

A U D I O N I C S
professional **broadcast equipment**

eMu - Mains Distribution Unit

Operation Manual – Ver 2.6 – 16-06-08

General Description

The eMu is a twelve output mains distribution unit with an embedded web server to provide IP control of the unit.

The master unit contains the embedded web server, which can also control up to seven slave units, connected to it via RS485 serial link.

Note that the Neutrik mains inlet and IEC mains outlets are not meant to be disconnected under load as they have no breaking capacity. Switch off the load before removing connectors to maximise connector life.

Features

Sequential Switch On - Each MDU can be set up to have sequential switch on to prevent switch on power surge.

Power Shedding - Each output can be programmed to switch off when the MDU is being powered from a UPS.

Remote Control - All outputs can be switched on or off via the embedded web server.

Power Cycling - Outputs can be cycled (switched off for 5 seconds, then power switched back on)

Output Monitoring - Front panel and web monitoring of status of output and fuse.

Email Alerts - MDUs can be programmed to send email alerts when powered from UPS. Each output can be programmed to send an email on detection of a fuse failure.

Installation Instructions

Each Slave MDU has to be individually coded so that the Master MDU can communicate with them and report the status via the web pages.

This is achieved by on board headers located inside the unit adjacent to the 40 pin micro controller.

NB - Remove power before opening unit

	P2	P1	P0
MDU 1			
MDU 2			X
MDU 3		X	
MDU 4		X	X
MDU 5	X		
MDU 6	X		X
MDU 7	X	X	
MDU 8	X	X	X

All the MDUs need to be connected via RS485. The pin out for the 9 pin D-type, female on unit, is:

1	
2	RS232 Rx - Master Only
3	RS232 Tx
4	
5	0v
6	RS485 A
7	RS485 B
8	
9	UPS - GPI

The RS485 can be 'daisy chained' from unit to unit.

The UPS - GPI requires a closing contact (to 0v) to operate.

Front Panel LED Output Indication

LED On - Output OK

LED Off - Output remotely switched off

LED Flash - Output switched on, but fuse failed

Software Setup

The master eMu is supplied with an IP address of **192.168.0.209**. This address is in the space reserved for private networks.

If your PC is configured to respond to different IP addresses based to its own IP address and mask settings, then the eMu will not be recognized over the network connection by your PC.

If this is the case you can change the IP address of the eMu via its serial port. Note that the D-type connector has several functions; a dedicated lead will be required, check the pinout on page 3.

Connect the eMu master to a host PC using the serial port, configure a terminal program (e.g. Windows Hyper Terminal) with the following settings:

Baud rate: 9600
Data: 8 bit
Parity: none
Stop: 1 bit
Flow control: none

Once the eMu has fully initialized the command prompt will appear.

The configuration of the unit can be altered using the **config** command, which will show the current configuration and take the user through step by step.

Configure unit:

```
Audionics eMu
>config

IP – 10.0.0.15

Subnet Mask – 255.255.255.0

Gateway – 10.0.0.1

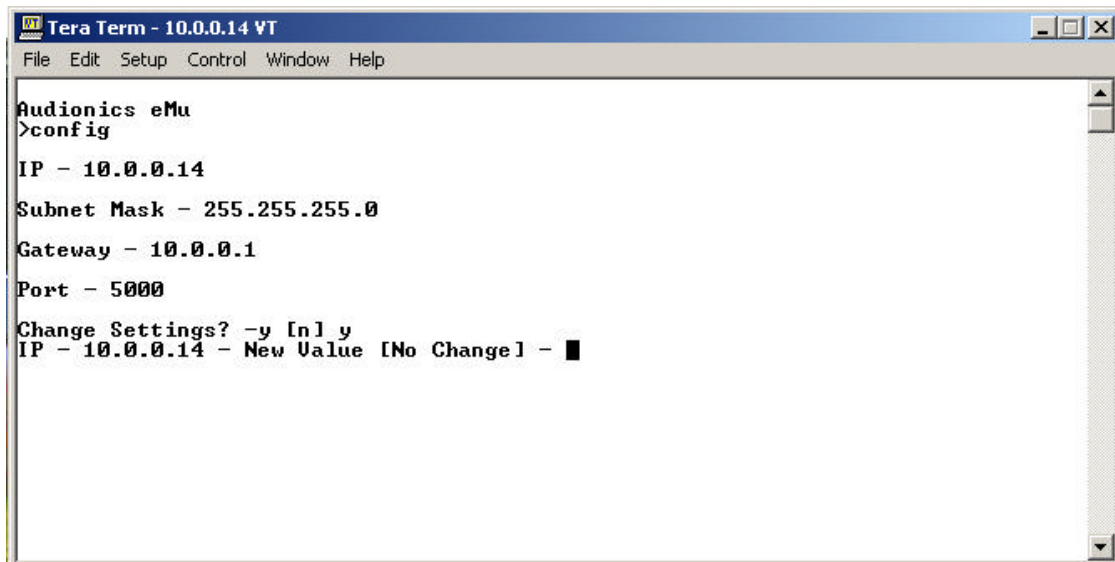
Port – 5000

>Change Settings? – Y [N] Y
>IP - 10.0.0.15 – New Value [No Change] – 10.0.0.16
```

