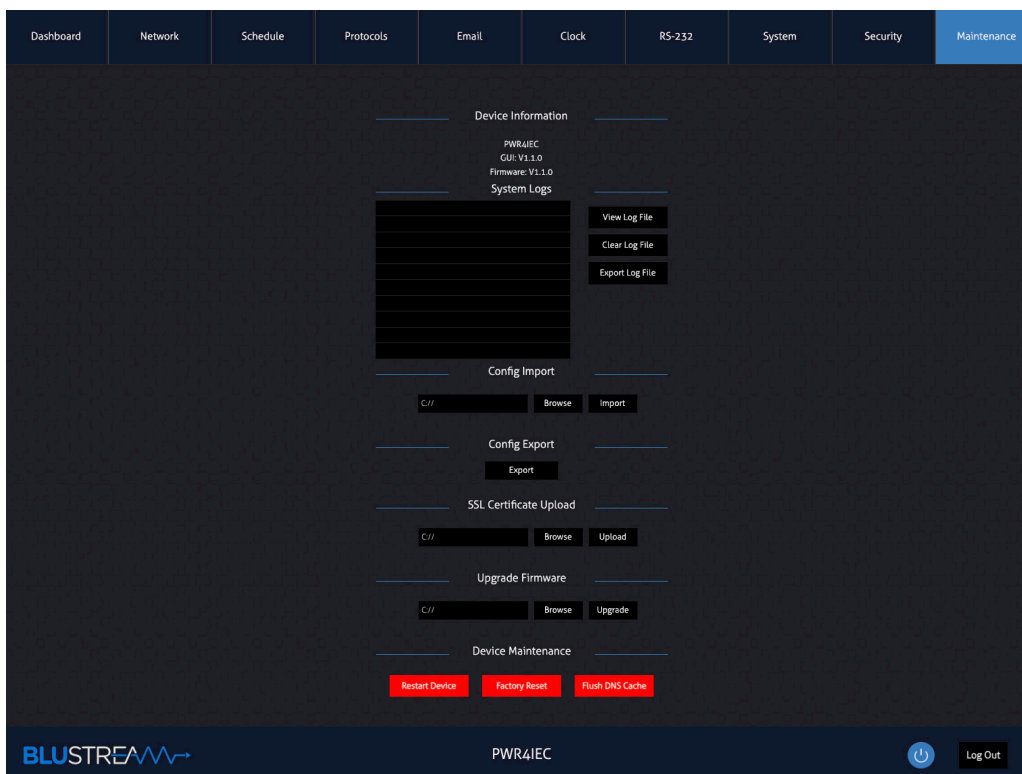
SSL Certificate Upload:

Upload a SSL Certificate for the product to self authenticate on your network.

Upgrade Firmware:

The MCU firmware can be downlaoded from the product page on the Blustream website. Please navigate ot the Firmware tab to download the most recent firmware package. Inside the download package, there will be a Firmware Update GUide to assist you through the process of firmware updating this unit.

Restart Device: restarts the device, does not affect any previously configured settings on the unit

Factory Reset: resets the unit back to factory default, including network settings

Flush DNS Cache: clears any IP addresses, or other DNS records from the cache

Specifications

- **Power Input Ports:** 1 x C14 IEC 10A
- **Power Output Ports:** 4 x C10 IEC 10A (total)
- **Relay Control:** 2 x 3-Pin Phoenix connector
- **RS-232 Serial Port:** 1 x 3-Pin Phoenix connector
- **TCP/IP Control:** 2 x RJ45, female
- **Rack-Mountable:** 1U rack height, rack ears included
- **Casing Dimensions (W x D x H):** 218mm x 153mm x 42mm
- **Casing Dimensions (including connections) (W x D x H):** 218mm x 170mm x 42mm
- **Shipping Weight:** 1.5kg
- **Operating Temperature:** 32°F to 104°F (0°C to 40°C)
- **Storage Temperature:** -4°F to 140°F (-20°C to 60°C)
- **Power Input:** 110-250V AC

NOTE: Specifications are subject to change without notice. Weights and dimensions are approximate.

Package Contents

- 1 x PWR4IEC
- 1 x Serial cable - 3 pin Phoenix to DB9 connector
- 2 x 3 pin 3.5mm Phoenix connectors (for Relay ports)
- 1 x 19" Rack Mounting kit
- 1 x Shelf / wall mounting brackets
- 1 x Quick Reference Card
- IEC Power Cable(s)

Please note: outlet IEC outlet cabling is not supplied for this product

Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

RS-232 Configuration and Telnet Commands

The MV41 can be controlled via serial and TCP/IP.

The default RS-232 communication settings are:

        Baud rate: 57600

        Data bit: 8

        Stop bit: 1

        Parity bit: none

The following pages list all available serial / IP commands.

