



evolutionDT

17/11/06 - vl.3

installation & setup guide

Revision History

Version	Date	Description	Author
1.3	17/11/06	Corrected I-Bus wiring in figures 13 & 14 Added revision history	SRP

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I Platform Overview

The evolutionDT is eyeheight's 3rd generation of the geNETics platform and builds on the heritage of the geNETics platform, adding additional features and cost benefits whilst maintaining interoperability with existing geNETics infrastructure.

Key Features of the evolutionDT platform:-

- Cost effective fully self-contained products including control panel, PSU and processing card.
- Compact desktop form-factor ideal for workstation and OB applications. Optional 19" rack mount fitting available (FF-6).
- User upgradeable for developing standards, new product features and fixes.
- Familiar geNETics operation enhanced with graphical and nested menus for easier operation.
- Fully networkable system allowing distributed products and control panels and interoperation with existing geNETics products.

I.I Platform Dimensions

Figure 1 shows the dimensions of a standard evolutionDT desktop unit, Figure 2 shows the dimensions for a unit with the optional FF-6 19" rack –mount fitted.

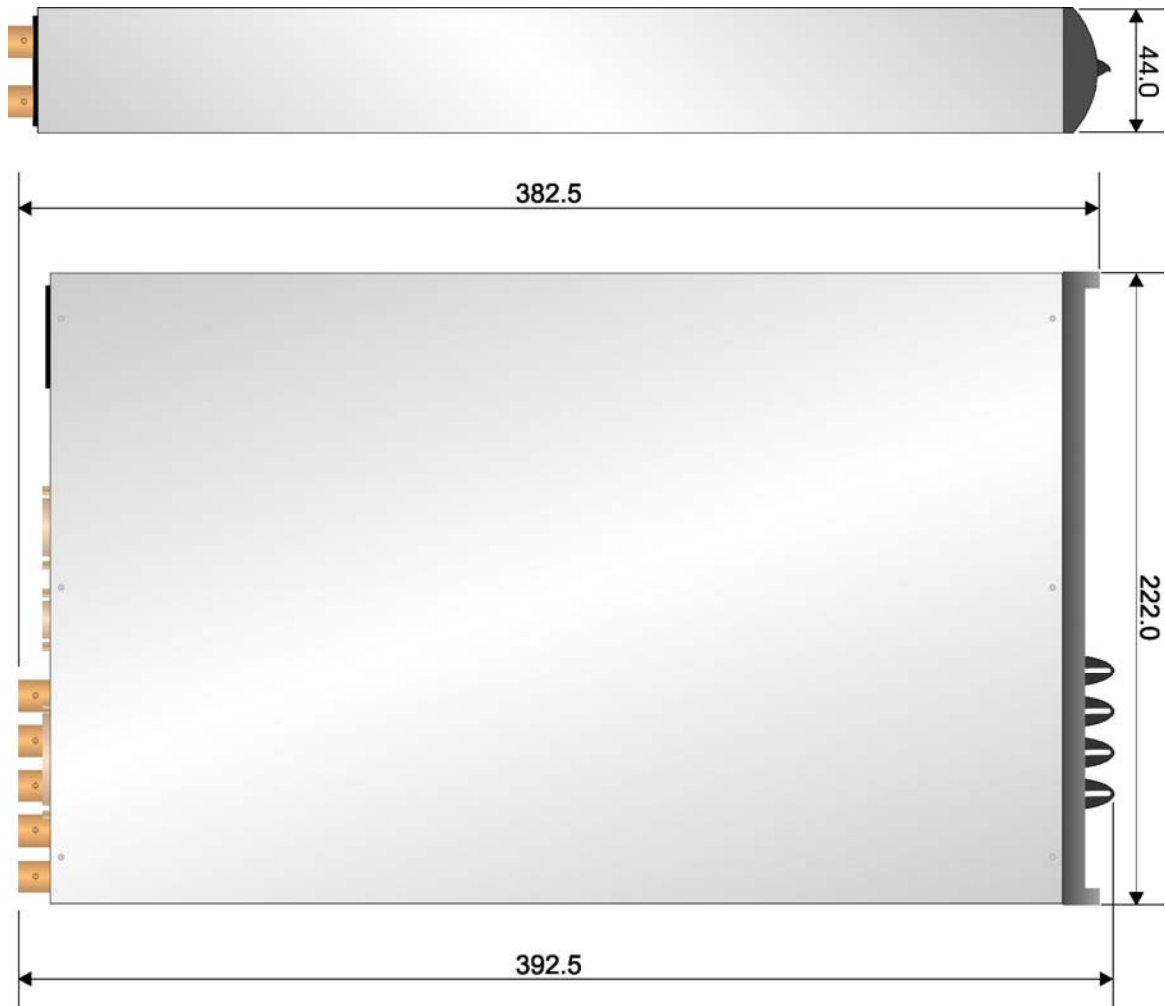


Figure 1 - evolutionDT Dimensions

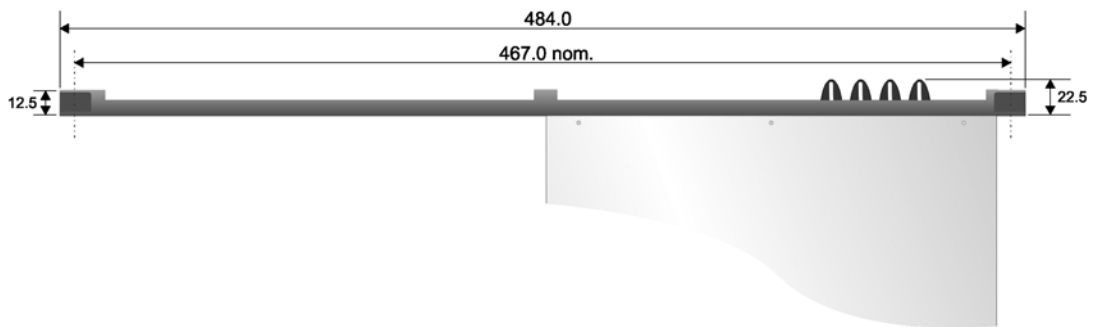


Figure 2 - FF-6 19" Rack Mount Dimensions

I.2 Control Panel Overview

The majority of evolutionDT units will come with a full control panel as shown in Figure 3.