You should now be able to log onto the eMu from a web browser.

eMu - Mains Distribution Unit

Alternatively the same configuration changes can be made via a telnet terminal. The telnet terminal needs to connect to port 23 of the emu using the currently stored IP address of the unit.



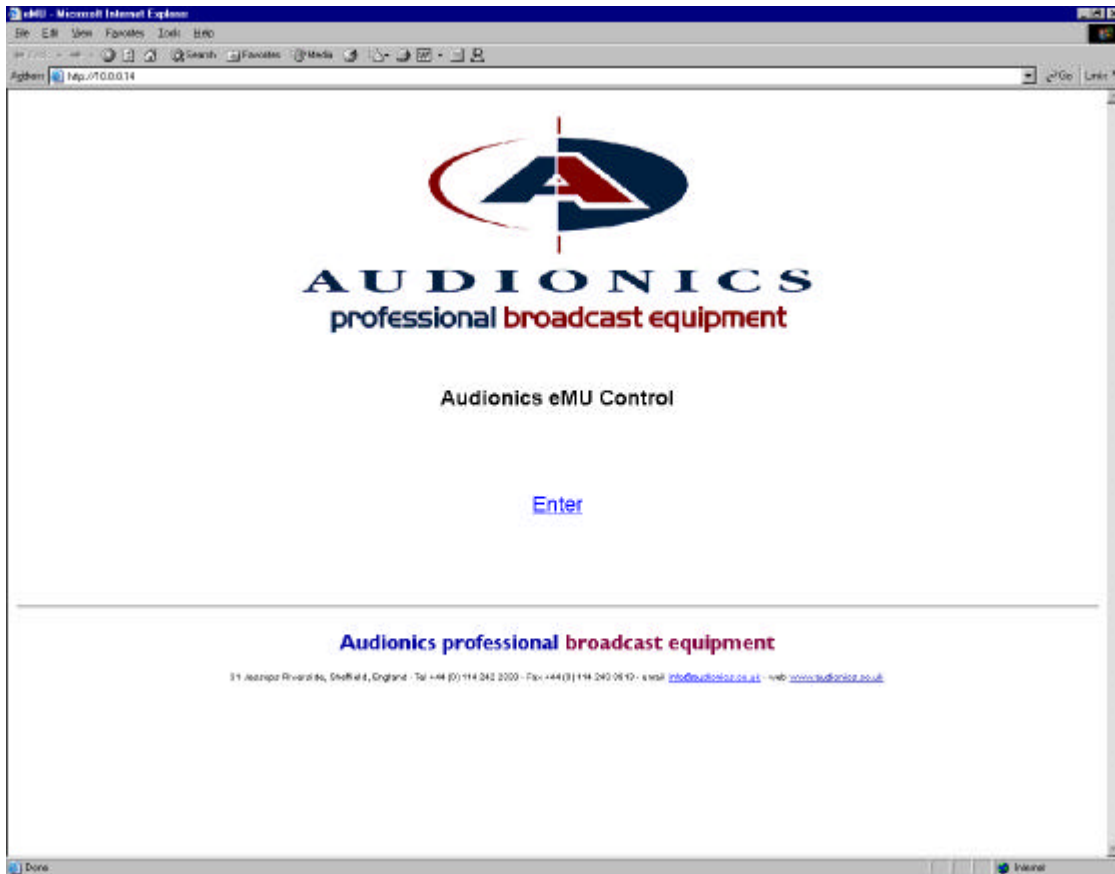
```
Tera Term - 10.0.0.14 VT
File Edit Setup Control Window Help
Audionics eMu
>config
IP - 10.0.0.14
Subnet Mask - 255.255.255.0
Gateway - 10.0.0.1
Port - 5000
Change Settings? -y [n] y
IP - 10.0.0.14 - New Value [No Change] - █
```