Commonly used Serial Commands

There are several commands that are commonly used for control and testing:

STATUS	Status will give feedback on the unit such as outputs on, type of connection etc...
PON	Power on
POFF	Power off
RELAY ON/OFF	Toggling the relay input / output control ON or OFF as required
Example:-	RELAYON (This would turn the ability for the relays to trigger events on)
OUTLET xx ON	(xx is the outlet)
Example:-	OUTLET04ON (This would switch outlet 4 to ON)

Common Mistakes

• Carriage return – Some programs do not require the carriage return where as other will not work unless sent directly after the string. In the case of some Terminal software the token <CR> is used to execute a carriage return. Depending on the program you are using this token maybe different. Some other examples that other control systems deploy include \r or 0D (in hex)

• Spaces – Blustream commands do not require space between commands unless specified. There may be some programs that require spacing in order to work.

    - How the string should look is as follows OUTLET04ON

    - How the string may look if spaces are required: OUTLET{Space}04{Space}ON

• Baud rate or other serial protocol settings not correct
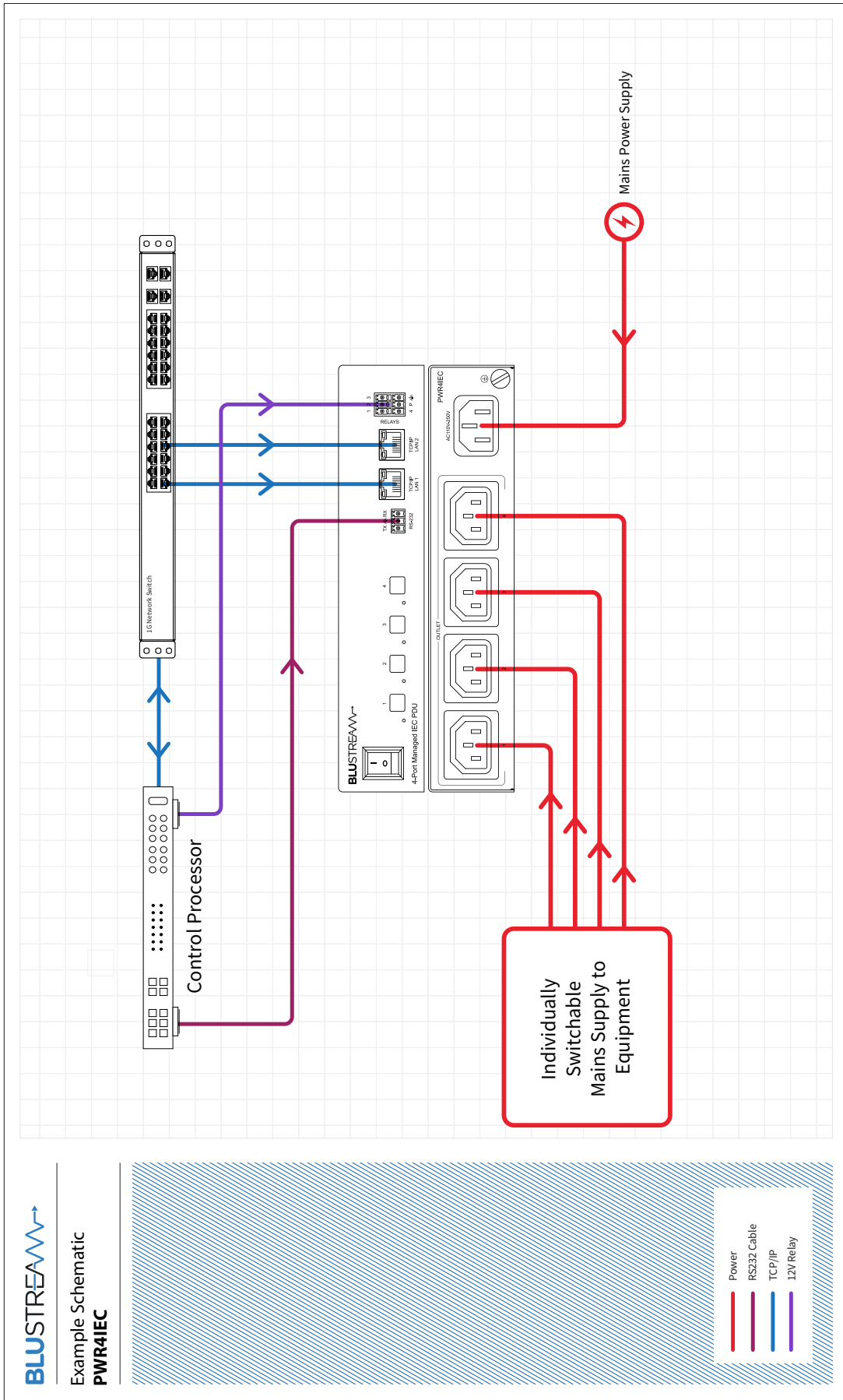
RS-232 Configuration and Telnet Commands

