NEBULA USER GUIDE

Contents

1 Introduction

1.1 What is Nebula?

Nebula is the name that has been given to the Pro-Bel router control system included with a Freeway, Axis, Sirius or Halo Master router. It is also the control system provided with the local router in a TX series Master Control switcher. With the Introduction of Halo, Pro-Bel now make four 'self contained' router products: Freeway, Axis, Sirius and Halo. The key to these routers is that they all include a control system, meaning that control panels and under-monitor-displays may be directly connected to the router frames without the need for an external control system. Pro-Bels other router products, like Eclipse and HD, due their large scale capability, do not include a control system, and must be controlled by an external system, such as Pro-Bels Aurora. Aurora is a powerful, expandable, highly flexible control system with a range of features and options to solve most routing requirements, and therefore would not be a cost-effective method of controlling a single, small router. Aurora can, of course, control the small router types as well, and include them as part of a maximum system size of 20 matrices, each with up to 16 levels. This structure is further enhanced by the ability of the small routers to use their own control systems in parallel with Aurora, thereby offering flexibility and redundancy. Pro-Bel's older modular router product, the TM series, may also be integrated into a Nebula control system, but a TM router can only be a slave router in such a system.

Nebula has been introduced to simplify the marketing and documentation process. Nebula is not available as a standalone router controller, but is always an integral part of a master Freeway, Axis, Sirius or Halo. Therefore all these routers have similar control features and options, and any Nebula system may have its control database edited by the user to match their own requirements. Consequently, a single Nebula user guide will be provided to users of these systems, and database details will not be included in future versions of the router user guides.

The Nebula control system is contained on a 2440, 2441, 2442 or 2443 control module. A change was made in the latter stages of 2003 when 2440 and 2441 modules were replaced by 2442 and 2443. 2440 and 2441 use either the Freeway Editor or Pro-Bel Router Editor, depending on age. 2442 and 2443 use the Nebula Editor.

The term 'master' refers to the router frame that contains the control module, if other

frames are required to for additional levels of routing, these need only be 'slave' frames, and require no control module. Nebula will control up to 8 levels of routing, using any router types from the Freeway/Axis/Sirius/Halo range. Slave frames connect to master frames with a 37way control cable, which effectively extends the control bus of the control module.

The following table summarizes the capabilities of the Nebula control system, although it is not definitive, and the user must refer to the individual user guides for a complete specification of the router type:

Router type	Level types	Control module and its editor	Dual processor option
Freeway	SDV <= 64x64 AES <= 128x128 AA <= 128x128 AV <= 128x128 RS422 <= 128 ports Timecode <= 128x128	2440 and Freeway or Router editor **OR** 2442 and Nebula editor	Yes
Axis	SDV 16x16 AES 16x16 AA 16x16 AV 16x16 HDTV 16x16	2440 and Freeway or Router editor **OR** 2442 and Nebula editor	No
Sirius 4U	AES <= 128x128 SDV <= 64x64	2441 and Freeway or Router editor **OR** 2443 and Nebula editor	Yes
Sirius 7U	SDV <= 128x128 AES(unbal)<=128x128	2441 and Freeway or Router editor **OR** 2443 and Nebula editor	Yes
Sirius 256	SDV <=256x256 AES(unbal)<=256x256	2443 and Nebula editor	Yes
Halo	SDV 32x32 SDV 16x16 HDTV 32x32 HDTV 16x16	2441 and Freeway or Router editor **OR** 2443 and Nebula editor	No
TX Series	SDV 24x12 or 24x24 AES 24x12 or 24x24 AA 24x12 or 24x24	2440 and Freeway or Router editor **OR** 2442 and Nebula editor	No

TM 16	SDV 16x16 AES 16x16 AA 16x16 AV 16x16	2659	TM control system can be slaved to Nebula	No
TM24	SDV <= 24x24 AES <=24x24 AA <=24x24 AV <=24x24			
TM32	SDV <= 32x32 AES <=32x32 AA <=32x32 AV <=32x32			

<= up to and including

SDV: Serial Digital Video up to 360mb/s

AES: balanced AES

HDTV: High Definition TV up to 1.4Gb/s

AA: Stereo analogue audio

AV: Composite analogue video (may also be configured for component with a third of the

number of routes)

1.2 Control module types

1.2.1   2440

The original Freeway/Axis/Halo control module had a part number 2440, which was fitted as a sub-module onto one of the crosspoint cards, usually the top card. Dual control modules could also be fitted, on different crosspoint cards to provide fully redundant operation. In Axis and Halo master routers only one module can be fitted.

The 2440 has now been superseded by the 2442 module, see Section 1.2.3.

In the lifetime of the 2440 module there was an important controller software change in order to support the Windows database editor. This change is generally referred to as 'Version 2'. Before Version 2 only the 'DOS' based editor could be used, but Version 2 also

changed the function of one of the configuration switches, as detailed later.

The last hardware change for the 2440 was that the configuration switch was upgraded from a 'piano' type to a 'slider' type DIL switch, the switch functions remain identical. In order to support the extended Sirius features the controller software was also upgraded. The first version to support the extended Sirius features was version 2.08.

1.2.2   2441

The 2441 control module was designed for use with the Sirius 4U and 7U frames, and although it had the same controller software as the 2440, it would only physically fit into a Sirius router.

The 2441 has now been superseded by the 2443 module, see Section 1.2.4.

1.2.3   2442

This module replaces the 2440 in all Freeway, Axis and Halo master routers, it has a new version of software, supporting existing and new features, and is used with the 'Nebula Editor' software. The module no longer uses battery-backed-up memory, which has been replaced with 'FRAM', a non-volatile memory type requiring no battery.

1.2.4   2443

Originally designed for the Sirius 16U frame, but now replaces the 2441 in all Sirius frames. It has a new version of software, supporting existing and new features, and is used with the 'Nebula Editor' software. The module no longer uses battery-backed-up memory, which has been replaced with 'FRAM', a non-volatile memory type requiring no battery.

1.3   Editor and database versions

Since the first release of the Freeway router, to the current Sirius series, these have been three types of database editor. The first, commonly called the 'DOS' Editor, required all data to be entered as text lines, from the editors command prompt. This was replaced by a Windows based editor, originally called the Freeway Editor, but renamed as the Router Editor when Axis was released. This editor included a conversion programme for converting DOS databases into Windows databases. Finally, a new version called the 'Nebula Editor' has been released to coincide with the release of the 2442 control module, which also includes a conversion programme for converting router editor databases into Nebula databases. The Nebula Editor may be used with any version of control module providing the software is compatible, as detailed in the next section.

In summary, the versions of database editor are as follows:

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- DOS Editor, database file extension .FRW
- Router Editor, database file extension .FR1
- Nebula Editor, database file extension .NE1

1.4 Controller code versions

The following tables summarize all the control module code versions, with the critical differences between them. If the user is unaware which version they are running, they may safely perform an upgrade to a known version, using the method detailed in the next section and the current editor software.

Controller Version	Flash EPROM version	To be used with Editor:	Found on module type	RS232 port	Other
V1.XX	V1.05	DOS editor only	2440 only	Supports General Switcher or General Remote protocol	Switch 2_4 selects RS232 port to Editor or General Remote protocol
V2.03	SP297-4	Freeway Windows editor pre V1.06		Supports General Remote protocol, and Windows editor only. Switchable between 9600 and 38400 BAUD	Switch 2_4 selects RS232 port BAUD rate (all V2.XX)
V2.04	SP297-5	Freeway Windows V1.06 onwards			Also supports analogue video 128x128
V2.05	SP297-6				
V2.06	SP297-7				
V2.07	SP297-9				
V2.08	SP297-9	Pro-Bel Router Editor	2440 and 2441		Also supports Sirius router features
V2.09	SP297-10				
V2.10	SP297-11				Also supports RS422 router in 'broadcast' mode

For operational reasons, some Freeway users may have chosen to retain the V1 system, in order that the system may be remotely controlled using the RS232 port configured for General Switcher protocol. There is only one version of code for the 2442 control module, as follows:

Nebula Controller Version	Flash EPROM version	To be used with Editor:	Found on module type	RS232 port	Other
V1.XX	SP407-X	Pro-Bel Nebula Editor	2442 and 2443 only	General Remote protocol, and Editor only. Switchable between 9600 and 38400 BAUD	Supports Sirius 256 levels, HD reference selection and choice of field or frame switching

1.5   Re-programming the control module

The 2440/1/2/3 modules are equipped with a 'Flash EPROM' memory, which means that the controller software can be re-programmed using a PC connected to the RS232 port on the master router frame. All versions of the Pro-Bel Router Editor are supplied with the necessary tools and instructions for upgrading the code in the users system. If the upgrade is performed, a backup of the original code is retained in order that the user may also perform a downgrade. For completeness, the instructions supplied with the editor are reproduced here:

1.5.1   Upgrade instructions

If the system you are upgrading is fitted with MAIN and BACKUP controllers, one of the 2440s must be removed whilst the other is being updated. Each controller will need to be upgraded separately following the set of instructions below.

WARNING. It will be necessary to take the system off line while performing this upgrade.

If the editable database is being used, this upgrade process will corrupt it.

Before proceeding with the Upgrade it is recommended that you have a backup copy of the current 2440 database. At the end of the upgrade, this can be converted, if necessary, and downloaded to the 2440.

NOTE: DOS databases will need to be converted using the relevant converter program before it can be used with the Windows Editor.

Upgrading the Flash EPROM:

In order to upgrade the software in a 2440/2441 controller, the following set of instructions should be followed:

1) Note the current positions of DIL switches 1, 2, 3 and 4 on the 2440/1 control card and

then set switches 1, 2, 3 and 4 to the DOWN(ON) position.

2) If the above step has been carried out without removing the switch module housing the 2440, reset the 2440 controller card.

3) Connect an RS232 cable from PC COM1 port to RS232 port on the router frame that the 2440 controller(s) are installed in.

4) From either a DOS prompt in the Router directory, or from Windows Explorer, run the batch file UPLDOLD. This command will upload three binary image files; MAINOLD.BIN, FIXDBOLD.BIN, and OEMOLD.BIN and save them in the Router directory. These files should not be deleted as they can be used to restore the Router to it's original state should you wish to revert to the original code. If errors are reported, or if any of the three files shown above are not saved in the Router directory, repeat until successful.

NOTE: This process may take a few minutes to complete.

5) Once the above step is complete, run the batch file DNLDNEW. This command performs the upgrade of the controller software by downloading the new binary image files MAIN.BIN, FIXDBE.BIN and OEM.BIN to it.

6) Return the DIL switches 1, 2 and 3 on the 2440 to their state prior to the upgrade. Set DIL switch 4 UP(OFF) if Windows editor port to run at 9600 baud or DOWN(ON) if to run at 38400 baud. Reset the 2440 controller.

7) If a BACKUP 2440 is installed in the system, remove upgraded 2440 and insert BACKUP 2440 and repeat the above steps.

8) If necessary, convert the saved Freeway DOS Editor Database to a Freeway Windows Editor compatible database using the 'Freeway-DOS-to-win32' converter program.

9) If using the editable database, re-download the database to the controller using the appropriate editor.

1.6   Control module functions

The Nebula control module is fundamental to the operation of the routing system. It is a microprocessor-based module with non-volatile memory (NVRAM). The system code is contained in flash memory, allowing rapid boot-up and easy code upgrades. The NVRAM holds a record of the system crosspoint settings (known as the 'tally table'), ensuring that the router status is maintained following power interruptions or signal card removal. It also holds an exact record of the router hardware, known as the 'configuration', which allows the control card to check that all components are present following a reset or power down.

Finally, the system database is also held in this memory.

The control module connects to all router crosspoint cards using a parallel control bus, this is used to detect card presence and for setting crosspoints.

