

Operations Manual for the Eyeheight Uni-Panel/Box



--V4.xx Software 4/2/98--

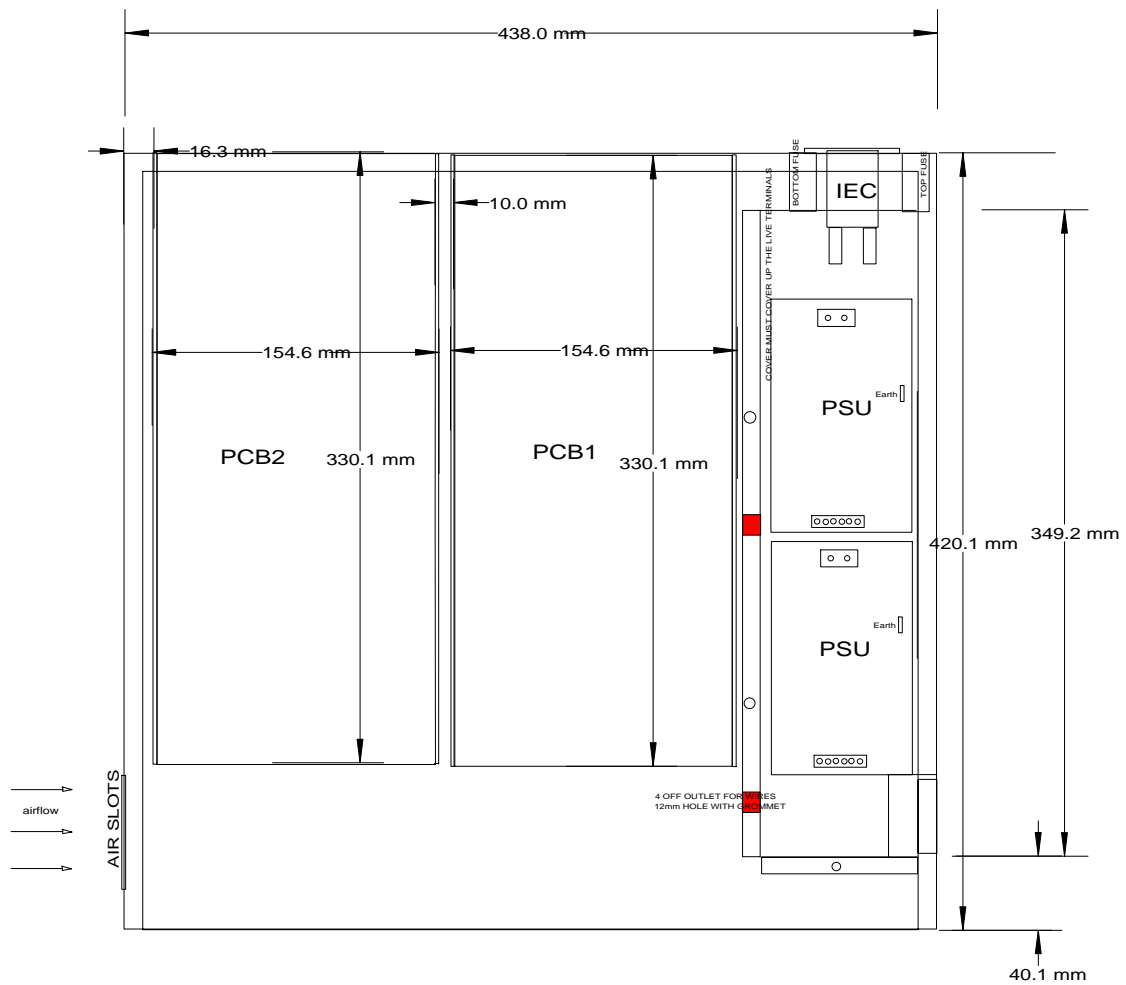
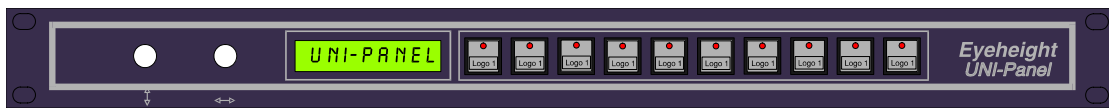


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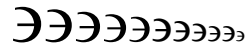
Technical Specification