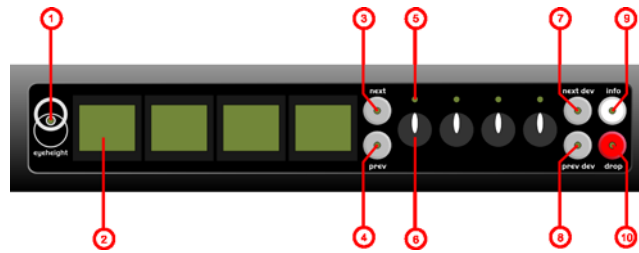


Figure 3 - evolutionDT Standard Control Panel

1 - Power/Status LED

Green – Normal operation

Green Flashing - Version Information Display

Orange – Product is initialising

Flashing Red – Product is in Field Reprogramming Mode

2 - Menu Display/Button (1 of 4)

Displays Menu Information. The colour of the menu button indicates the function.

Green – adjustment menu. Pressing the menu or using the associated digipot(6) will adjust the menu value.

Yellow – information menu, no adjustment possible.

Blue – navigation menu. Pressing the button will take you up or down the menu hierarchy.

Red – multiple variable menu. Pressing the button will “open” the menu assigning one digipot(6) to each variable. The active LED(5) will light above the digipots associated with each variable.

3 - Next Menu Button

Within a layer of the menu hierarchy there may be more than four menus and where this is the case the “next” button will illuminate to show that further menus are available. Pressing the “next” button moves you to the next set of menus.

4 – Previous Menu Button

Within a layer of the menu hierarchy there may be more than four menus and where this is the case the “prev” button will illuminate to show that previous menus are available. Pressing the “prev” button moves you to the previous set of menus.

5 – Digipot Active LED (1 of 4)

Illuminates to indicate that the digipot below is active for adjustment of the associated menu variable.

6 – Digipot (1 of 4)

Allows for rapid adjustment of the associated menu variable.

7 – Next Device Button

It is possible to control more than one device from a single evolutionDT control panel. Where more than one device is assigned to the panel the “next dev” will move control to the next device in the device list.

In set-up mode this button will pick up a free device and assign it to this panels device list. The button will flash to indicate that a free device is selected.

8 – Previous Device Button

Where more than one device is assigned to the panel the “prev dev” will move control to the previous device in the device list.

In set-up mode this button will remove a device owned by this panel from this panels device list. The button will flash to indicate an owned device is selected.

9 – Info Button

This button displays all hardware, software and firmware version information for the currently selected product and this panel.

In set-up mode where a free evolutionDT device is selected this button will flash indicating that the network address (box & slot) can be changed. Pressing this button will take you to the adjustment menus.

10 – Setup/Drop Button

Press and hold this button for four seconds to enter set-up mode.

Products which operate without user interaction or which are intended to operate with a remote panel may come with a blank front panel as shown in Figure 4.

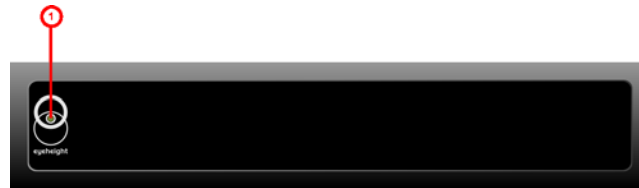


Figure 4 - evolutionDT Blank Control Panel

1 - Power/Status LED

Green – Normal operation

Green Flashing - Version Information Display

Orange – Product is initialising

Flashing Red – Product is in Field Reprogramming Mode

2 Basic Installation

2.1 Desktop Installation

Where the unit is to be used freestanding we strongly recommend that the enclosed self-adhesive feet be employed on the underside of the unit to reduce movement of the unit in operation and to protect desktop surfaces.

The unit should be positioned within easy reach of the operator. Ensure that nothing is placed on top of the unit and that no liquids are spilled on or near the unit.

2.2 Rack Installation

The optional FF-6 hardware makes the evolutionDT rack mountable in a standard industrial rack. Chassis supports should be employed to support the rear of the unit. Ensure all four mounting bolts are securely fastened.

2.3 Connections to the evolutionDT

The evolutionDT platform provides a wide range of connections that are not necessarily used by each product. Some of the connectors shown in Figure 5 may have blanks fitted or may not be internally connected. See individual product manuals for details of which connections are relevant to each product.

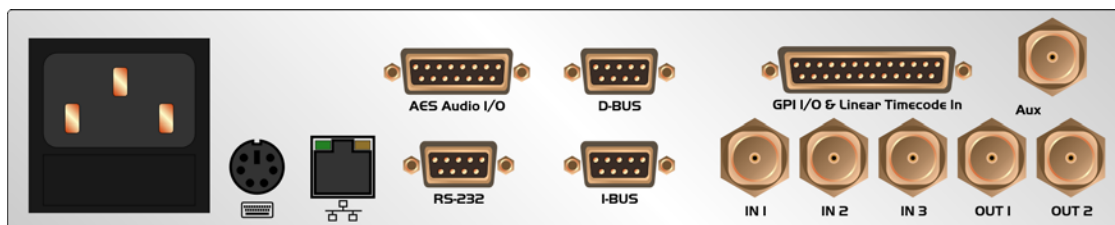


Figure 5 - evolutionDT Rear Connectors

2.3.1 Video Connections

6 off 75 ohm BNC connectors.

IN1- IN3 can be SDI, HD-SDI or multiDef-SDI connections depending on the product.

OUT1 & OUT2 are independent SDI, HD-SDI or multiDef-SDI connections depending on the product.

Aux can be an SD analogue reference, HD tri-sync analogue reference or an additional SDI output depending on the product.