All external communication is passed through the control module, whether it is for remote control of the router, or for the connection of control panels and Under Monitor Displays. Finally, the control module detects reference signals, both audio and video, and determines at what point to make a crosspoint switch, in the absence of valid reference signals a 'crash' switch will be implemented.

The Nebula control module is fitted in the Master router frame in a system. In a multi-frame system, the control module must be in the frame to which the control panels, or external control system, are connected. The module has configuration switches which determine the operation of the system, details of these switches are given in a later section of this manual. At its upper limit, a Nebula controlled system may have 8 levels, each varying in size up to a maximum of 256x256. Such a configuration would require multiple router frames, one being designated the 'master', and containing the control module(s), the others being 'slave' frames, with no control module fitted.

1.7   Control Module configuration switches

These switches are basic to the operation of the control system, it is therefore important that reference is made to the following table before the system is used:

1.7.1   2440 fitted with Version 1.XX (DOS editor only)

Switch	Function	Selection	
SW 2		UP	DOWN
1	MASTER/SLAVE SELECT	SLAVE	MASTER
2	µP CLOCK SELECT	10 MHz	20 MHz
3	SYSTEM RUN MODE	NORMAL	TEST
4	RS232 PORT SELECT	EDITOR	REMOTE
5	DEFAULT TRIGGER SELECT	625	525
6	RE-CONFIGURE	MANUAL	AUTO
7	DATABASE TYPE	FIXED	CONFIGURE
8	CONTROL MODE	GENERAL	PANELS

Note: For 2440s fitted with a 'slider' type switch, DOWN is ON

1.7.2   2440 fitted with Version 2.XX (Windows editor)

Switch	Function	Selection	
SW 2		OFF	ON
1	MASTER/SLAVE SELECT	SLAVE	MASTER
2	µP CLOCK SELECT	10 MHz	20 MHz
3	SYSTEM RUN MODE	NORMAL	TEST
4	RS232 PORT BAUD RATE	9600	38400
5	DEFAULT TRIGGER SELECT	625	525
6	RE-CONFIGURE	MANUAL	AUTO
7	DATABASE TYPE	FIXED	CONFIGURE
8	CONTROL MODE	GENERAL	PANELS

Note: For 2440s fitted with a 'piano' type switch, ON is DOWN

1.7.3 2442 and 2443 all versions

Switch	Function	Selection	
SW 2		OFF	ON
1	MASTER/SLAVE SELECT	SLAVE	MASTER
2	µP CLOCK SELECT	10 MHz	20 MHz
3	SYSTEM RUN MODE	NORMAL	TEST
4	RS232 PORT BAUD RATE	9600	38400
5	DEFAULT TRIGGER SELECT	625	525
6	RE-CONFIGURE	MANUAL	AUTO
7	DATABASE TYPE	FIXED	CONFIGURE
8	CONTROL MODE	GENERAL	PANELS

1.8 Switch descriptions

The following is a detailed description of the switch setting modes of operation for all control module types. Users must note that there is no 'default' switch setting since there are several distinctly different modes of operation which must be determined by the user:

1.8.1 Master/Slave select

Used in dual control situations, to assign Master/Slave status to the control modules. One module must be set to MASTER and the other to SLAVE so that on reset or power up the Master module powers up first and, hence, always becomes the active controller.

1.8.2 µP Clock Select

Used to select between 10 MHz or 20MHz microprocessor clock frequency, the lower rate is only used for debugging purposes.

1.8.3 System Run Mode

Determines which mode of operation the Freeway powers up in (i.e. NORMAL or TEST). NORMAL is the standard mode of operation. TEST selects a special test mode where various features of the hardware can be tested by Pro-Bel.

1.8.4 RS232 port BAUD rate select

The RS232 port on the rear of the Freeway frame is used by the database editor which runs on a PC using it's COM port, or by an external control system using General Remote protocol (SW-P-08). If the Windows based editor is being used it will automatically detect the BAUD rate configured, and therefore this rate only needs changing to 9600 BAUD if the PC being used has difficulty communicating at 38400 BAUD.

1.8.5 RS232 port select

This mode requires selection when pre Version 2 builds of the 2440 control module are in use. 'EDITOR' allows the connection of a DOS based database editor, and 'REMOTE' configures the port to communicate using General Remote or General Switcher Protocol, for connection to an external control system.

1.8.6 Default trigger select

Used to select between a 625 or 525 line reference signal for all source switching when the fixed database is in use. If the reference is not detected by the module, 'crash' switching will occur.

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1.8.7   Reconfigure

Selects between AUTOmatic reconfigure of cards in the system on power-up or reset and MANUAL , in which the system configuration is compared to that held in non-volatile memory. It is recommended that during initial configuration the switch be set to AUTO, and when the final desired configuration is achieved, the switch changed to MANUAL. In this way the control module will always look for the intended system card configuration, and if cards or slave systems appear after the initial power-up, they will not be de-configured from the system.

1.8.8   Database Type

Selects whether to use the fixed, non-editable database or the editable one.

1.8.9   Control mode

Is used in conjunction with the 'database type' switch to select which protocol the serial control ports will use. 'GENERAL' configures both RS485 ports to support General Switcher protocol (SW-P-02) for connection to an external control system. 'PANELS' configures both RS485 Remote ports to support Multi-drop Comms protocol (SW-P-06) for connecting to control panels and under monitor displays.

1.8.10   View of the 2440 fitted with 'piano' type DIL switch

These are normally fitted with pre V2.08 software.

Switch 2 viewed from front
up is OFF
down is ON

Reset button

Switch 2
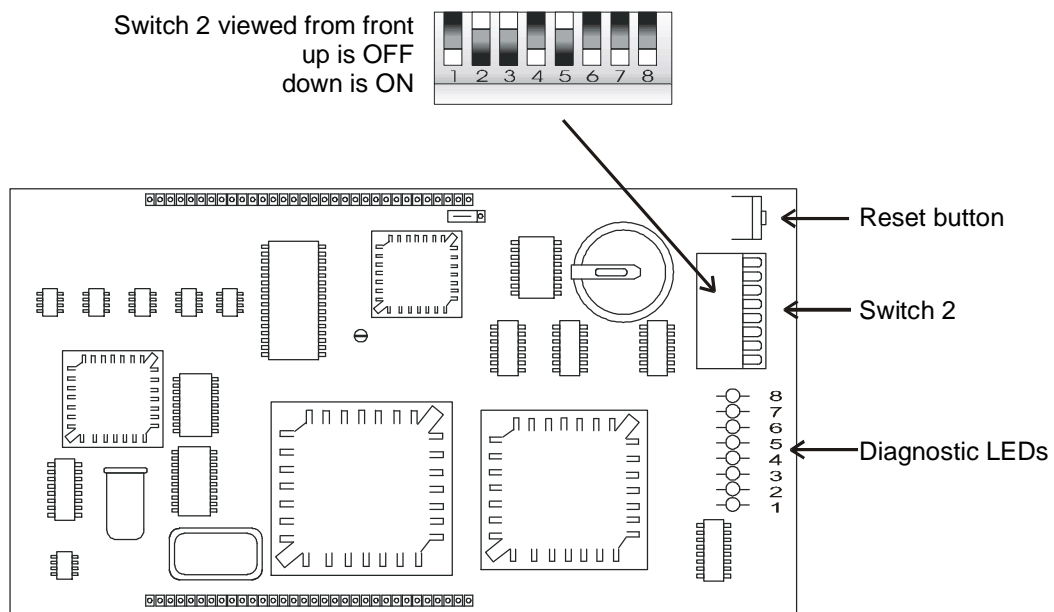
Diagnostic LEDs

1.8.11   View of the 2440 module fitted with a 'slider' switch

These are normally fitted with V2.08 software onwards.

Switch 2 viewed from top

Reset button

Switch 2
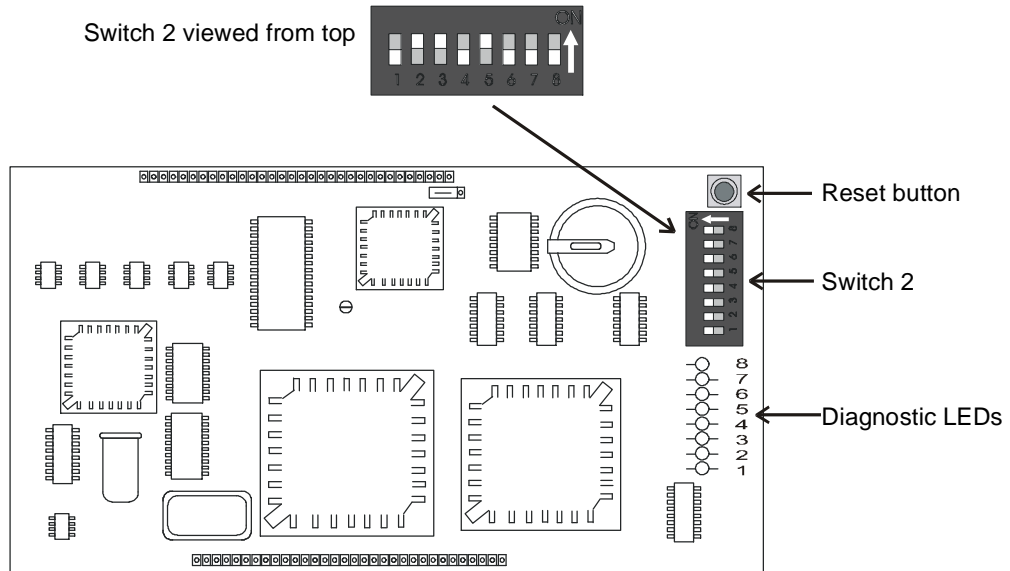
Diagnostic LEDs

1.8.12 View of the 2442/3 module

Config Switch viewed from top

TEST/NORMAL
Sw1

Reset button

Config Switch
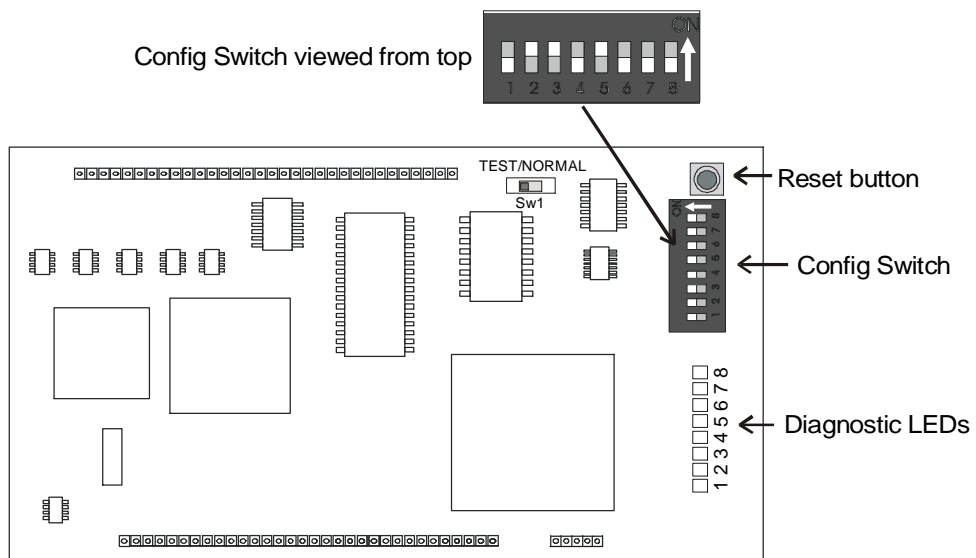
Diagnostic LEDs

Ensure SW1 is always set to NORMAL.