Uni-Panel

Mounting	Locally on the Front of a Uni-Box, or remotely sited with rear cover UR-1.
Power Requirements	+7 to +12V at 0.2 Amps, normally supplied by the Uni-Box.
Size	Standard 1RU with ear mounts, 50mm deep if situated remotely with rear panel UR-1
General Features	10 Legendable push buttons 2 Rotary Digipots 1 16x1 LCD Display
Local Control	Uni-Panel Mounted on front of UNI-Box using Eyeheight 2 Wire Local Talk system to control 1 or 2 PCB subsystems.
Remote Control	Uni-Panel situated up to 50M remotely using RS422 control with power also via pin 5 of the control cable from the Uni-box. The Panel will control 1 or 2 PCB subsystem if mounted remotely.
Accessories	If the panel is sited remotely, the UR-1 rear cover is recommended for protection of the control surface PCB and for EC EMC regulations.
Connections	4W pin header with friction lock for the Eyeheight Local Talk system (Front panel mount) 9W Female D-Type connection for the RS422 System (Remote)

Technical Specification

Uni-Box



Mounting	Standard 1RU rack mount
Power Requirements	110-250V ac, 250mA, 50W Max
Size	420mm Deep not including connectors, 1RU.
General Features	<ul style="list-style-type: none"> ∅Space for 2 Eyeheight PCB Subsystems which slot into the rear of the Box. The subsystems contain all the signal connectors. ∅Redundant PSU system as Standard ∅Two Independent fans run off main and reserve PSU's. ∅Switch mode PSU systems with wide range auto adjusting input 110-250V ac.
Accessories	If the box is ordered with no front panel control, a blank front panel is required FP-1
Approvals	All Internal components are CE and UL approved, The Box is custom designed aluchromed Low EMC Unit.
Connections	<ul style="list-style-type: none"> ∅Standard, single IEC mains connection for power. ∅Two Internal Din41216 connectors for the mounting of Eyeheight PCB Subsystems.

Uni-Panel Operation

The Uni-Panel Operation generally depends on the Host system that it is connected to, however there are a number of set-up features that are important to know about. These set-up features are permanently stored in EE-prom such that once they are set up there should be little or no need to change them again.

The set up modes are activated by pressing certain keys on the Uni-Panel while the unit is being powered up. If the Uni-Panel is locally situated on the front of a Uni-Box, then the whole Uni-box must be re-powered while the set-up keys are pressed in. If the Uni-panel is remotely sited, then it may be easier to re-power the panel only by disconnecting and reconnecting the 9W D type, while the set-up keys are being pressed.

In the following text the terminology "**slot 0**" refers to the PCB system on the Right Hand side looking from the **rear** of the Uni-Box.

The terminology "**slot 1**" refers to the PCB system on the Left Hand side looking from the **rear** of the Uni-Box.

First Birthday:

Pressing switches 1 and 10 together when power-up happens, will cause a 1st Birthday to occur.

This will set the EE-prom all to 00h, **and consequently put the panel into 'Local' mode and lose all the host subsystems start-up data.**

After EE-Prom is cleared, the message 'EE-OK' will appear on the LCD display and the host systems must be restarted by a total power down.

Panel Lock:

Keeping Switch 1 pressed for more than 4 seconds will cause the panel to "Lock". This disables all the controls except the Device select (Switch 1) and the "menu" select Rotary digipot. (Hence enabling the status to be browsed). To Unlock the panel, press Switch 1 for more than 4 seconds. The panel will be unlocked after a First Birthday.

Protocol Change:

Pressing switches 3 and 8 together when power-up happens, will cause the panel protocol to toggle between 'Eyeheight 2 wire local talk' and RS422. If the panel is remotely sited 'RS422' is required. If the panel is on the front of a Uni-Box then 'Local' is required.

ID Change:

Pressing switches 4 and 7 together when power-up happens, will cause a mode to be entered such that the user can change the panel ID code (0-255).

The ID is changed by moving the "adj" digipot.

This code is currently NOT USED and does not need to be set.

Slot Identification Text:

Pressing switches 5 and 6 together when power-up happens, will cause a mode to be entered such that the "user slot text" can be changed and stored in EE-prom.

The Text is displayed when a user uses SW1 to switch between slot 0/1. This announces that now you are controlling, for example 'Studio 1 Clipper' or 'P Box1 Cage'.

The default text after a first birthday is 'Dev1' for slot0 and 'Dev2' for slot1.

To change the text for slot 0, enter this mode by powering up with sw5 and 6 pressed. You will now see the Slot 0 text (Dev1). adjust character under the underscore by moving the 'adj' digipot. To move the underscore use the 'menu' digipot.

When you have completed the slot 0 text, press sw 10 (Flashing led). this will then do the same for the slot 1 text. When this is complete press sw10 and after a few seconds re-power the system.