COMMAND	ACTION
? / HELP	Print help information
STATUS	Print system status and port status
ELESTA	Print All Outputs Electricity Level Information
FWVERSION	Print FW Version And GUI Version
DEVICENAME:xx	Set Device Name To xx
PON	Set System Power to ON
POFF	Set System Power to OFF
RELAY ON/OFF	Set System RELAY Control ON Or OFF
KEY ON/OFF	Set System Key Control ON Or OFF
RESET	Reset System To Default Setting(Type "Yes" To Confirm, "No" To Discard)
REBOOT	Set System Reboot And Apply New Config!!!
RESTA	Set System Restart
SETCURRENTTHRESHOLD xx	Set System Current Threshold To xx (xx to one decimal place at most) xx = 0.0 : 10.9
SAFEMODE xx	Set The System Safe Mode To xx When Overloaded xx = 0 Outlet_Shutdown 1 System_Shutdown 2 Auto_Retry
OVERLOADRETRYCNT xx	Set The System Retry Number To xx When Overloaded(Default: 1) xx = 1 : 3
OVERLOADRETRYTIME xx	Reset System To Default Setting
STANDBYMODE xx	Set The System Standby Mode To xx xx = 0 All_Standby_Mode 1 Sleep_Mode
RELAYMODE xx	Set The System Relay Mode To xx xx = 0 Dry_Contact 1 Push_Button
RELAYVOLTAGE xx	Set The System Relay Toggle Voltage To xx xx = 0 Low_Voltage 1 High_Voltage
BEEPERTIME xx	Set The Buzzer Sound Time To xx Seconds When Alarming (Default: 10 Seconds) xx = 0 : 9999
OUTLETTIMEON xx:yy	Set Outlet xx Power_ON Delay To yy Seconds xx = 1 Outlet 1 2 Outlet 2 3 Outlet 3 4 Outlet 4 yy = 0 : 9999
OUTLETTIMEOFF xx:yy	Set Outlet xx Power_OFF Delay To yy Seconds xx = 1 Outlet 1 2 Outlet 2 3 Outlet 3 4 Outlet 4 yy = 0 : 9999
OUTLETELERESET xx:yy	Set Outlet xx Electrical Work Reset Duration To yy Seconds (Default: 10 Seconds) xx = 1 Outlet 1 2 Outlet 2 3 Outlet 3 4 Outlet 4 yy = 0 : 9999
ALLOUT ON/OFF	Set All Outlets ON/OFF

COMMAND	ACTION
OUTLET xx ON/OFF	Set Outlet xx ON/OFF xx = 1 Outlet 1 2 Outlet 2 3 Outlet 3 4 Outlet 4
RSALLOUTELE	Clean Up All Outlets Electrical Work
RSOUTELE xx	Clean Up The Outlet xx Electrical Work xx = 1 Outlet 1 2 Outlet 2 3 Outlet 3 4 Outlet 4
SYSTIME	Get The Time For The System
RESYSTIME yyyy-mm-dd;hh:mm:ss	Set The Time For The System yyyy = Year mm = Month dd = Day hh = Hour mm = Minute ss = Second
RS232OUT y:z:c:a	Send y Type Of Command a With Baud Rate z, Parity c To Output y=a: ASCII y=h: HEX z=1: 2400 z=2: 4800 z=3: 9600 z=4: 19200 z=5: 38400 z=6: 57600(Default) z=7: 115200 c=1: None c=2: Even c=3: Odd a=RS232 Command
RS232BAUD z	Set RS232 Baud Rate To xx z = 1 - 2400 2 - 4800 3 - 9600 4 - 19200 5 - 38400 6 - 57600(Default) 7 - 115200
NET TCP/IP ENABLE xx	Set TCP/IP xx Enable(Only One Can Be Enabled) xx = 1 TCP/IP1 2 TCP/IP2
NET TCP/IP1 DHCP ON/OFF	Set TCP/IP1 Auto IP (DHCP) ON or OFF
NET TCP/IP1 IP xxx.xxx.xxx.xxx	Set TCP/IP1 IP Address
NET TCP/IP1 GW xxx.xxx.xxx.xxx	Set TCP/IP1 Gateway Address
NET TCP/IP1 SM xxx.xxx.xxx.xxx	Set TCP/IP1 Subnet Mask Address
NET TCP/IP2 DHCP ON/OFF	Set TCP/IP2 Auto IP (DHCP) ON or OFF
NET TCP/IP2 IP xxx.xxx.xxx.xxx	Set TCP/IP2 IP Address
NET TCP/IP2 GW xxx.xxx.xxx.xxx	Set TCP/IP2 Gateway Address

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
NET TCP/IP2 SM xxx.xxx.xxx.xxx	Set TCP/IP2 Subnet Mask Address
NET MDNS ON/OFF	Set mDNS ON/OFF
NET RB	Set Network Reboot and Apply New Config

Schematic

Example Schematic
PWR4IEC

Mains Power Supply

PWR4IEC

1G Network Switch

Control Processor

4-Port Managed IEC PDU

RELAYS

TCP/IP LAN 2

TCP/IP LAN 1

RS232

TX RX

OUTLET

AC110V/250V

Individually Switchable Mains Supply to Equipment

Power

RS232 Cable

TCP/IP

12V Relay

Certifications

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

CAUTION - changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CANADA, INDUSTRY CANADA (IC) NOTICES

This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CANADA, AVIS D'INDUSTRY CANADA (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

CORRECT DISPOSAL OF THIS PRODUCT

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.

Installer Notes

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Installer Notes

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