Again the command **config** is used to start the configuration changes and the telnet access will take the user through the process step by step, just as with the RS232.

eMu - Mains Distribution Unit

Logging On

When you log onto the IP address of the master eMu the index page will be displayed.



eMu - Mains Distribution Unit

Main Display Page

Once logged on the main page is displayed:

Audionics eMu - MDU Embedded Monitor

MDU 1	MDU 2	MDU 3	MDU 4	MDU 5	MDU 6	MDU 7	MDU 8	MDU 9	MDU 10	MDU 11	MDU 12	MDU 13	MDU 14
MDU 1	2H	3.0	2.0	2H	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
MDU 2	2H	3.0	2.0	2H	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
MDU 3	4H	4.0	4.0	4H	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MDU 4	5H	5.0	5.0	5H	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MDU 5	6H	6.0	6.0	6H	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
MDU 6	7H	7.0	7.0	7H	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
MDU 7	8H	8.0	8.0	8H	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
MDU 8	9H	9.0	9.0	9H	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
MDU 9	10H	10.0	10.0	10H	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

HEV

Audionics professional broadcast equipment

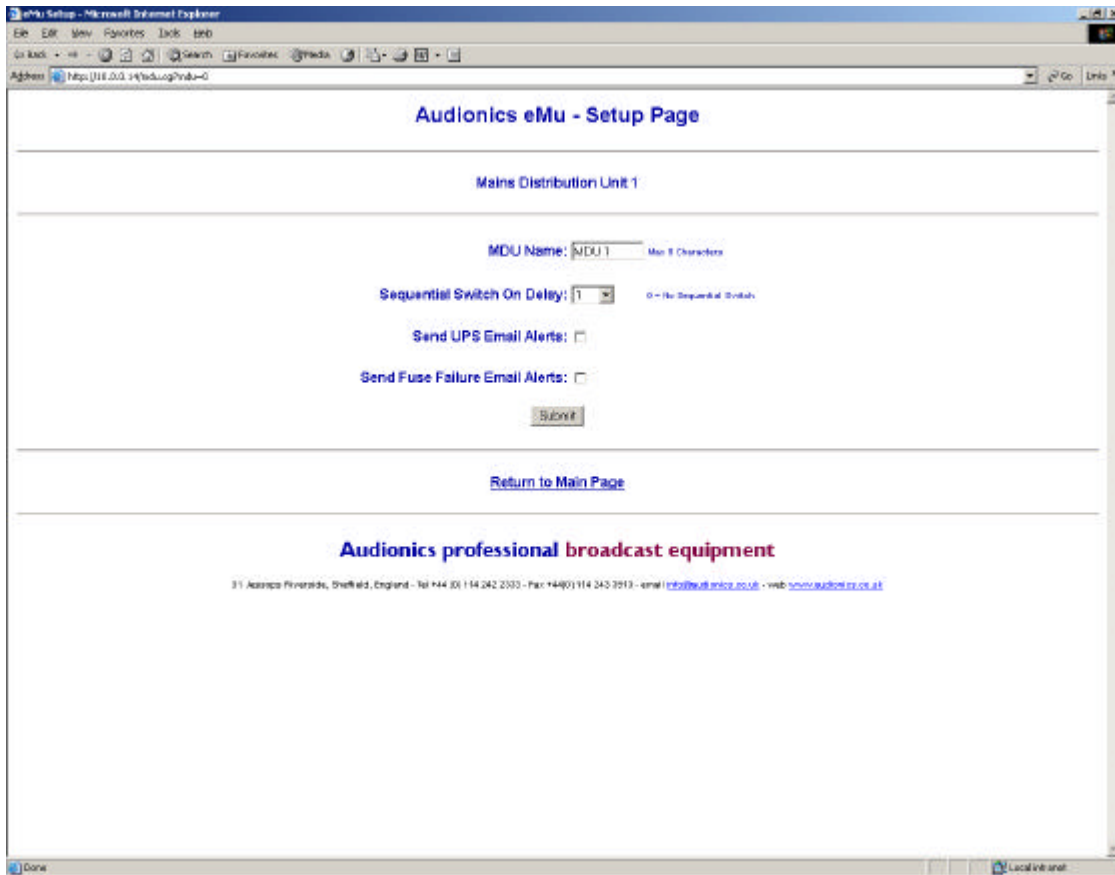
21 Jerrape Riverside, Sheffield, England - Tel +44 (0) 114 242 2232 - Fax +49(0)114 242 2912 - email info@audionics.co.uk - web www.audionics.co.uk