1.9   2440 Diagnostic LEDS

The 8 yellow diagnostic LEDS on the 2440/1, all versions, have the following definitions:

LED	Function
1	POWER ON
2	RESET
3	CONTROL CARD ACTIVE
4	Flashing at 2Hz - ACTIVE CONTROLLER
5	CROSSPOINT SET - FLASHES WHEN SET
6	NO HANDSHAKE FROM A MODULE
7	525 REFERENCE INPUT DETECTED
8	625 REFERENCE INPUT DETECTED
4,8	4 on & 8 flashing: R/W error with RAM
4,7	4 on & 7 flashing: Checksum error in EPROM

1.10   2442/3 Diagnostic LEDs

The 8 yellow diagnostic LEDS on the 2442 have the following definitions:

LED	Function
1	POWER ON
2	RESET
3	CONTROL CARD ACTIVE
4	Flashing at 2Hz - ACTIVE CONTROLLER
5	CROSSPOINT SET - FLASHES WHEN SET
6	NO HANDSHAKE FROM A MODULE
7	525 REFERENCE INPUT DETECTED
8	625 REFERENCE INPUT DETECTED
4,8	4 on & 8 flashing: R/W error with RAM
4,7	4 on & 7 flashing: Checksum error in EPROM
6	Flashing: corrupt database
7	Flashing: FRAM read/write error
8	Flashing: serial flash memory read/write error
6,7,8	On together: writing to serial flash
7,8	On together: HD reference detected

1.11 Using the reset button

Resetting the control module will cause the processor to re-boot, a process that takes only a few seconds, it will NOT lose the system database or change any crosspoint settings. If switch 2_6 on the card is set to 'AUTO', a reset will also force the control module to interrogate all the cards in the frame and update it's configuration information. It is therefore important to perform a reset whenever the system size has been increased or decreased, and then set switch 2_6 to MANUAL, to avoid over-writing this configuration should the system be partially powered on a reset.

1.12 Control port details

Freeways, Axis, Sirius and Halo all have three serial ports available on the rear connector panel as follows:

- 2 x RS485 ports
- 1 x RS232 Editor port for connecting directly to a PC COM port

Sirius has a third RS485 port available for a customer defined control protocol, but this can only be used as an alternative to RS485 port number 2. See the Sirius user guide for details.

When using the Fixed Database (as selected by control module switch 2_7), the RS485 ports must then be configured using control module switch 2_8. See the previous section for these details. When using an editable database, the user must select from one of four protocols for each of these ports, as follows:

- General Switcher Protocol (SW-P-02)
- Multi-drop Communications Protocol (SW-P-06)
- General Remote Control Protocol (SW-P-08), available on Freeway RS232 port in V2.XX with fixed database
- Simple Switcher Protocol (SW-P-03), not available with fixed database

1.13 Control protocol descriptions

1.13.1 Pro-Bel General Switcher Protocol (SW-P-02)

Pro-Bel General Switcher Communication Protocol is the preferred method of controlling Pro-Bel routers. It uses numbers in the range 0 to 1023 to set, acknowledge and poll crosspoints via a single 2440/1/2 control module. Master router ports must be configured for this protocol if the router is to be control by an Aurora control system. If the system is a

multi-level router, and configured as such in it's database, all levels may be controlled using a destination offset appropriate to its level type in the Nebula database settings. For example:

Aurora	Nebula
Port to Matrix Assignments	**Database settings**
Level 1:	Level 1: type Freeway 32/64
source offset 0	64 sources
destination offset 0	64 destinations
Level 2:	Level 2: type Freeway/Sirius 128
source offset 0	128 sources
destination offset 64	128 destinations
Level 3:	Level 3: type Freeway/Sirius 128
source offset 0	128 sources
destination offset 192	128 destinations

General switcher protocol

In summary, in order for Aurora (or any system using General Switcher protocol) to control a multi-level Nebula system, the user must have knowledge of the local database in use, only then can the router control module direct the correct the data to the correct crosspoints.

The normal electrical parameters for this port are:

- RS485 on a 9 pin D type socket configured as 'device'
- 8 bit data
- 1 stop bit
- EVEN parity
- 38.4K baud

Although labeled 'RS485', this port is actually software configured to be point to point, as with RS422, when using this protocol.

The full specification for this protocol is available from our website (www.pro-bel.com/support).

1.13.2 Pro-Bel General Remote Control Protocol (SW-P-08)

This protocol has been developed to provide a common method of interfacing Pro-Bel router control systems to a variety of standard and custom applications. An example of the use of this protocol would be the interfacing of the Freeway system to an Aurora Soft Panel control system, or to a TSL Under Monitor Display system. General Remote protocol allows the controlling system to access and control all system parameters, using the database configured names, as well as level, source and destination numbers, although not all commands are implemented on the Freeway controller. See SW-P-08 protocol document for full details of commands supported by Freeway.

The full specification for this protocol is available from Pro-Bel.

1.13.3 Pro-Bel Multi-Drop Communications Protocol (SW-P-06)

This protocol is designed to communicate between a Pro-Bel router control system and router control panels and Under Monitor Displays. Up to sixteen 'devices' may be 'daisy-chained' onto one multi-drop control port, each device requires a unique address, identified using an address switch. The control system database must hold configuration data for all devices.

The full specification for this protocol is available from Pro-Bel.

1.13.4 Pro-Bel Simple Switcher Protocol (SW-P-03)

Similar to General Switcher Protocol but with reduced capability, such as only being able to address 128 sources and destinations. It has the advantage of being able to set more crosspoints per video frame than General Switcher. The port may also be configured for baud rates up 230kbaud.

1.14 Fixed and configurable databases

Any router control system requires a 'database' of configuration details, such as the number of logical levels, signal types and control panel functions. For ease of use, the Nebula control module has a 'fixed' control database embedded in it's program code, which the user may choose to activate, enabling a basic system to be controlled 'out-of-the-box', either locally or remotely. For full flexibility, a 'configurable' database may alternatively be selected, allowing a pre-configured, or user-configured system to be controlled. The fixed or configurable database is selected using a switch on the Nebula control card. All control card switches are described in Section 1.7.

Section 2 of this guide describes how the configurable database can be edited using the Pro-Bel Nebula Editor software.

Not all Pro-Bel router types have the fixed database available to them. Axis and Halo are small routers with limited functionality, and so these are shipped with a pre-configured database more suited to small systems. Halo is a sealed unit and the fixed database cannot be selected; if the pre-configured database is not suitable, the user must edit, or download a different configuration. Axis is similar, except that the unit is not sealed, and hence the user may select the fixed database if it is appropriate.

There are three different fixed databases in existence, because the maximum system dimensions have increased during the lifetime of the product. Therefore, the fixed database configuration will depend on which software is loaded into the Nebula control card. The following Sections describe the exact configuration of the three fixed databases.

1.15 Fixed database configuration V2.07

This database is included in all Nebula software versions up to V2.07 on the 2440 control module. It was designed when Freeway systems never exceeded 64x64 in size, and therefore has limitations when Freeway 128 or Sirius routers are included in the configuration. The user may update the fixed database by upgrading the software as described in Section 1.4.

The user must note that when the fixed database is selected, they must also select the trigger method using switch 2_5 on the 2441 module, and also the mode of the serial ports using switch 2_8. See Section 1.7 fro full details.

Parameter	Setting
Level Types	8 levels, all 64x64 in size, all levels Freeway 64 Normal levels
8 Character Source Names	'SRC 1' - 'SRC 64'
8 Character Dest Asc. Names	'DEST 1' - 'DEST 64'
Route Inhibits	None
Salvos	None
Source Associations	1 to 64 are 1 to 1, 64 to 192 not configured
Destination Associations	1 to 64 are 1 to 1, 65 to 192 not configured
Controllable Destinations	All dests controllable for every panel position
Trigger Method per source	All set to 625 if sw2_5 on 2441 up, 525 if sw2_5 down
Source Audio Parameters	All set to normal stereo operation
Destination Audio parameters	All set to normal stereo operation

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If RS485 port 1 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 1						
Panel address	Panel Name	Device	Dests	Source	Overrides	Levels/ Brightness
1	PNL 1-1	6276XY	All	All	None	All/6
2	PNL 1-2	6276XY	All	All	None	All/6
3	PNL 1-3	6276XY	ALL	All	None	All/6
4	PNL 1-4	6277-8	1-8, 33-40	All	None	All/6
5	PNL 1-5	6277-8	9-16, 41-48	All	None	All/6
6	PNL 1-6	6277-8	17-24, 49-56	All	None	All/6
7	PNL 1-7	6277-8	25-32, 57-64	All	None	All/6
8	PNL 1-8	6285	1	1-32	1 to 8	All
9	PNL 1-9	6285	1	33-64	1 to 8	All
10	PNL 1-10	6285	2	1-32	1 to 8	All
11	PNL 1-11	6285	2	33-64	1 to 8	All
12	PNL 1-12	6285	3	1-32	1 to 8	All
13	PNL 1-13	6285	3	33-64	1 to 8	All
14	PNL 1-14	6285	4	1-32	1 to 8	All
15	PNL 1-15	6285	4	33-64	1 to 8	All
16	PNL 1-16	6285	1-32	1-32	None	All

If RS485 port 2 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 2						
Panel address	Panel Name	Device	Dests	Source	Overrides	Levels/ Brightness
1	PNL 2-1	6276XY	All	All	None	All/6
2	PNL 2-2	6276XY	All	All	None	All/6
3	PNL 2-3	6276XY	ALL	All	None	All/6
4	PNL 2-4	6277-8	1-8, 33-40	All	None	All/6
5	PNL 2-5	6277-8	9-16, 41-48	All	None	All/6
6	PNL 2-6	6277-8	17-24, 49-56	All	None	All/6
7	PNL 2-7	6277-8	25-32, 57-64	All	None	All/6
8	PNL 2-8	6285	5	1-32	1 to 8	All
9	PNL 2-9	6285	5	33-64	1 to 8	All
10	PNL 2-10	6285	6	1-32	1 to 8	All
11	PNL 2-11	6285	6	33-64	1 to 8	All
12	PNL 2-12	6285	7	1-32	1 to 8	All
13	PNL 2-13	6285	7	33-64	1 to 8	All
14	PNL 2-14	6285	8	1-32	1 to 8	All
15	PNL 2-15	6285	8	33-64	1 to 8	All
16	PNL 2-16	Master 6276XY	All	All	None	All/6

The default dial-up keypad layout for the 6276 panel is as follows:

Protect						7	8	9
Line-up						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

The default dial-up keypad layout for the 6277 panel is as follows:

Protect				7	8	9
Line-up				4	5	6
Alt dest	UP			1	2	3
Dest ident	DOWN			SRC	0	CLEAR

For a description of the button types and functions, refer to Section 2.9.4

1.16 Fixed database configuration V2.08

This database is included in all Nebula software versions from V2.08 onwards using the 2440 or 2441 control module. It was designed to accommodate the Sirius 128x128 router size, but also had the number of levels reduced to reflect the most common system configurations. The database may be used for any system whose parameters lie within these dimensions.

The user must note that when the fixed database is selected, they must also select the trigger method using switch 2_5 on the 2441 module, and also the mode of the serial ports using switch 2_8. See Section 1.7 fro full details.