2.3.2 Audio Connections

A 15-way male D-type connector provides for two AES digital audio inputs and dual outputs for each of two AES digital audio outputs depending on the product. See Figure 6 for details.

Pin No.	Function
1	AES1 Input +
2	AES1 Input -
3	AES2 Input +
4	AES2 Input -
5	AES1 Output 1 +
6	AES1 Output 1 -
7	AES1 Output 2 +
8	AES1 Output 2 -
9	AES2 Output 1 +
10	AES2 Output 1 -
11	AES2 Output 2 +
12	AES2 Output 2 -
13	GPI Input 1 (Also available on GPI connector)
14	GPI Input 2 (Also available on GPI connector)
15	Ground

Figure 6 - AES Audio Connector Pinout

2.3.3 GPI/Timecode Connections

A 25-way female D-type connector provides eight GPI outputs, four as isolated relay closures and four as open collector transistor outputs, eight GPI inputs and a differential linear timecode input. See Figure 7 for details.

Pin No.	Function
1	GPI Output 1a (isolated relay closure)
2	GPI Output 1b (isolated relay closure)
3	GPI Output 2a (isolated relay closure)
4	GPI Output 2b (isolated relay closure)
5	GPI Output 3a (isolated relay closure)
6	GPI Output 3b (isolated relay closure)
7	GPI Output 4a (isolated relay closure)
8	GPI Output 4b (isolated relay closure)
9	GPI Output 5 (open collector <1000mA)
10	GPI Output 6 (open collector <1000mA)
11	GPI Output 7 (open collector <1000mA)
12	GPI Output 8 (open collector <1000mA)

13	GPI Input 1 (pull to ground to activate)
14	GPI Input 2 (pull to ground to activate)
15	GPI Input 3 (pull to ground to activate)
16	GPI Input 4 (pull to ground to activate)
17	GPI Input 5 (pull to ground to activate)
18	GPI Input 6 (pull to ground to activate)
19	GPI Input 7 (pull to ground to activate)
20	GPI Input 8 (pull to ground to activate)
21	Linear Timecode In +
22	Linear Timecode In -
23	
24	
25	Ground

Figure 7 - GPI/Timecode Connector Pinout

2.3.4 I-Bus Connector

A 9-way female D-type provides the I-Bus network connections, power for remote panels & dongles and video status and timing information to the evolutionDT router unit. See Figure 8 for details.

Pin No.	Function
1	Ground
2	I-Bus- (must use same twisted pair as pin 7)
3	Not Connected
4	+12v (do not connect to other chassis')
5	Ground
6	SD/HD Detect (connect to evolutionDT router only)
7	I-Bus+ (must use same twisted pair as pin 2)
8	Timing Ref (connect to evolutionDT router only)
9	+12v (do not connect to other chassis')

Figure 8 - I-Bus Connector Pinout

2.3.5 D-Bus Connector

A 9-way female D-type provides the D-Bus network connections & power for dongles. See Figure 9 for details.

Pin No.	Function
1	Ground

2	D-Bus- (must use same twisted pair as pin 7)
3	Not Connected
4	+12v (do not connect to other chassis')
5	Ground
6	Not Connected
7	D-Bus+ (must use same twisted pair as pin 2)
8	Not Connected
9	+12v (do not connect to other chassis')

Figure 9 - D-Bus Connector Pinout

2.3.6 RS-232 Connector

A 9-way female D-type provides the RS-232 interface for communications and field reprogramming the evolutionDT unit. See Figure 10 for details.

Pin No.	Function
1	Not Connected
2	Tx Data
3	Rx Data
4	Not Connected
5	Ground
6	Not Connected
7	Not Connected
8	Not Connected
9	Not Connected

Figure 10 - RS-232 Connector Pinout

2.3.7 RJ45 Ethernet Connector

An RJ45 socket provides an 10/100 auto-sensing Ethernet connection where fitted. See Figure 11 for details.

Pin No.	Function
1	Transmit +
2	Transmit -
3	Receive +
4	Not Connected
5	Not Connected
6	Receive -
7	Not Connected

8	Not Connected
---	---------------

Figure 11 - Ethernet Connector Pinout

2.3.8 Keyboard Connector

A standard 6-pin DIN PS-2 style keyboard connector. See Figure 12 for details.

Pin No.	Function
1	SP1
2	DATA
3	Ground
5	+5v
6	SP2
8	CLK

Figure 12 - Keyboard Connector Pinout

2.3.9 Mains Connector

A fused IEC mains connector for connection to a 100-240v, 47-63Hz mains supply. A 20mm 250V 2A slow acting (T) rated fuse should be used.

2.4 Introduction to the I-Bus Network

All evolutionDT products make use of the I-Bus network to connect panels and hosts (products). The network is multi-drop allowing multiple hosts and multiple panels on the same network each identified by a unique address known as the Network ID or NID. The NID is actually a number from 0 to 253 with panels always having a NID in the range 192-253 and hosts having a NID in the range 0 to 191.

All items on a network must have unique NIDs and each panel keeps a list of the NIDs of hosts it is allowed to control and each host knows the NID of the panel that is supposed to control it. This allows multiple panels and hosts to co-exist, a panel to control multiple distributed hosts and control of hosts to be passed between panels.

For simple standalone products this flexibility is not required but it is still necessary to ensure that each panel has a unique NID and that each panel knows who it is controlling and each host knows which panel is controlling it.

Hosts which are assigned to a panel are "owned" by that panel. Hosts which are not assigned to a panel are "free".

2.5 Basic Set-up

For a single standalone product the unit will arrive configured for operation but when combining products or when performing a field upgrade it may be necessary to manually adjust the set-up to ensure unique NIDs.

2.5.1 Power-up sequence

When power is applied to the unit you will see the start-up animation followed by the “evolutionDT” banner and the LEDs above the dipots blinking while the panel performs checks on the system to ensure that there are no conflicting panels and that it can still communicate with at least one of the hosts it owns. Once the checks are complete the unit should display the top-level menu of the product (see product documentation for details).