Removal / Replacement of a Uni-Panel from a Uni-Box

If a user wishes, The Uni-panel on the front of the Uni-box maybe used remotely. To detach the Uni-Panel:

- 1) First remove all power and connections from the Uni-Box.
- 2) Remove the three M3 Cross hair Screws from the front edge of the Uni-box, on top of the Uni-Panel.
- 3) Remove the three M3 Cross hair Screws from the front edge of the Uni-box, on the bottom of the Uni-Panel.
- 4) The Uni-Panel should slide out on a short 4W ribbon cable.
- 5) Detach the 4W Molex connector from the Uni-panel.
- 6) Inside the Front of the Uni-Box there is also a small 2 Way header plug with a 2 Way Molex socket attached. It is advisable for possible future enhancements to remove and re-attach this **reversed**, if the Uni-panel is removed permanently

Replacement of a Uni-Panel is the reverse of the above.

It is advisable to fit a blank front panel to the Uni-Box if the Uni-Panel is removed (Accessory FP-1).

It is also advisable to fit a Rear Cover (Accessory UR-1), if the Uni-Panel is sited remotely.

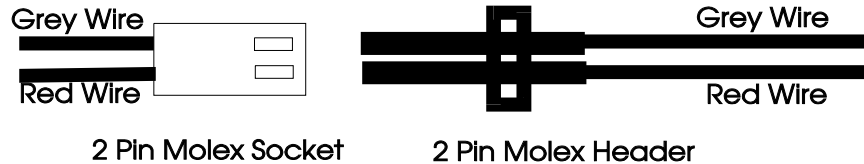
Removal / Replacement of a UR-1 to a Uni-Panel

- 1) First connect the 9W D type male connector on the ribbon cable to the 9W female connector on the end of the Uni-Panel.
- 2) Attach the rear cover with the 6 M3 screws provided.

Removal of a UR-1 accessory is the reverse of the above.

Local and Remote control Configurations

The Uni-Panel can control two PCB Subsystems. Depending on the mode of control the user will need to configure the UB-1000 Uni-Box. The only adjustment in the UNI-Box is a small 2 Pin header which is located directly behind the Uni-Box Front panel.



2 Pin plug and socket located behind the UB-1000 front panel

**The following combinations of control are possible:
(See Note 2)**

Local control of 1 or 2 PCB Subsystems from a single front mounted Local UNI-Panel	Connect together Socket to header with grey and red wires continuing the same colour.
Remote control of 1 or 2 PCB Subsystems from a single remote panel, which must be connected to SLOT 0 RS422 port. (i.e. the RIGHT hand slot looking from the rear.)	Connect together Socket to header with grey and red wires CROSSED . (i.e. the red wire crosses over to become a grey one and vice-verca) (See Note 1)
Remote control of 2 PCB Subsystems from two separate	DO Not Connect the Socket to the Plug at all.

remote panels, connected to the respective PCB Subsystems.	
Remote Control of one PCB Subsystem (MUST BE SLOT 1), and Local control of the other, (MUST BE SLOT 0)	DO Not Connect the Socket to the Plug at all.

Note 1 On Uni-boxes with serial number less than 035, the user will find that the molex header has a "Friction Lock". This must be cut off with a pair of wire cutters in order for the wires to be crossed.

Note 2 Configurations other than these are possible with the system. Please call Eyeheight Ltd, Technical Department for any further information.

Uni-Panel Connections

This is the Pinout for the 9W D-type RS422 Connector

Pin 1	Ground 0V
Pin 2	Rx-
Pin 3	Tx+
Pin 4	Not Used
Pin 5	+7-12V dc Power
Pin 6	Not Used
Pin 7	Rx+
Pin 8	Tx-

8	
Pin	Ground 0V
9	

UNI-Panel Remote RS422 Protocol

The Uni-Panel system has been designed to be as simple as control interface as possible. This will enable control from a PC or other computer system via each Host PCB subsystems rear RS422 socket. Remote connection from the Uni-Panel to the Host PCB subsystem is made via the 9 way D type on the back of each PCB subsystem. Each Uni-Box can hold 2 PCB Subsystems, these are referred to as slot 0, and slot 1. Each card knows which slot it is in by an identification code on the edge connector, therefore there may be two RS422 connections on a UNI-Box. The protocol allows a Uni-Panel to talk via, slot0 RS422 physical connection TO slot1 PCB Subsystem thus allowing control of Two subsystems from 1 Uni-panel. This system also works on the Eyeheight 2 wire local talk system which is used when the panel is mounted locally on the front of a Uni-Box.

The RS422 specification is 19.2K baud 8 bits with no parity, 1 Start bit and 1 Stop bit.

In the following, b'76543210' stands for BINARY, 8 digits, 7=msb, 0=lsb.