Parameter	Setting
Level Types	4 levels, all 128x128 in size, all levels Sirius/Freeway 128 Normal levels
8 Character Source Names	'SRC 1' - 'SRC 128'
8 Character Dest Asc. Names	'DEST 1' - 'DEST 128'
Route Inhibits	None
Salvos	None
Source Associations	1 to128 = 1 to 1, 129 to 192 = none
Destination Associations	1 to 128 = 1 to 1, 129 to 192 = none
Controllable Destinations	All dests controllable for every panel position
Trigger Method per source	All set to 625 if sw2_5 on 2441 up, 525 if sw2_5 down
Source Audio Parameters	All set to normal crosspoint selection
Destination Audio parameters	All set to normal crosspoint selection

If RS485 port 1 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 1						
Panel address	Panel Name	Panel type	Destinations	Sources	Overrides	Levels/ Brightness
1	PNL 1-1	6276-XY	All	All	None	All/6
2	PNL 1-2	6276-XY	All	All	None	All/6
3	PNL 1-3	6276-XY	ALL	All	None	All/6
4	PNL 1-4	6277-8	1-8, 65-72	All	None	All/6
5	PNL 1-5	6277-8	9-16, 73-80	All	None	All/6
6	PNL 1-6	6277-8	17-24, 81-88	All	None	All/6
7	PNL 1-7	6277-8	25-32, 89-96	All	None	All/6
8	PNL 1-8	6277-8	33-40, 97-104	All	None	All/6
9	PNL 1-9	6277-8	41-48, 105-112	All	None	All/6
10	PNL 1-10	6277-8	49-56, 113-120	All	None	All/6
11	PNL 1-11	6277-8	57-64, 121-128	All	None	All/6
12	PNL 1-12	6705	1	1-32	1 to 8	All
13	PNL 1-13	6705	1	33-64	1 to 8	All
14	PNL 1-14	6705	1	65-96	1 to 8	All
15	PNL 1-15	6705	1	97-128	1 to 8	All
16	PNL 1-16	6705	1-16	1-16	None	All

If RS485 port 2 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 2						
Panel address	Panel Name	Panel type	Destinations	Sources	Overrides	Levels/ Brightness
1	PNL 2-1	6276-XY	All	All	None	All/6
2	PNL 2-2	6276-XY	All	All	None	All/6
3	PNL 2-3	6276-XY	ALL	All	None	All/6
4	PNL 2-4	6277-8	1-8, 65-72	All	None	All/6
5	PNL 2-5	6277-8	9-16, 73-80	All	None	All/6
6	PNL 2-6	6277-8	17-24, 81-88	All	None	All/6
7	PNL 2-7	6277-8	25-32, 89-96	All	None	All/6
8	PNL 2-8	6277-8	33-40, 97-104	All	None	All/6
9	PNL 2-9	6277-8	41-48, 105-112	All	None	All/6
10	PNL 2-10	6277-8	49-56, 113-120	All	None	All/6
11	PNL 2-11	6277-8	57-64, 121-128	All	None	All/6
12	PNL 2-12	6705	2	1-32	1 to 8	All
13	PNL 2-13	6705	2	33-64	1 to 8	All
14	PNL 2-14	6705	2	65-96	1 to 8	All
15	PNL 2-15	6705	2	97-128	1 to 8	All
16	PNL 2-16	Master 6276-XY	All	All	None	All/6

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The default dial-up keypad layout for the 6276 panel is as follows:

Protect						7	8	9
Line-up						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

The default dial-up keypad layout for the 6277 panel is as follows:

Protect				7	8	9
Line-up				4	5	6
Alt dest	UP			1	2	3
Dest ident	DOWN			SRC	0	CLEAR

For a description of the button types and functions, refer to Section 2.9.4.

1.17 Current fixed database configuration

This database is included in the current Nebula software on the 2442and 2443 control module. It is designed to accommodate the new Sirius 256x256 router size and may be used for any system whose parameters lie within its dimensions.

The user must note that when the fixed database is selected, they must also select the trigger method using switch 2_5 on the module, and also the mode of the serial ports using switch 2_8. See Section 1.7 fro full details.

Parameter	Setting
Level Types	2 levels, 256x256, type Sirius 256 Normal
	2 levels, 128x128, type Sirius/Freeway 128 Normal
8 Character Source Names	'SRC 1' - 'SRC 256'
8 Character Dest Asc. Names	'DEST 1' - 'DEST 256'
Route Inhibits	None
Salvos	None
Source Associations	1 to 256 = 1 to 1, 257 to 384 = none
Destination Associations	1 to 256 = 1 to 1, 257 to 384 = none
Controllable Destinations	All dests controllable for every panel position
Trigger Method per source	All set to 625 if sw2_5 on 2442 OFF, 525 if sw2_5 ON
Source Audio Parameters	All set to normal crosspoint selection
Destination Audio parameters	All set to normal crosspoint selection

If RS485 port 1 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 1						
Panel address	Panel Name	Panel type	Destinations	Sources	Overrides	Levels/ Brightness
1	PNL 1-1	6276-XY	All	All	None	All/6
2	PNL 1-2	6276-XY	All	All	None	All/6
3	PNL 1-3	6276-XY Mon (Sirius)	Can switch any source or destination to the monitoring output of a Sirius router		None	All/6
4	PNL 1-4	6277-8	1-8, 65-72	All	None	All/6
5	PNL 1-5	6277-8	9-16, 73-80	All	None	All/6
6	PNL 1-6	6277-8	17-24, 81-88	All	None	All/6
7	PNL 1-7	6277-8	25-32, 89-96	All	None	All/6
8	PNL 1-8	6277-8	33-40, 97-104	All	None	All/6
9	PNL 1-9	6277-8	41-48, 105-112	All	None	All/6
10	PNL 1-10	6277-8	49-56, 113-120	All	None	All/6
11	PNL 1-11	6277-8	57-64, 121-128	All	None	All/6
12	PNL 1-12	6705	1	1-32	1 to 8	All
13	PNL 1-13	6705	1	33-64	1 to 8	All
14	PNL 1-14	6705	1	65-96	1 to 8	All
15	PNL 1-15	6705	1	97-128	1 to 8	All
16	PNL 1-16	6705	1-16	1-16	None	All

If RS485 port 2 is selected to Multi-drop communications protocol, the panel settings are as follows:

Panel Port 2						
Panel address	Panel Name	Panel type	Destinations	Sources	Overrides	Levels/ Brightness
1	PNL 2-1	6276-XY	All	All	None	All/6
2	PNL 2-2	6276-XY	All	All	None	All/6
3	PNL 2-3	6276-XY	ALL	All	None	All/6
4	PNL 2-4	6277-8	1-8, 65-72	All	None	All/6
5	PNL 2-5	6277-8	9-16, 73-80	All	None	All/6
6	PNL 2-6	6277-8	17-24, 81-88	All	None	All/6
7	PNL 2-7	6277-8	25-32, 89-96	All	None	All/6
8	PNL 2-8	6277-8	33-40, 97-104	All	None	All/6
9	PNL 2-9	6277-8	41-48, 105-112	All	None	All/6
10	PNL 2-10	6277-8	49-56, 113-120	All	None	All/6
11	PNL 2-11	6277-8	57-64, 121-128	All	None	All/6
12	PNL 2-12	6705	2	1-32	1 to 8	All
13	PNL 2-13	6705	2	33-64	1 to 8	All
14	PNL 2-14	6705	2	65-96	1 to 8	All
15	PNL 2-15	6705	2	97-128	1 to 8	All
16	PNL 2-16	Master 6276-XY	All	All	None	All/6

The default dial-up keypad layout for the 6276 panel, for both XY operation and Input and Output Monitoring, is as follows:

Protect						7	8	9
Line-up						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

The default dial-up keypad layout for the 6277 panel is as follows:

Protect				7	8	9
Line-up				4	5	6
Alt dest	UP			1	2	3
Dest ident	DOWN			SRC	0	CLEAR

For a description of the button types and functions, refer to Section 2.9.4.

1.18 Limitations of the fixed database

The user may select the fixed database for any system whose dimensions lie within the parameters defined in the last three sections. Users with smaller systems will find they have full functionality of their system, with the disadvantage that more levels and destinations will be displayed on their control panels than they actually have control of. Also, both control ports must be of the same type, General Switcher or Multi-drop.

The fixed database does not allow control of the more advanced features of the Sirius and Freeway routing systems, such as mixed frame rate switching, audio parameters, route inhibits and salvoes. To access such features a customised database must be edited and loaded from the Pro-Bel Nebula Editor, see Section 2 of this guide.

1.19 The Axis pre-configured database

All Axis master routers are supplied with the Nebula control module selected for 'configurable' database, with the following database loaded. This database is also included with the Pro-Bel Nebula Editor software, so that the user may edit it 'off-line' if necessary.

Parameter	Setting
Level Types	4 levels, all 16x16 in size, all levels Freeway 32/64 Normal levels
8 Character Source Names	'SRC 1' - 'SRC 16'
8 Character Dest Asc. Names	'DEST 1' - 'DEST 16'
Route Inhibits	None
Salvos	None
Source Associations	1 to16 are 1 to 1, 17 to 192 not configured
Destination Associations	1 to 16 are 1 to 1, 17 to 192 not configured
Controllable Destinations	All dests controllable for every panel position
Trigger Method per source	Set to 525 in order to auto-detect video reference
Source Audio Parameters	All set to normal crosspoint selection
Destination Audio parameters	All set to normal crosspoint selection

RS485 port 1 is configured for Multi-drop communications protocol, with the following panel settings:

Panel address	Panel Name	Panel type	Destinations	Sources
1	Panel 1		1	1-16
2	Panel 2		2	1-16
3	Panel 3		3	1-16
4	Panel 4		4	1-16
5	Panel 5		5	1-16
6	Panel 6		6	1-16
7	Panel 7	6709 16 button panel, in BPX mode, controlling all levels, with no overrides	7	1-16
8	Panel 8		8	1-16
9	Panel 9		9	1-16
10	Panel 10		10	1-16
11	Panel 11		11	1-16
12	Panel 12		12	1-16
13	Panel 13		13	1-16
14	Panel 14		14	1-16
15	Panel 15		15	1-16
16	Panel 16	6707 32 button panel, in XY mode, fitted to front of master router.	1-16	1-16

RS485 port 2 is configured as a General Switcher protocol.

1.20 The Halo pre-configured database

All Halo master routers are supplied with the Nebula control module selected for 'configurable' database, with the following database loaded. This database is also included with the Pro-Bel Nebula Editor software, so that the user may edit it 'off-line' if necessary.

Parameter	Setting
Level Types	4 levels, all 32x32 in size, all levels Freeway 32/64 Normal levels
8 Character Source Names	'SRC 1' - 'SRC 32'
8 Character Dest Asc. Names	'DEST 1' - 'DEST 32'
Route Inhibits	None
Salvos	None
Source Associations	1 to32 are 1 to 1, 32 to 192 not configured
Destination Associations	1 to 32 are 1 to 1, 32 to 192 not configured
Controllable Destinations	All dests controllable for every panel position
Trigger Method per source	Set to 525 in order to auto-detect video reference
Source Audio Parameters	All set to normal crosspoint selection
Destination Audio parameters	All set to normal crosspoint selection

Control port 1 is configured as a multi-drop port with control panels configured as follows:

Control Port 1 – Multi-drop						
Panel address	Panel Name	Panel type	Destinations	Sources	Overrides	Levels/ Brightness
1	PNL 1-1	6276-XY	All	All	None	All/6
2	PNL 1-2	6276-XY	All	All	None	All/6
3	PNL 1-3	6276-XY	ALL	All	None	All/6
4	PNL 1-4	6277-8	1-8	All	None	All/6
5	PNL 1-5	6277-8	9-16	All	None	All/6
6	PNL 1-6	6277-8	17-24	All	None	All/6
7	PNL 1-7	6277-8	25-32	All	None	All/6
8	PNL 1-8	6705	1	1-32	1 to 8	All
9	PNL 1-9	6705	2	1-32	1 to 8	All
10	PNL 1-10	6705	3	1-32	1 to 8	All
11	PNL 1-11	6705	4	1-32	1 to 8	All
12	PNL 1-12	6705	5	1-32	1 to 8	All
13	PNL 1-13	6705	6	1-32	1 to 8	All
14	PNL 1-14	6705	7	1-32	1 to 8	All
15	PNL 1-15	6705	8	1-32	1 to 8	All
16	PNL 1-16	6705	1-16	1-16	None	All

RS485 port 2 is configured as a General Switcher protocol.