Where the product has a blank front panel the Power/Status LED will be orange while the product (Host) software boots and will go green once the

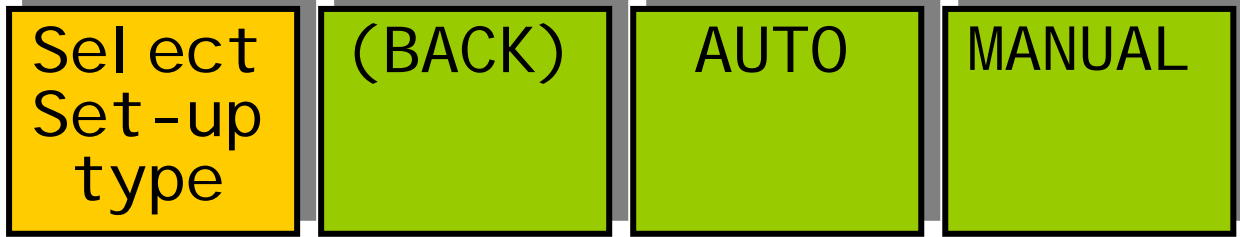
2.5.2 Automatic Set-up for a Stand-alone System

Where the unit fails to show the top-level product menu after running the system checks it is necessary to manually acquire a host for the panel. The panel will have automatically have entered set-up mode on failing to detect any owned hosts (To enter Set-up mode manually press and hold the Setup/Drop button for 4 seconds).

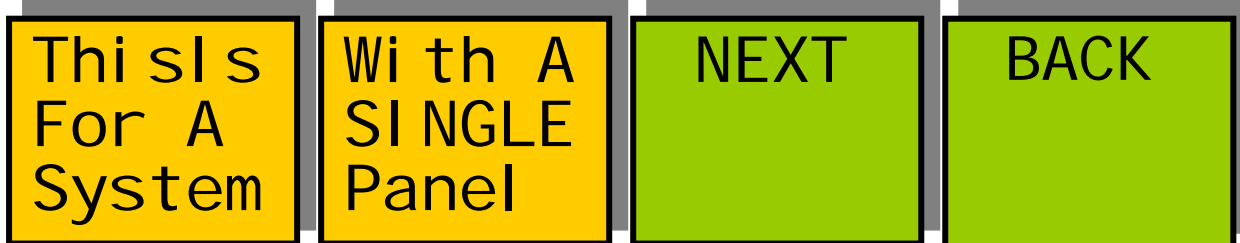
On entering set-up mode the menu buttons display the panel number as shown below.



Pressing “NEXT” takes you to the choice of set-up types. “AUTO” scans the I-Bus network and acquires all hosts unless they are owned by a panel which is also detected. For a standalone product this type of set-up provides a quick and easy way to require the product. For “MANUAL” set-up see the Advanced Set-up section.



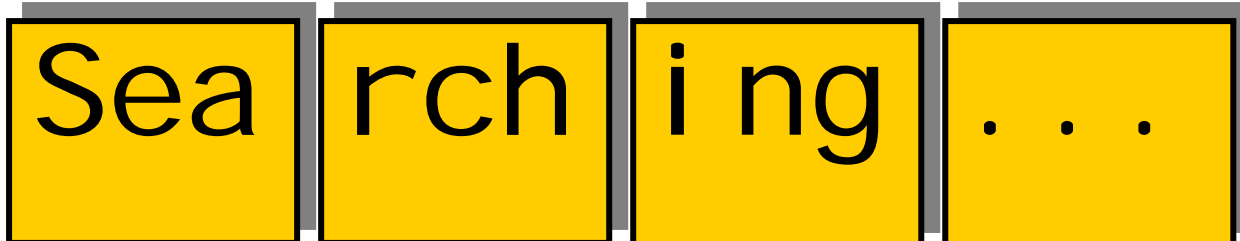
Press "AUTO"



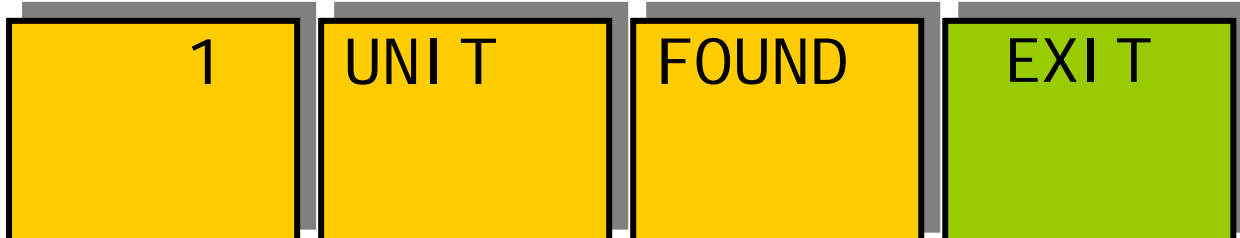
Press "NEXT"



Press "Yes", the unit will display "Searching..." and the LEDs above the digipots will flash as the unit scans the network for hosts.



Once the scan is complete the unit will display the number of units found. Press "EXIT" to go to the operational menus for the first host.



3 Advanced Installations

3.1 Connecting Multiple Units with the I-Bus

The I-Bus connector on the rear of the evolutionDT provides a means of networking multiple products and panels. Typical uses of the I-Bus for an evolutionDT might be controlling two or more units from a single panel or controlling an evolutionDT from an existing FP-9 or FP-10 flexiPanel.

Before you connecting multiple hosts to a panel you must first ensure that each host has a unique NID. By default all evolutionDT units have a NID of Box 16 Slot 6 it is therefore necessary to change the NID of any existing host to make it unique when adding another host. When mixing evolutionDT and geNETics products it is also necessary to make sure that all NIDs are unique on the system.

The I-Bus is a multi-drop differential serial network and to ensure signal integrity the network must be constructed using impedance matched cable and correctly terminated. The I-Bus is designed to operate using a single twisted pair of 110 ohm AES digital audio cable, as this form of cabling is widely available in a broadcast or post-production environment. The network must be constructed with a linear topology and be terminated uniquely at either end with a 110 ohm resistor. See Figure 13 for details.