Each MDU is polled about once a second and the display page is updated every 5 seconds.

If a change occurs in between updates, this will not be reflected on the display, click on Refresh Display to force an update.

To update the MDU details click on the MDU name

Update MDU Details



The MDU display name can be up to 8 characters long:

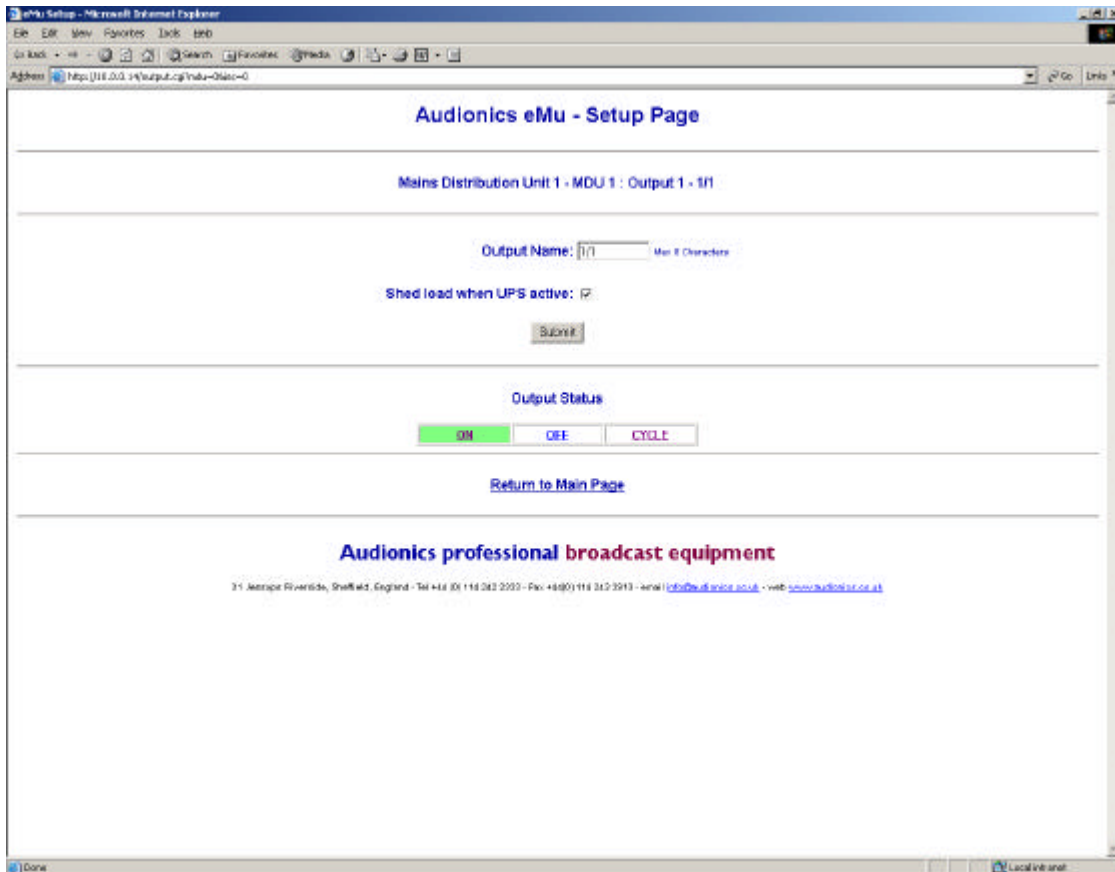
Sequential switch-on can be programmed for 0.25, 0.5, 0.75 or 1sec delay between each output.