The default dial-up keypad layout for the 6276 panel is as follows:

Protect						7	8	9
Line-up						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

The default dial-up keypad layout for the 6277 panel is as follows:

Protect				7	8	9
Line-up				4	5	6
	UP			1	2	3
Dest ident	DOWN			SRC	0	CLEAR

1.21 The TX320 pre-configured databases

There are two versions of this pre-configured database, one for a PAL mixer system, and one for an NTSC system. Both are simple configurations, having two levels of 24x24 routing, one to one associations and default source and destination names. No panels are configured and both control ports are set for General Switcher protocol. The difference between the two databases is that the source trigger parameters are fixed as either 525 or 625 line reference.

These databases are designed to be used by the local router system in a Pro-Bel TX series Master Control switcher. This routing system uses modified Freeway cards, each card is populated with 24x12 crosspoints, and hence two cards are required for a maximum 24x24

router on each level. A single Nebula 2440 control module is required, where control port 1 is directly connected to the mixer control frame. This database may be modified to include control panels on control port 2, in order that spare outputs on the routing system may be used, or for the configuration of an emergency bus-cut panel.

2   Editing the configurable database

The configurable database is edited using either the Pro-Bel 'Router Editor' (2440 and 2441 control cards), or the 'Nebula Editor' (2442 and 2443 control cards). Databases created using the Router Editor (or the earlier 'Freeway Editor) can be converted for use with the Nebula Editor. However, not all the features available in the editor will be available on all router types.

The new Nebula Editor V1.00 cannot be used to communicate with earlier Freeway or Axis controllers. Communication with earlier versions of Freeway or Axis control modules must use Freeway Editor V1.xx. These earlier versions can be identified by the revision number or the embedded software on the 2440 control module, IC3 – SP297-X.

Check the following table for compatibility of controller and editor versions:

Router type	Controller software location	Controller software revision	Editor
Freeway and Axis	2440 controller, IC3	SP297-9 or lower	Old Editor V1.xx
Freeway and Axis	2440 controller, IC3	SP297-10 or above	Router Editor V2.00 or above
Sirius	2430 controller, 2441 sub-module, IC3	SP297-9 or below	**Will not function**
Sirius	2430 controller, 2441 sub-module, IC3	SP297-10 or above	Router Editor V2.00 or above
Halo	2441 controller	SP297-10 or above	
Sirius, Freeway, Axis and Halo	2440/1	SP297-11	
Sirius, Freeway, Axis and Halo	2442/3 controller	SP407-1	Nebula Editor

To transfer a database from an old Freeway or Axis to a Sirius or Halo, use a Freeway Editor V1.xx to upload the database from the Freeway or Axis. Save it to the PC. Then use

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Router Editor V2.00 or above to download it to the Sirius or Halo (or later version of Freeway controller).

This section describes installation of the editor and the options available when configuring the database. The user should note that a help file is also available after the software has been installed, and is access by selecting Start\Programs\Router Editor\Help on the PC.

2.1 Installing the editor

2.1.1 PC requirements

The Pro-Bel Nebula editor has been designed to run on the Microsoft Windows NT4, 2000 or XP operating systems.

The editor and associated programs require around 3.2 Mbytes of hard drive space. Each saved database typically requires 1.3 Mbytes.

To use the editor 'On-Line', the PC must have an RS 232 port capable of operating at 38.4 Kbaud.

2.1.2 Installation

The editor is supplied either on a CD ROM, or as an e-mail attachment.
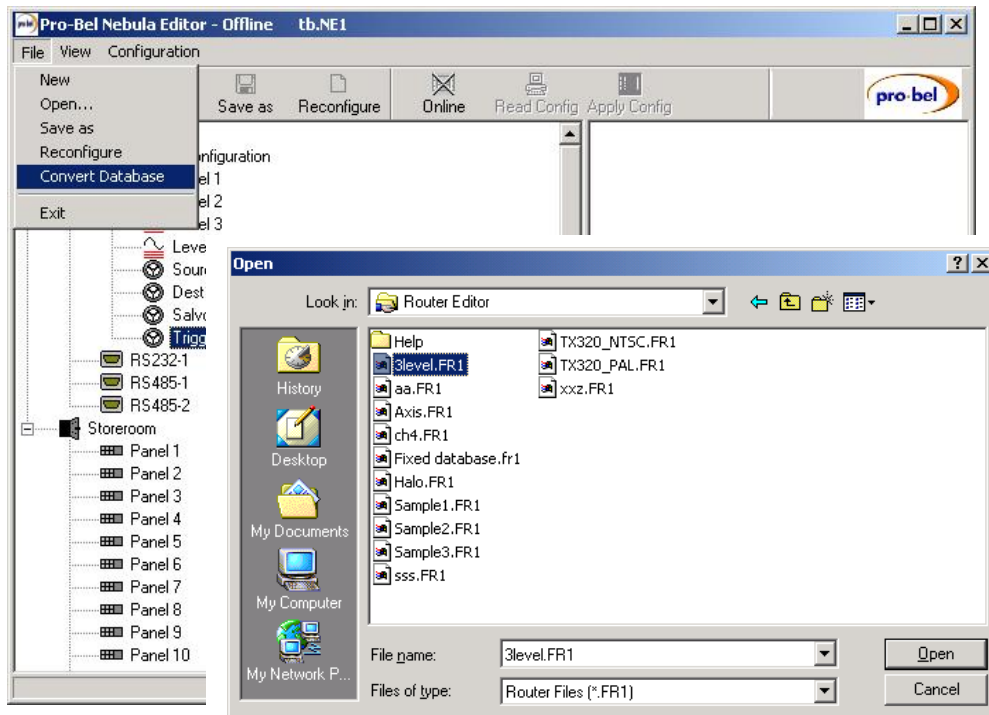
To install from CD;

Insert the CD ROM into the PC's CD drive and either:

Click 'Start', then select Run from the start menu, then type D:Setup (where D id the drive letter for the CD ROM drive) and click OK, or

Run Explorer, view the contents of the CD ROM and select Setup.exe and follow the instructions on screen.

An HTML help file is provided with the editor package and is installed at the same time as the editors. A shortcut to these files can be found in the Start menu under Nebula Editor in the Programs folder.

2

to a Nebula database (with a '.NE1' file extension).

s

bulsmenu, the user may run the Convert Database programme. A file browsing
screen will allow the user to locate the required Router Editor database file (identified by its
'.FR1' file extension), and convert it to a Nebula database (with a '.NE1' file extension).


From the File menu, the user may run the Convert Database programme. A file browsing
screen will allow the user to locate the required Router Editor database file (identified by its
'.FR1' file extension), and convert it to a Nebula database (with a '.NE1' file extension).

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2.2 Converting databases

From the File menu, the user may run the Convert Database programme. A file browsing
screen will allow the user to locate the required Router Editor database file (identified by its
'.FR1' file extension), and convert it to a Nebula database (with a '.NE1' file extension).

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2.2 Converting databases

From the File menu, the user may run the Convert Database programme. A file browsing screen will allow the user to locate the required Router Editor database file (identified by its '.FR1' file extension), and convert it to a Nebula database (with a '.NE1' file extension).

2.3 Using the editor on-line

'On-line' is the phrase used to describe the process of successfully connecting the PC running the editor, to a Master router system. This operation is essential if databases need to be 'uploaded' (transferred from the router to the PC) or 'downloaded' (transferred from the PC to the router). The Master router frame can only hold one editable database, and this is named 'Curr_sys.fr1, and this same database must exist in the on-line editor before any editing can be achieved.

To connect the PC to a router, use a 'pin to pin' cable with a 9 pin D type socket at one end and a 9 pin D type plug at the other. It is connected between the PC COM port, and the router RS232 'configure' port. If the user has more than one COM port on their PC, a selection will have to be made, as follows:
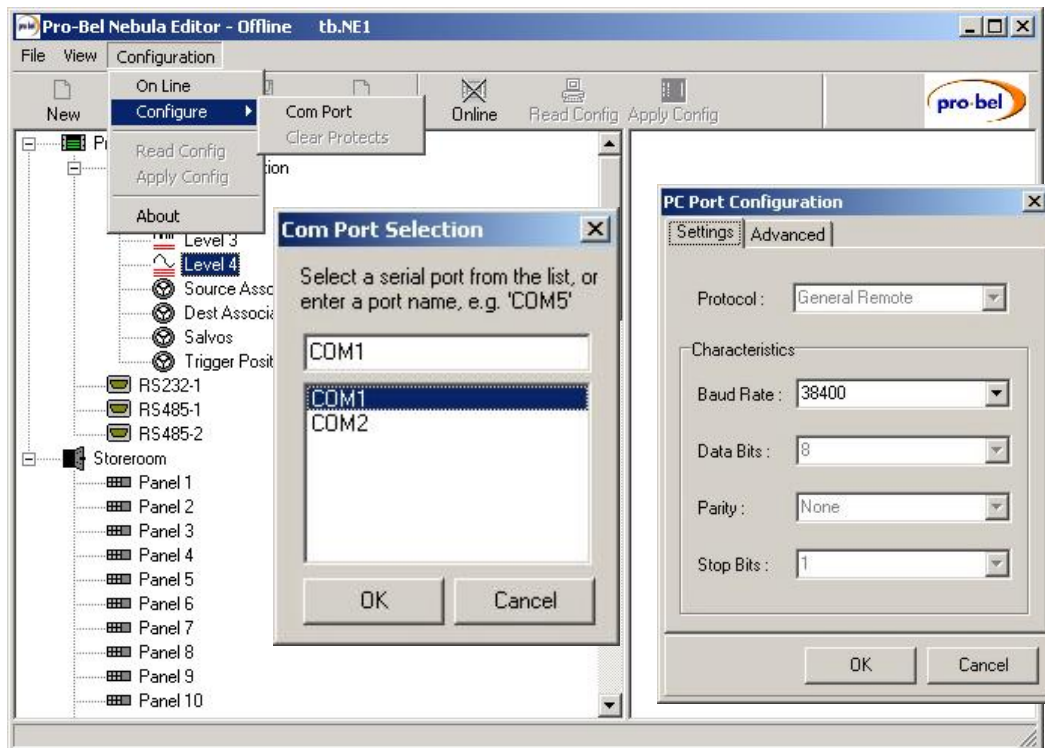
Select the Baud Rate to match switch setting 2_4 on the control module (see Section 1.7). The default setting is OFF for 38400 baud. ON sets the rate at 9600 (where UP=OFF and DOWN=ON).

Test the connection by loading a database into the editor (File\load database) and clicking on the 'On-line' icon. If the editor has been used on-line before, a Curr_sys.ne1 file will already exist, and this one may be loaded. A few seconds after clicking 'on-line' the editor status will either change to 'on-line', as indicated by the icon, or it will report that a database mismatch exists, the following is the recommended procedure:

- Perform an 'upload'

- Select file\save-as, and keep a backup of the curr_sys.ne1 file under another name

On-line editing may now be performed. All minor edits will be applied to the system when the 'Apply' or 'OK' button is clicked, major system changes will reset the control system, after a warning is given.

If the user requires a different database to be loaded in the system, proceed as follows:

- Take the editor 'off-line' by clicking on the 'on-line' icon

- Load the required database into the editor

- Click 'on-line', and wait for a database mismatch to be reported

- Select NO to an upload, and YES to a download

- Wait for the database to be fully downloaded

The user must note that at this stage, the editable database in the Nebula control system will be overwritten and lost.