Where remote panels are to be connected to an evolutionDT unit it is also necessary to supply power to the panel. A 12v supply is available on the I-Bus connector for this purpose. The panels require a supply of 7v minimum so a cable should be chosen such that at the current required by the panel the voltage drop is sufficiently low to ensure the 7v necessary for correct panel operation. See Figure 14 for details.

N.B. The 12v supplies from separate evolutionDT or flexiBox chassis should not be connected together.

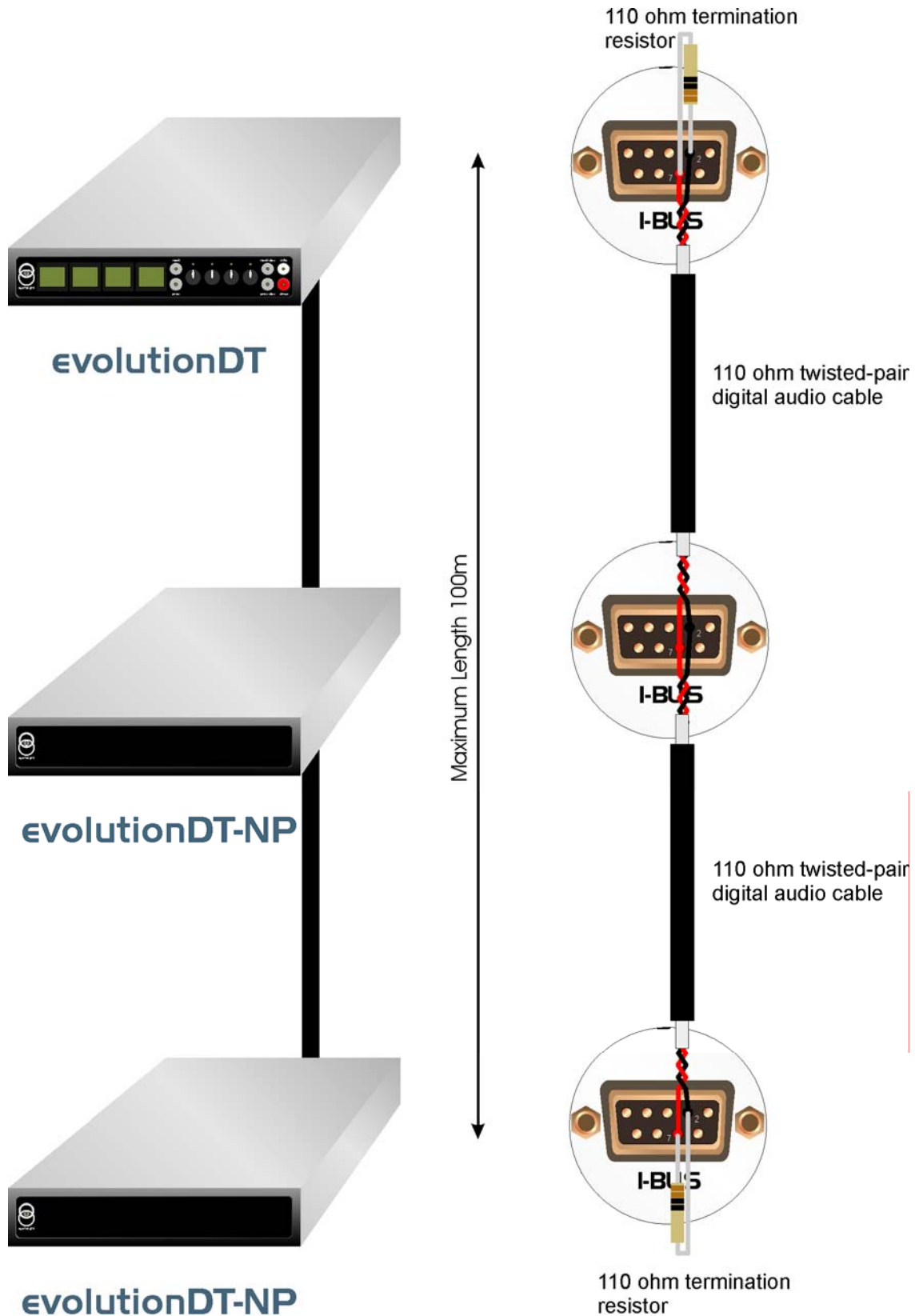


Figure 13 - I-Bus Connection

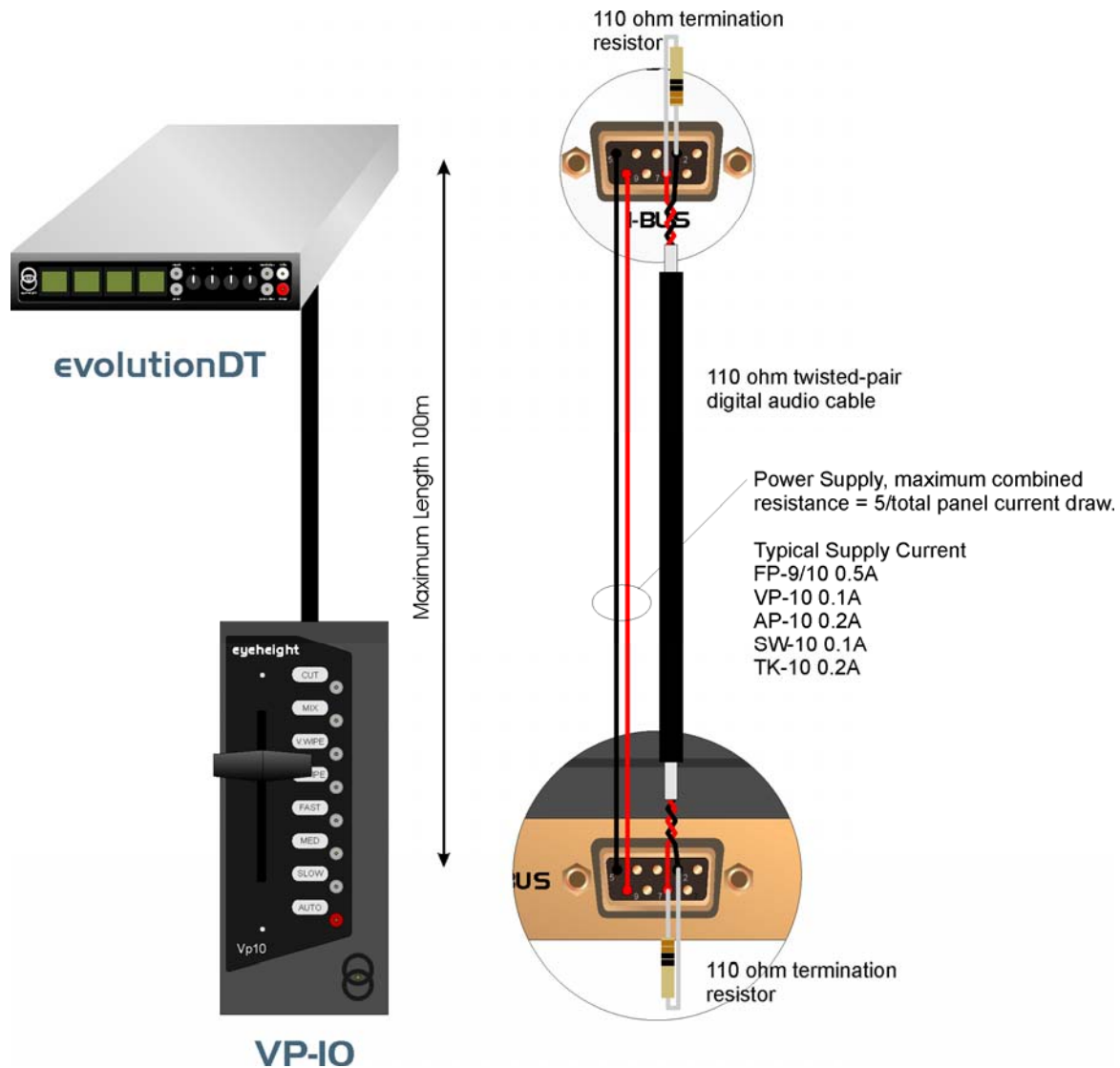


Figure 14 - External Panel Connections

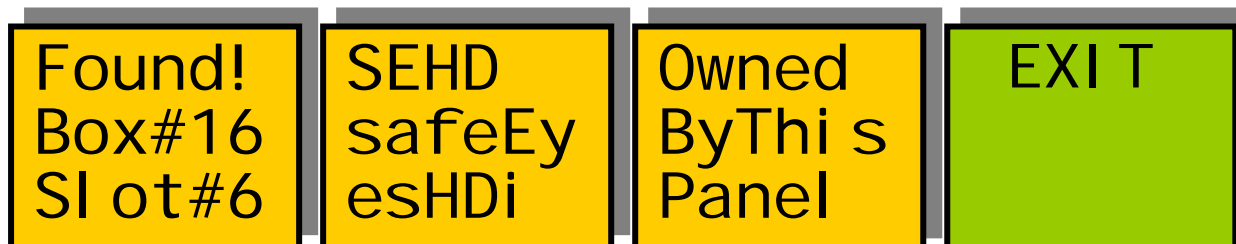
3.2 Manual Host Set-up

For evolutionDT products the host NID can be assigned in software. For geNETics products the host NID is derived from the physical location of the card in a flexiBox (the slot number) and the number assigned to the flexiBox via internal DIP switches (the box number). To maintain compatibility with the geNETics system the evolutionDT NID is set and reported using the Box/Slot notation so that it is easy to ensure that unique NIDs are assigned.

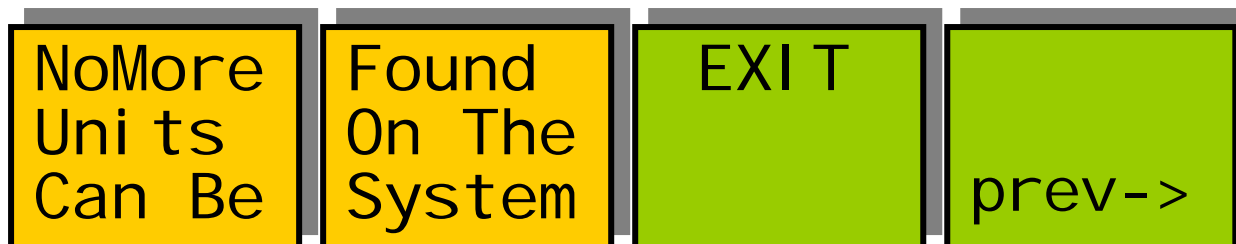
To enter manual set-up mode press and hold the Setup/Drop button for 4 seconds then press "NEXT" and then choose "MANUAL" as the set-up type. You will then be given the choice of panel or host setup.



Now choose “Hosts” and the system will begin scanning for a host. When the unit finds a host it will display the NID (Box/Slot) of the host, the type of the host and who owns the host.



To move to the next host on the network press “next” to move to the previous host press “prev”. If there are no more hosts on the network you will get a message informing you that this is the case.