The first byte in any command is always b'111snnnn'. This byte is used to indicate which slot the command is destined for and also indicates the number of bytes in the command NOT including this byte. 'nnnn' is most frequently 1 or 2.

On reception of this code by a host PCB Subsystem:
s=slot select, which determines if the card being talked to is 0 or 1 (local talk system only at the moment)
nnnn=number of bytes in the command not including this one.

On the Uni-Panel the slot change is performed by SW1. This switch is the only one on the Uni-Panel which does not transmit a code to the Host, neither is the LED on this switch under control by the host. SW1 is dedicated to changing the slot destination code and therefor is used to toggle between control of the two host PCB subsystems.

There is no header byte for serial reception by the Uni-Panel, so received command codes are "as is"

Class 1 routines (Switch and Digipot action):

<u>Tx Cmd code</u>	<u>Action</u>
"B"	Close Sw2
"C"	Close Sw3
"D"	Close Sw4
"E"	Close Sw5
"F"	Close Sw6
"G"	Close Sw7
"H"	Close Sw8
"I"	Close Sw9
"J"	Close Sw10
"b"	Open Sw2
"c"	Open Sw3
"d"	Open Sw4
"e"	Open Sw5
"f"	Open Sw6
"g"	Open Sw7
"h"	Open Sw8
"i"	Open Sw9
"j"	Open Sw10

(The following digipot movement commands are two bytes, the second is a 2's compliment byte giving a range of +/-127

">" + <+/-127> Movement in digipot H eg... <>> <FFH> one click c/clockwise

"^" + <+/-128> Movement in digipot V eg... <^> <01H> one click clockwise

Class 2 routines (Writing to the LCD Display):

The display is a 16x1 Backlit LCD Unit
<"> (Single Quote!) followed by a start position (0-15)
followed by up to
16 chrs, followed by another quote.

eg... <"> <04H> <Hello Mum> <"> would write " Hello
Mum "

^^^^^^^^^^^^^^^^^^^^

0123456789012345

To clear the screen send the code <!>

If the string is too long it gets lost off the edge of the display

Protocol for writing to the LEDs in the switches from a remote box

these are similar to the switch press routines but signals are TO the UNI-Panel

Class 3 routines (Writing to the LEDs in the switches):

Rx Cmd Code Action

"B"	led 2 on
"C"	led 3 on
"D"	led 4 on
"E"	led 5 on
"F"	led 6 on
"G"	led 7 on
"H"	led 8 on
"I"	led 9 on
"J"	led 10 on
"2"	led 2 flashing
"3"	led 3 flashing
"4"	led 4 flashing
"5"	led 5 flashing
"6"	led 6 flashing
"7"	led 7 flashing
"8"	led 8 flashing
"9"	led 9 flashing
": "	led 10 flashing
"b"	led 2 off
"c"	led 3 off
"d"	led 4 off
"e"	led 5 off
"f"	led 6 off
"g"	led 7 off
"h"	led 8 off
"i"	led 9 off
"j"	led 10 off

Class 4 routines (read/write to serial EE Prom):

There is a 256x8 serial EE-prom within the Uni-Panel. This is largely used to store Uni-Panel configuration data and Host PCB Subsystem power fail configuration data. This enables a PCB Subsystem to maintain it's previous configuration after a power down/fail. **Generally speaking it is unwise for anything other than the Host subsystem to change this.**

To write to the Uni-panel EE-prom the following protocol is used:

<W>,<Address>,<Address>,<data>,<data> (5 Bytes)
(address and data are repeated for error detection)

To Read from the Uni-panel EE-prom the following protocol is used:

<R>,<Address>,<address>
(the address is repeated for error detection)

the UNI-panel replies with <r>,<data>,<data> (3 Bytes)
(the data are repeated for error detection)

The Class 5 routines are for initialisation and detection of the Uni-panel

Class 5 routines (Uni-Panel detection):

To Ask for existence of a Uni-panel
Send <X> from box to panel, UNI-Panel Replies <x>

Class 6 routines (Number format conversions)

Number format conversions. These routines take raw 16 bit binary numbers, and display them in various versions of decimal.

The general format is:

<#> <attribute> <lcd_pos> <data_l> <data_h>

attribute =0, data is converted to decimal range +/- 9999, fixed print format +/-nnnn

attribute =1, data is converted to decimal range +/- 9999, print format :only "-" sign
with all leading zeros suppressed

attribute =2, data is converted to decimal +/-9999, print format :only "-" sign

with all leading zeros suppressed. The value also is converted to a percentage such that 0%=40h and 100%=3ACh, the effective video percentage level for 10 bits