2.4 Using the sample databases

Three 'sample' databases are available to the user and are included with the Pro-Bel Handbooks CD ROM. These may be loaded directly into the router system, if appropriate, or used as a reference when editing other databases. These databases have the following features:

2.4.1 Sample1.ne1

Describes a two level system with 128x128 SDV and 128x128 AES, with an input/output monitoring control panel on position 1 of RS485 port 1. This monitoring control panel will allow any two input or outputs on a Sirius routing system to be routed to the monitoring output, on up to two levels. All other settings are as for the V2.08 fixed database.

The button layout for the input/output monitoring panel is as follows:

						7	8	9
						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

2.4.2 Sample2.ne1

Describes a 4 level system with one 64x64 SDV primary level, two 64x64 AES levels and a 32 port Freeway RS422 level. The RS422 level is configured to be 'non-distributive', and the associations only allow the first 32 video sources to have a control connection. The RS422 ports appear in both the source and destination association tables, meaning that a single control port on the router may be configured as a 'device' or a 'controller' depending whether it is routed as a 'source' or 'destination', respectively. An example of this would be a VTR machine connecting to both the source and destination video and audio ports but with a single RS422 connection, it may then be a controlling machine (destination) or a controlled machine (source). The layout and operation of the XY panel is as the Sample1 configuration.

2.4.3 Sample3.ne1

Describes an 8 level system, each 16x16 in size. RS485 port 1 is configured for control panels as for Sample1.fr1, and RS485 port 2 is configured for General Switcher protocol, in order that Aurora may also control the system. All the levels are configured as type 'Freeway/Sirius 128', which means that if Aurora is being used to control this system, destination offsets of 128 must be applied between each level in the 'port to matrix assignments'.

Two salvoes are also included in the database:

- Salvo 1: Crosspoints are set diagonally on all levels (1 to 1, 2 to 2 etc.)

- Salvo 2: All destinations on all levels are set to source 1

These salvos are assigned to the keypad of all the XY panels as follows:

Protect	SALVO					7	8	9
Line-up						4	5	6
	UP					1	2	3
	DOWN					DEST SRC	0	CLEAR

To fire a salvo, select the source keypad (that is, toggle the source/destination button so that the preselect window is indicated), press 'SALVO' and the number required, press TAKE. Salvos may be disabled by editing the panel details in the editor.

2.5   Creating a new database

New databases must be created 'off-line'. After clicking on the 'New' icon, a configuration wizard will help the user design a database template. The user must decide on the number, type and size of levels in their system. Use the following rules when making these decisions:

- Databases cannot be made smaller after creation, so only configure the number and size of levels to be the maximum that your system will have

- Databases can always be made larger by using the 'Reconfigure' tool, which retains all data already entered, so system expansion is not a problem

The following sections describe all the database parameters available to the user during configuration of their database.

2.6 Selecting a level type

The following table shows the level types available in the editor, and notes on their use:

Nebula levels			
Signal type	**options**	**Level type**	**Notes on use**
SDV HDTV (Axis or Sirius)	Normal	Freeway32/64 Freeway/ Sirius128 Sirius256 TX series TM16	May be configured in Dual, Triple or Quad split mode, where the number of routes is reduced by a half, two thirds or three quarters, respectively. Dual output mode halves number of outputs, see next Section. TM series levels can only be slaved to other routers, but can still be a primary level.
	Dual split		
	Triple split		
	Quad split		
	Dual output		
Analogue video	As above	TM24	As above
AES	As above	TM32	As above, but also with optional audio parameters that may be enabled if level is Freeway (analog audio only) or Sirius. All sources may be fixed as normal, swapped, left to both or right to both and destinations as normal, swapped or mono summed. These parameters may also be dynamically configured from a 6277 or 6276 control panel.
Analogue audio	As above		
Mixed audio	As above	Freeway/ Sirius	As above. Allows Analogue and AES audio routing modules to be mixed on the same level.
Timecode	None	Freeway	Up to 128x128.
RS422	One to one or 'broadcast' routing*	Freeway	Up to 128x128 Freeway only. Auto or manual parking**

*RS422 routers are usually 'non-distributive', allowing only one to one routing, but they may also be configured to be distributive (or 'broadcast'), such that one 'controller' may connect to multiple 'devices'. See the Freeway user guide for full details of operation.

**When an RS422 router is in one to one routing mode, unused destinations must be 'parked' at the park source ('off' position) in order to free a source, this may be performed

automatically by the control system ('auto parking') or performed manually by the operator ('manual parking'). See the Freeway user guide for full details of operation.

2.7 Dual Output mode

This mode can be applied to any Freeway or Sirius, video or audio router, and will 'copy' the same source to two destinations, thereby halving the number of effective destinations, but simulating a dual-output router. Since this feature can be applied independently to any level in a system, including 'partitioned' levels, this provides a more flexible solution than the traditional hardware-configured dual output router. The following table shows how the dual-output routing is configured:

	Destination number															
Output1	1	2	3	4	5	6	7	8	17	18	19	20	21	22	23	24
Output2	9	10	11	12	13	14	15	16	25	26	27	28	29	30	31	32

	Destination number															
Output1	33	34	35	36	37	38	39	40	49	50	51	52	53	54	55	56
Output2	41	42	43	44	45	46	47	48	57	58	59	60	61	62	63	64

	Destination number															
Output1	65	66	67	68	69	70	71	72	81	82	83	84	85	86	87	88
Output2	73	74	75	76	77	78	79	80	89	90	91	92	93	94	95	96

|	Destination number															
Output1	97	98	99	100	101	102	103	104	113	114	115	116	117	118	119	120
Output2	105	106	107	108	109	110	111	112	121	122	123	124	125	126	127	128

The same sequence is repeated for a Sirius 256 level.

2.8   Configuring source names and associations

Source names. Every input, on each level within the configured system must have a unique name. Names can be up to 8 characters long, and may contain any alphanumeric characters or symbols. These will be the names displayed in the 6276 and 6277 panel types, and is an important reference for anyone editing the database. A new database is automatically populated with default source names, which must be left configured if not required by the user. Blank names cannot be used. Source names must match the exact signals that are connected to each input on each level.

In summary:

- Source names must be unique within their own level

- Source names cannot be blank

- Leave the default names on unused inputs

- Source names describe the signal connected to that input on that level
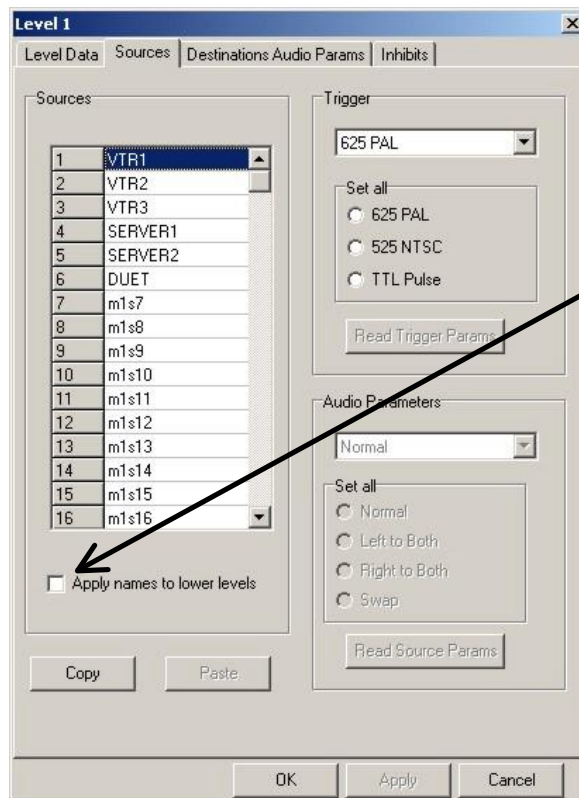
Edit source names in the level details window. If appropriate, tick the 'Apply names to lower levels' box. Note that it is often easier to tick this box, then edit the names as appropriate on the lower levels.

Source Associations.

A source association is a combination of input signals, across multiple levels that are required to be routed together. A typical example would be that the video, audio and control signals for a VTR usually need to be routed at the same time in order to simplify the system operation for a user. In a multi-level system, the user must define the source associations, at least for all the primary level inputs. The primary level is level 1, typically the video level. So, for a mult-level system with a 32 source primary level, there must be at least 32 source associations, and these are referred to as the 'standard associations'. The source names must be configured before the associations can be edited.

After the standard associations have been edited, the user may define some 'special associations'. These can consist of any sources on any levels to be associated together, including those that have no primary level source. A typical example of this would be an audio-only source, such as a DAT machine.

All source associations have an 'index number', which is the reference used when configuring control panels in the database.

Index number
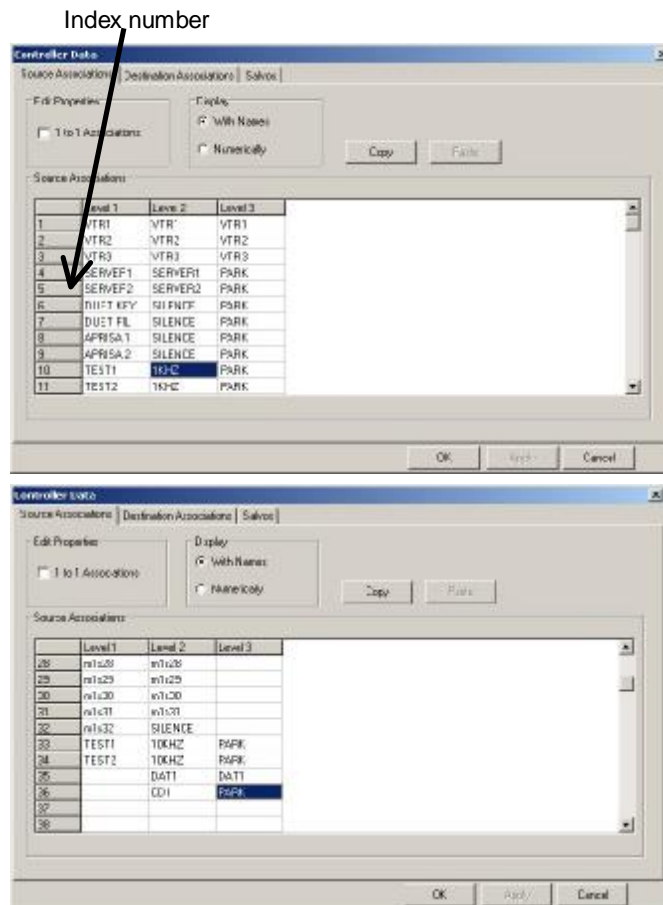
Some standard associations are shown here, which may be edited 'numerically' or 'with names'. Note that the names cannot be edited here.
This column cannot be edited in the standard associations.

Some special associations are shown here. The user is free to associate any source with any other source, including 'no source'

In summary:

- source associations are required for all multi-level systems

- the source names must be edited first

- the minimum number of associations equals the number of primary level sources

- these are known as 'standard associations'

- associations beyond the maximum primary level source number are 'special'

- special associations can combine any sources from any level

2.9   Selecting the trigger mode

In the source name configuration screen, each input may be assigned a trigger type from the drop-down menu, or a trigger type may assigned globally using the 'radio buttons'. If the level type is a Sirius, the HD reference may be used as a trigger.

For Axis and Halo routers the 525 reference should be selected.