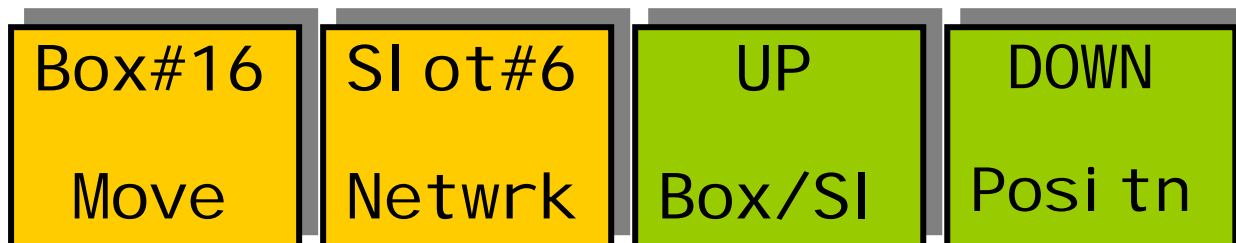


3.2.1 Acquiring & Freeing Hosts

If the host is owned by this panel as indicated in the 3rd display the host can be released by pressing the “prev dev” button. If the host is free is can be acquired by this panel by pressing the “next dev” button.

3.2.2 Changing a Hosts NID

To change a hosts NID you must first free the host as described above. Once the host is free press the “info” button to enter the NID set-up display shown below.



Pressing “UP” or “DOWN” will change the Box and Slot numbers for this host. When you have finished press “info” again to return the previous display which will now show the new Box/Slot information and allow you to reacquire the host.

3.2.3 Controlling Multiple Hosts

Each panel can acquire multiple hosts which are held in a host list. In normal operation pressing the “next dev” and “prev dev” buttons moves between hosts in the host list. When you press either button you will either get a display of the host alias (a user definable name for the particular host) or a message indicating that there is no host at that location in the host list.

To identify which evolutionDT unit you are controlling press the info button on the panel and the unit you are currently controlling will flash its power/status LED. Press “info” again to return to normal operation.

When a host is freed it leaves a space in the host list. When a new host is acquired it will take the first available location in the host list. Undesirable gaps in the host list can be removed either by running an “AUTO” set-up or by manually freeing hosts and reacquiring them.

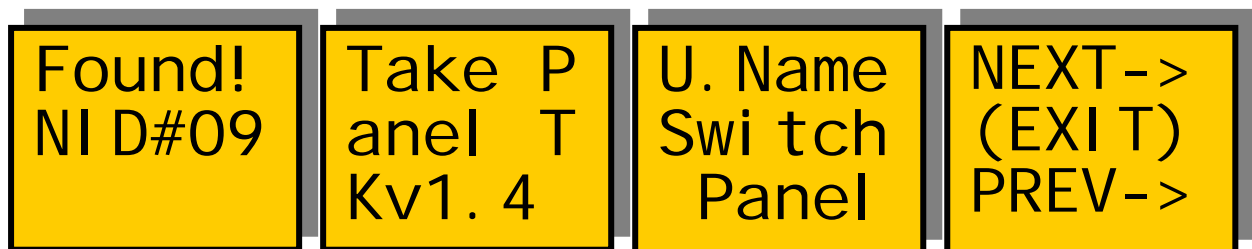
3.2.4 Exiting Manual Setup

To exit manual set-up press the “EXIT” menu button to return to the Panels/Hosts selection menu then press “No!” or press the Set-up/Drop button. It is not possible to exit set-up mode when the panel owns no hosts.

3.3 Special Function Panel Review

Where special function panels (not FP-9 or FP-10) are connected to the I-Bus network it is possible to identify them by running a network scan in “Panels” mode.

Enter set-up mode by pressing the Set-up/Drop button for 4 seconds. Then press “NEXT” then select “MANUAL” then “Panels”. The display will show “Searching...” and the LEDs above the digipots will flash as the unit searches the network for panels. When a panel is found the unit will display the NID, software version and user name for the panel as shown below.



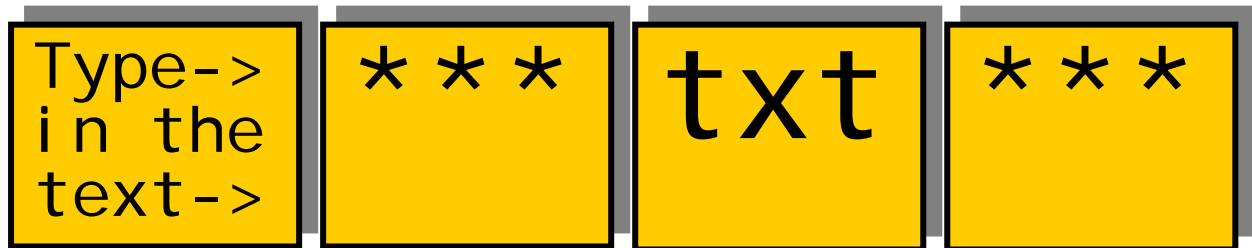
Pressing the “next” or “prev” buttons will continue the search for other panels on the network.

4 Text Messaging System

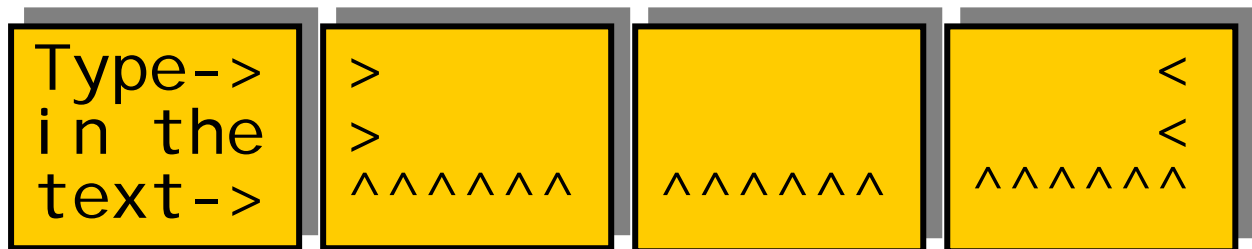
The evolutionDT supports a sub-set of the geNETics text messaging system which allows users to rename units and memories, lock or hide menus and perform some specialist engineering functions.

To use the text messaging system first attach a keyboard to the evolutionDT keyboard connector.

Pressing "F9" will start the text messaging system. The displays will change as shown below.



Then...