Entering 0 will disable sequential switch on.

The MDU can send email alerts on the detection of a UPS GPI (on and off) and the detection of a fuse failure (and fuse restore after failure).

Update Output Details & Remote Control of Outputs

To update outputs, click on the output name.



The output name can be up to 8 characters in length.

Shed load when UPS active, when selected, will switch the output off when the GPI is active and restore it when the GPI is removed.

When the load is shed, it can be remotely switched back on from the web browser.

This page also enables the output to be switched on and off, or cycled (5 sec off then back on).

Main Setup Page

Audionics eMu - Setup Page

LAN Settings

IP Address

Subnet Mask

Gateway

Port Number

SMTP Server

Email Settings

Subject

To

Cc

Software version 517C1019

[Return to Main Page](#)

Audionics professional broadcast equipment

31 Aspinx Road, Boreham, England - Tel +44 (0) 144 242 2033 - Fax +44(0) 144 242 2813 - email info@audionics.co.uk - web www.audionics.co.uk

The IP address, Subnet Mask, Gateway and Port number can all be change via this page, if required. Also, if email alerts are activated, you need to supply an SMTP server address and email addresses of the mail recipients.

The subject is the same for all emails, with full details in the text e.g.

Audionics eMu Alert
MDU 1 - Bay 1
Output 1 - Off Air Receiver
FUSE FAIL

eMu Control Via LAN Socket Connection

The eMu can also be controlled and monitored via the LAN connection, by opening a socket on port 5000.

The eMu will allow up to four clients to connect via this port at any one time.

Request Output State

For an output status request the connected client must send a wake up to the eMu which is 0xFF and then a control code which in this case is set to 0x01. Then the ID of the unit should be sent. The eMu will again respond an acknowledgement of 0xFE, and an echo of the control code. It will then send the units identification and 1 byte of information for each of the units outputs.

Command	Response
FFh – Wake Up Server	
01h – Control Code – Output status req	
[ID] – ID of unit 0=Master, 1-7=Slaves	
	FEh – Acknowledge
	01h – Control Code
	[ID] – ID of unit 0=Master, 1-7=Slaves
	Byte 1 – Output 1 – 00=on 01=off
	*
	*
	Byte 12 – Output 12 – 00=on 01=off

Operate Output

To switch an output a wake up code and a control code must be sent as before with the control code this time set to 0x02. Again the unit ID must be sent and then the output number which is to be switched. Then a byte must be sent to describe to the unit how to switch the output 0x00 – off, 0x01 – on. The eMu will again acknowledge and echo the control code. It will then send the unit ID and the status of all the units outputs.

Command	Response
FFh – Wake Up Server	
02h – Control Code – Operate output	
[ID] – ID of unit 0=Master, 1-7=Slaves	
[O/P] – Output 0-11	

eMu - Mains Distribution Unit

[state] - 1 = Switch Output On
 0 = Switch Output Off
 2 = Cycle Output **

No response

Send a status request to confirm switch.

NB – There can be a delay of up to 0.5sec before the switch is actually actioned by the remote unit. In this time the old status may be returned.

** Cycle output is only on units with software revision 517K1019 or higher

Multiple Switch

To switch more than one output at a time then a wake up code and a control code must be sent as before with the control code this time set to 0x03. As before the unit ID must be sent and then twelve bytes to tell the eMu the desired status of each output. The eMu will respond the same way as when switching just one output with an acknowledge, an echo of the control code, the unit ID and twelve bytes for the status of all the units outputs.

Command

Response

FFh – Wake Up Server
03h – Control Code – Operate output
[ID] – ID of unit 0=Master, 1-7=Slaves
Byte 1 – Output 1 – 01=on 00=off
*
*
Byte 12 – Output 12 – 01=on 00=off

FEh – Acknowledge
03h – Control Code
[ID] – ID of unit 0=Master, 1-7=Slaves
Byte 1 – Output 1 – 00=on 01=off
*
*
Byte 12 – Output 12 – 00=on 01=off

Revision History

V2.5 – 090307 – Corrections to Socket Protocol – PM

V2.6 – 160608 – Cycle added to socket protocol - PM