NOTE: This is a multi standard input, which will accept either 625 or 525 and generate the correct switch point for either standard. Selecting 525 simply selects the correct physical input to the Nebula controller.
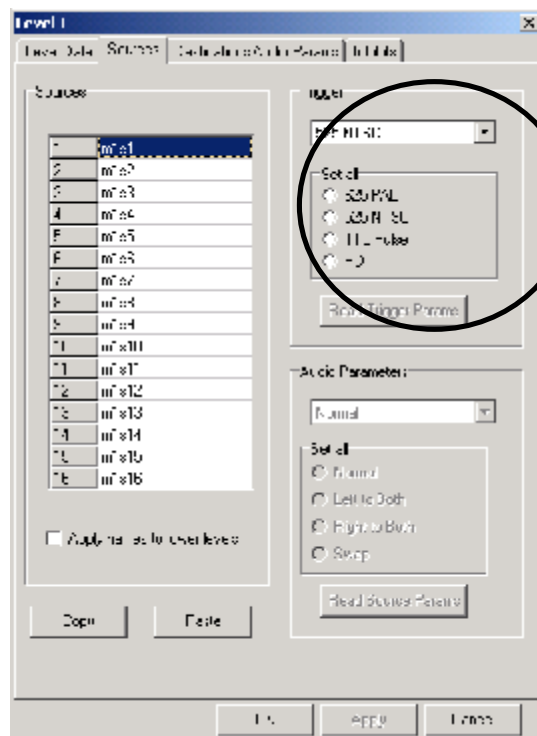
2.10 Trigger position selection

If the 2442 control module is being used as the control module, routes may be switched on the interval between fields or frames, as configured in the 'trigger position' screen.
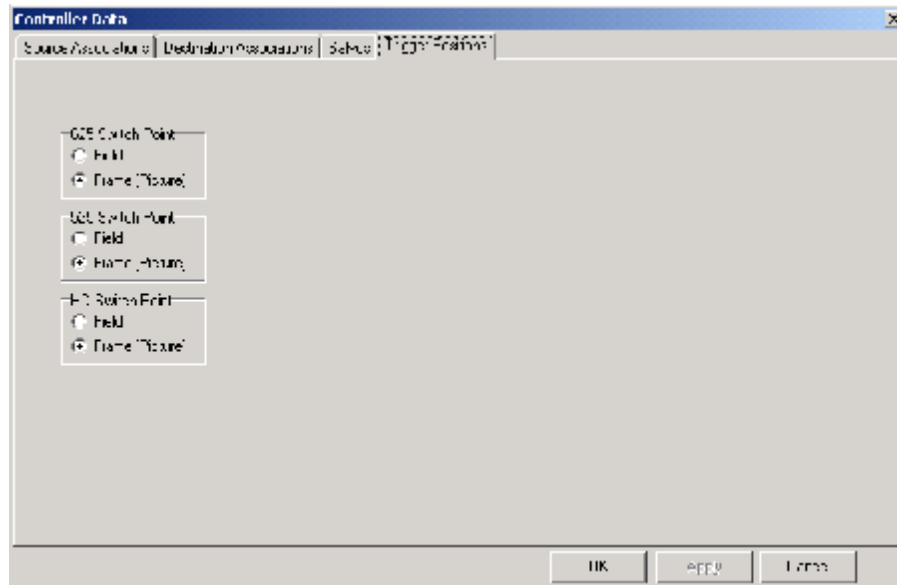

2.11 Configuring destination associations

A destination association describes how equipment is connected to the outputs of a routing system. This is particularly important in a multi-level system where a piece of equipment may take feeds from more than one level.

Edit destinations associations as follows:

- Name the association as the equipment connected to the primary level output

- If that equipment has feeds from other levels, define which output number

- Do not insert numbers on levels where the equipment has no connection

- If equipment has no connection on the primary level, it must use a 'special association'

- Special associations are those beyond the maximum primary output number
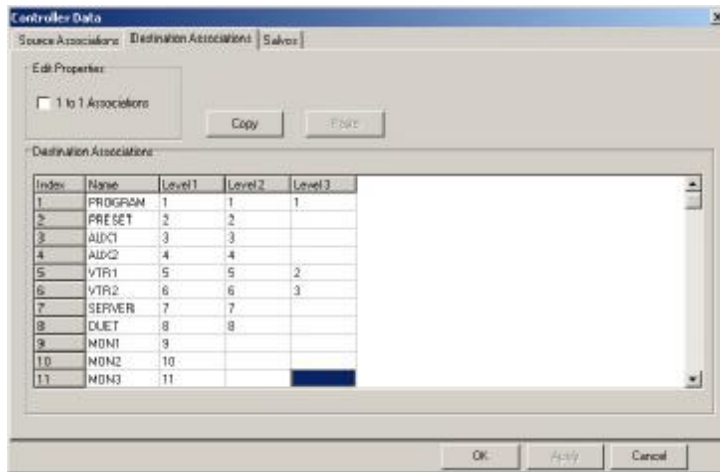
Some standard associations are shown here. The level 1 column cannot be edited
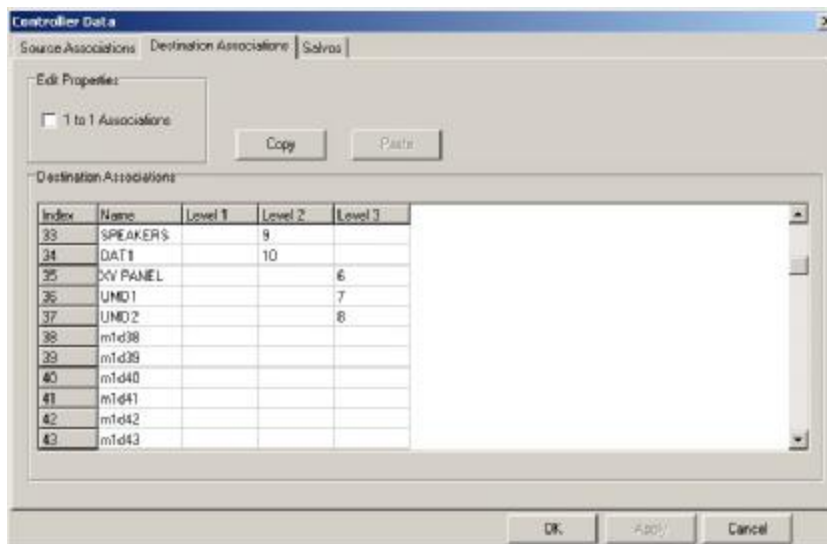
Some special associations are shown here. The index number is the far left column

2.12 How associations are used

The object of programming source and destination associations into the database is to make routing a simple activity on a multi-level system. Whenever a source is routed to a destination using any type of control panel, it is in fact the associations that are being routed, meaning that if the system has 8 levels of routing, up to 8 routes will be made simultaneously by a single 'take' operation.

2.12.1 Married and unmarried routes

When a standard source association is routed to a standard destination association, the

resulting route is known as being 'married', assuming all routes are made successfully. If a special association is involved in any routing, the result will be 'unmarried'. 6276 and 6277 control panels will indicate an unmarried route by illuminating a yellow LED. Unmarried routes may be interrogated by using the level buttons on these panel types to indicate which source is routed on each level. Unmarried routes may also be created by using the level buttons on any panel type to form 'breakaways'.

2.13 Configuring control panels

This section describes the panel types and their features as supported by the Nebula system.

2.13.1 Panel and UMD types

Panel description	Use
6270 Series 2U panels with displays	
6276 XY	All sources to all destinations, 8 level buttons
6276 1/2 BUS	All sources to 1 or 2 destinations (with 'alt-dest' button), 8 level buttons
6277-8	All sources to 8 or 16 destinations (with 'alt-dest' button), 8 level buttons
6277-6	All sources to 6 or 12 destinations (with 'alt-dest' button), 8 level buttons
6277-2	All sources to 2 or 4 destinations (with 'alt-dest' button), 8 level buttons
6277-4	All sources to 4 or 8 destinations (with 'alt-dest' button), 8 level buttons
6276 XY MON	All sources and destinations to monitoring output
6700 Series 1U panels	
6709 BPX	16 sources to 1 destination with 4 level buttons, protect and panel lock
6709 split BPX	(8 sources to 1 destination)x2 with 4 level buttons, protect and panel lock
6709 split XY	8 sources to 8 destinations with 4 level buttons, protect and panel lock
6709 4 bus XY	16 sources to 4 destinations, protect and panel lock
6705 BPX	32 sources to 1 destination with 4 level buttons, protect and panel lock
6705 split BPX	(16 sources to 1 destination)x2 with 4 level buttons, protect and panel lock
6705 split XY	16 sources to 16 destinations with 4 level buttons, protect and panel lock
6705 4 bus XY	32 sources to 4 destinations, protect and panel lock
6706 BPX	48 sources to 1 destination with 4 level buttons, protect and panel lock
6706 split BPX	(24 sources to 1 destination)x2 with 4 level buttons, protect and panel lock
6706 split XY	24 sources to 24 destinations with 4 level buttons, protect and panel lock
6706 4 bus XY	48 sources to 4 destinations, protect and panel lock
6706 32x16 XY	32 sources to 16 destinations with 4 level buttons, protect and panel lock
6707 split BPX	(16 sources to 1 destination)x2 with 4 level buttons, protect and panel lock
6707 XY	16 sources to 16 destinations with 4 level buttons, protect and panel lock
6708 XY	24 sources to 12 destinations with 4 level buttons, protect and panel lock
Under Monitor Displays	
6140	8 character UMD- Red
6141	8 character UMD- Green
6143	Dual 8 character UMD- Red
6144	Dual 8 character UMD- Green

Full details for configuring these panels can be found in the relevant control panel user guide, however it is important to ensure that each panel is configured for both the correct

control system and panel operation.

Nebula also supports the 6280 series panels, which are no longer manufactured:

6280 Series 1U panels	
6280 BPX	24 sources to 1 destination
6281 XY	24 sources to 12 destinations with 4 level buttons
6282 BPX	24 sources to 1 destination with 4 level buttons
6283 BPX	16 sources to 1 destination with 4 level buttons
6283 XY	8 sources to 8 destinations with 4 level buttons
6284 BPX	32 sources to 1 destination with 4 level buttons
6285 BPX	32 sources to 1 destination with 4 level buttons
6286 BPX	16 sources to 1 destination
6287 BPX	32 sources to 1 destinations
6287 XY	16 sources to 16 destinations
6289 BPX	16 sources to 1 destination with 4 level buttons
6289 XY	8 sources to 8 destinations with 4 level buttons
6298 BPX	48 sources to 1 destination with 4 level buttons

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2.13.2 Panel and UMD switch settings

The following table details the switch settings required for each panel type to provide correct operation with a Nebula system.

Panel description	Switch setting							
	1	2	3	4	5	6	7	8
6270 Series 2U panels with displays								
6276 all modes	1	1	1	0	0	0	0	*
6277-2,4,6,8	1	1	1	0	0	1	0	*
6280 Series 1U panels 1=UP								
6280 BPX	1	0	0	0	0	0	1	#
6281 XY	1	0	1	0	0	0	1	#
6282 BPX	1	0	0	0	0	0	1	#
6283 BPX	1	1	0	0	0	0	1	#
6283 XY	1	1	1	0	0	0	1	#
6284 BPX	1	1	0	1	0	0	1	#
6285 BPX	1	1	0	1	0	0	1	#
6286 BPX	0	0	0	0	0	0	1	#
6287 BPX	0	0	0	0	0	0	1	#
6287 XY	0	1	1	0	0	0	1	#
6289 BPX	1	1	0	0	0	0	1	#
6289 XY	0	0	0	1	0	0	1	#
6298 BPX	0	0	1	1	0	0	1	#
6700 Series 1U panels								
6709 BPX	0	0	N/U	N/U	0	0	0	0
6709 split BPX	0	0	N/U	N/U	1	0	0	0
6709 split XY	0	0	N/U	N/U	0	1	0	0
6709 4 bus XY	0	0	N/U	N/U	1	1	0	0
6705 BPX	0	0	N/U	N/U	0	0	1	0
6705 split BPX	0	0	N/U	N/U	1	0	1	0
6705 split XY	0	0	N/U	N/U	0	1	1	0
6705 4 bus XY	0	0	N/U	N/U	1	1	1	0
6706 BPX	0	0	N/U	N/U	0	0	0	1
6706 split BPX	0	0	N/U	N/U	1	0	0	1
6706 split XY	0	0	N/U	N/U	0	1	0	1
6706 4 bus XY	0	0	N/U	N/U	1	1	0	1
6706 32x16 XY	0	0	N/U	N/U	0	0	1	1
6707 split BPX	0	0	N/U	N/U	1	0	1	1
6707 XY	0	0	N/U	N/U	0	1	1	1
6708 XY	0	0	N/U	N/U	1	1	1	1
Under Monitor Displays								
6140/1/3/4	0	0	0	0	1	0	1	0

* *Set to 1 (UP) for panels with address 1-15 and set 0 (DOWN) for panels with address 16*

 # Set to 0 (DOWN) for panels with address 0-15 and set 1 (UP) for panels with address 16

In addition it is important to ensure that each control panel connected to the system has a *unique* panel address set, that corresponds to the one required for that panel type in the database.