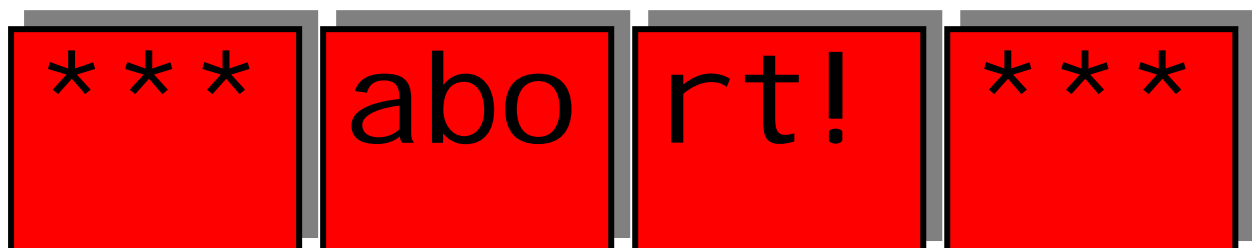


At this point typing on the keyboard will edit the text displayed in the area surrounded by arrows. Pressing "Enter" will send the message, pressing "Esc" will abort the message.

When a standard text message is sent the receiving unit should acknowledge the message and the displays indicate this as below.



Where a unit does not send the expected acknowledge or the user presses "Esc" the displays will indicate this as below.



4.1 User Functions

4.1.1 Naming Products

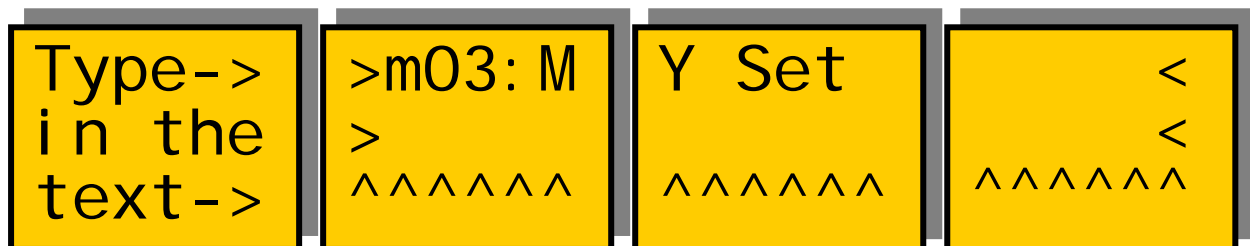
To name a product first make sure the panel is currently operating the product to be named. Then send a text message of the form “u:<my new name>” where <my new name> is a 12 character string to be used as the new product name (host alias). The “message sent” message should display to indicate receipt the name change has taken effect.



4.1.2 Naming Memories

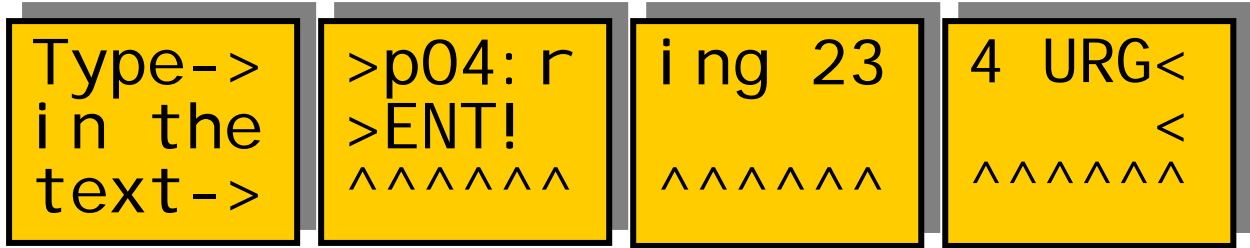
There are potentially 24 memories, numbers 1-6 for 625 SD, 7-12 for 525 SD, 12-18 for 1080 HD and 19-24 for 720p HD. The different sets of memories will be automatically selected as the input video standard changes. Some products will not have all 24 memories, such as a SD only product will not have any HD memories.

To name a memory first make sure the panel is currently operating the product containing the memory to be named. Then send a text message of the form “m<n,n>:<my new name>” where <my new name> is a 6 character string to be used as the new memory name and <n,n> is a two digit memory number with single digit memory numbers preceded by a ‘0’. The “message sent” message should display to indicate receipt the name change has taken effect.

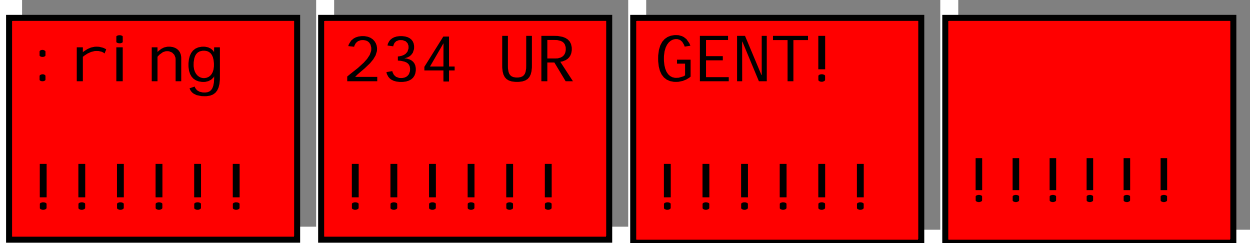


4.1.3 Panel to Panel Messages

Sending a text message of the form “p<nn>:<message>” where <nn> is a two digit panel number and <message> is an 18 character or shorter message will cause panel number <nn> to display the message as an alert. The sending panel will display “Message Sent” to indicate success.



The above will result in panel no.4 displaying the alert as shown below.



4.2 Engineering Functions

The following functions are also available via the text messaging system but should only be used under the instruction of experienced engineering staff.

- "!?:%" Engineers First Birthday of the device (Factory Reset)
- "P!<nn>" This will force a panel to take on the panel ID <nn>, where <nn> is a number between 1 and 58.
- "F:fb" Engineers First Birthday of the Panel.
- "P99:" Locks the set-up button.
- "P00:" Unlocks the set-up button.