2.13.3 General panel details

A Nebula system can drive up to sixteen multi-dropped panels from each of the two RS485 ports when they are configured as Multi-drop protocol in the database.

Each panel on the same RS485 port must be set, according to its handbook, to have a unique multi-drop address. For this port and address, the database should be configured (if applicable) with the:

- Panel type
- Source keypad
- Destination keypad
- Controllable destination
- Controllable levels and brightness
- Override sources
- Panel name

2.13.4 Panel features

This section describes the various features encountered across the range of panel types.

2.13.4.1   Special Function Keys

6276 and 6277 type panels have 4 special function keys arranged in a vertical line of 4 buttons to the left of the source/dest keypad. These keys can each be assigned a different function as illustrated in the example below. See individual panel features for special functions supported.
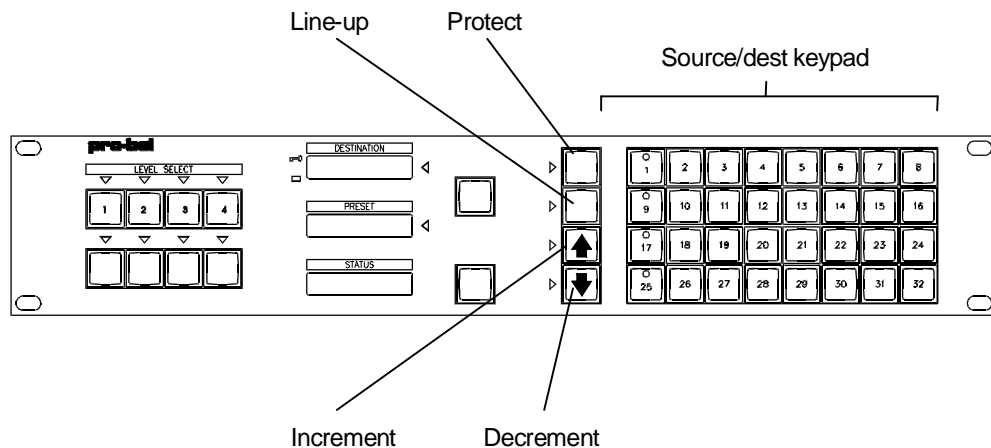
2.13.4.2   Protect

Any control panel with a 'Protect' button may 'lock' any route it has access to, which then prevents any device using the same control system from changing that route. The only exception to this is any 'Master' panel (see later section). Any panel type may have a Protect button assigned, with 6276 and 6277 panels the function must be assigned to one of the 'special' function buttons (see later section).

Protect operates on the destination assigned to each level for the destination association that was protected.

If a control device attached to the multi-drop device ports attempts to set crosspoints on a protected destination then an error message will be displayed on control devices with displays. See 'Panels with displays' section for display messages.

Setting a protected destination causes protect button LEDS on other BPX type panels to flash - if they are assigned to the same destination.

2.13.4.3   Line-up

This is a continuous toggle (once a second) of the preset and program sources to the selected destination, allowing easy comparison of sources. This is only available on 6276 and 6277 panels using the 'special' function buttons. Line-up of sources is selected as follows:

- Route source to be aligned to desired destination.

- Make sure the level of the sources to be aligned is the most significant active level.

- Select reference source as the preset source.

- Press <LINE-UP> button on panel. The LED associated with the <LINE-UP> button will light to show the <LINE-UP> button has been pressed.

- Press <TAKE> button of desired destination. The source routed will toggle between the reference source and the source to be aligned.

- Line-up of sources on a destination is cancelled by pressing the <LINE-UP> button again. This cancels line-up altogether on the control device.

- The source being aligned is returned as the source routed to the destination being used and also the LED associated with the <LINE-UP> button will be extinguished.

- Pressing another <TAKE> button on the same panel will cause the original source to be routed to the previous destination and then start the line-up sequence on the new destination.

N.B. All control devices will power-up with line-up *inactive*.

2.13.4.4   Next and Previous

Each time the <NEXT> or <PREVIOUS> button is pressed, the source or destination association number selected, depending on the active keypad, is increased or deceased with the panel displays being updated accordingly. These functions only work on 6276 and 6277 panels.

2.13.4.5   Alt-dest

ALT-DEST allows a 6277 multi-destination panel to access more destinations than are usually configured, that is, one per status display. When pressed, the panel changes control to the alternate set of assigned destination associations configured in the database. When the LED to the left of the <ALT-DEST> button is illuminated, the panel is then controlling the second set of destination associations assigned to the panel. This function must use a 'special' function button.

2.13.4.6   Dest-ident

The <DEST-IDENT> button is used to identify the destination associations assigned to the <TAKE> buttons on a 6277 multi-destination panel. Pressing and holding down the <DEST-IDENT> button changes the 'STATUS' displays to show the 8 character name for the assigned destination association for the current set of destination associations. This button is especially useful when an ALT-DEST button has been assigned.

2.13.4.7   Level buttons

Most panel types have level buttons 'hard coded' into their operation, and these allow 'breakaway' route selections to be made, that is, routes that are not determined by the Association tables in the database (see Section 8.6).

Each button operates in a toggle on/off manner with the level active indicated by an illuminated button. Unless otherwise stated each button toggles the state of one level only. Only levels that are controllable can be toggled on or off.

On occasions when more controllable levels are assigned to a panel than there are level buttons, then the last level button controls the excess levels, i.e. if the controllable levels for

a 4 level button panel were defined as 1, 2, 3, 4, 5, 6 then level 1 to 3 would be assigned to first three level buttons respectively, and the fourth level button would control levels 4, 5 and 6.

Single levels or all levels can be turned off, if required, via the database.

2.13.4.8   Alt-lev

The Alternate level shift function is used on panels with only four level buttons, allowing individual control of all eight levels. It operates in a toggle on/off manner with an LED used to indicate the level shift - when the LED is off then levels 1 to 4 are controllable and when the LED is on levels 5 to 8 are controllable.

The level shift function is button programmable on all panel types (BPX and X-Y). Any source or destination button can be configured as a level shift button.

2.13.4.9   Clear

This key is used as a source preset or destination clear key and is generally assigned to the bottom right key on the keypad of a 6276 or 6277 panel.

2.13.4.10   Controllable destinations

This applies to X-Y panels only. The user can configure any destination association to be controllable from a given X-Y type panel.

2.13.4.11   BPD or Dial Up keypads

Button Per Destination or Dial Up (multiple button presses) keypads are available for 6276 and 6277 panels, and must be selected in the database. All other 1U XY panels can only use BPD keypads.

The database has a limit of 32 BPD keypads each with up to 64 buttons (this allows each panel to have a different keypad) and 8 dial-up type destination keypads. The editor allows the same keypad to be assigned to panels of the same type, to simply the editing process.

The dial-up keypads allow a maximum of four button presses per source or destination selection.

Pressing a destination button (BPD) or a sequence of buttons (Dial up) selects a destination association, the advantage of a dial up keypad is that many more destinations may be accessed from the same size keypad.

The pressed button will either illuminate if it has a valid associated destination association

index, or have alphanumeric displays to show the name of the selected destination association.

On power-up no destination button is selected so all destination buttons are extinguished and any destination displays on X-Y panels are blanked.

2.13.4.12 BPS or Dial Up keypads

Button Per Source or Dial Up (multiple button presses) keypads are available for 6276 and 6277 panels, and must be selected in the database. All 1U panels may only use BPS keypads.

The database has a limit of 32 BPS keypads each with up to 64 buttons (this allows each panel to have a different keypad) and 8 dial-up type source keypads. The editor allows the same keypad to be assigned to panels of the same type, to simply the editing process.

The dial-up keypads allow a maximum of four button presses per source or destination selection.

Pressing a source button (BPS) or a sequence of buttons (Dial up) selects a source association, the advantage of a dial up keypad is that many more sources may be accessed from the same size keypad.

The source keypads on 6276 and 6277 panels are used to preselect sources not route them. These panels have <TAKE> buttons to make the selections.

2.13.4.13 Panel swap mode

Panel Swap Mode is available for 6276 and 6277 panels. When activated in the database, it causes the taken source and the preselected source to 'swap', or interchange, and therefore allows the previously taken source to be re-routed with another <TAKE>. This could be considered to be an 'undo' facility, for quickly reverting to the previous selection.

2.13.4.14 Override Salvo Protects

This mode is only available for the 6276 XY panel, and is configured as a 'tick box' in the panel details. When enabled, any Salvos fired from this panel will override any system protects, from whatever source they have been applied. This ensures that all crosspoints configured in a Salvo will always be set. Enabling this mode will also automatically enable the Master mode

2.13.4.15 Mask With Destination

This mode is available with all XY panels, including the 6276 and any 6700 series panels configured as XY and is configured as a 'tick box' in the panel details 'levels' page. When enabled, any destination assigned to the panel that does not have a primary level association will indicate this by flashing the primary level panel lamp, and showing the next active level source in the status display.

2.13.4.16 Display Audio parameters

This feature can be applied to 6276 X-Y and 6277 multi-bus panels only. It is enabled by assigning one of the special function buttons to be of the <DISPLAY AUD> type. When pressed, source and destination audio parameters are indicated by the eighth character in the source and destination displays for the most significant stereo Analogue Audio level in the system, this may require the level buttons to be toggled on or off in order to show the desired audio level. The following table defines the symbols used:

Symbol	Description
Space	Indicates normal source or destination
Steady 'S'	Indicates destination is Swapped
Steady 'M'	Indicates destination is Mono
Flash 'N' and '?'	Normal destination pre-selected
Flash 'S' and '?'	Swapped destination pre-selected
Flash 'M' and '?'	Mono destination pre-selected
Flashing 'L'	Left channel of source routed to both channels
Flashing 'R'	Right channel of source routed to both channels
Flashing 'S'	Left and right channels swapped
NRM or NRM?	Source is Normal or pre-selected to be Normal
L-R or L-R?	Source is L-R or pre-selected to be L-R
R-L or R-L?	Source is R-L or pre-selected to be R-L.
SWP or SWP?	Source L/R swapped or pre-selected to be L/R swapped
525 or 525?	Source using 525 trigger or pre-selected to use 525

625 or 625?	Source using 625 trigger or pre-selected to use 625
Steady '→'	No audio parameters on current most significant active level but other levels configured with audio parameters.
Flashing '→' with '?'	No audio parameters pre-selected on most significant active level but other levels configured with audio parameter pre-selected.
TRG?	No source pre-select on level thus unknown trigger.
AUP?	No source pre-select on level thus unknown audio parameter.

2.13.4.17 Configure Audio parameters

This feature can be applied to 6276 X-Y and 6277 multi-bus panels only. It is enabled by assigning one of the special function buttons to be of the <CONFIG AUD> type. When pressed, not only are the source and destination audio parameters indicated by the eighth character of the display, as in the previous table, but they may also be changed. When enabled this feature allows pre-selection of destination AUD parameters for stereo analogue audio levels. If panel is a Master 6276 X-Y then enabling this feature allows AUD parameters to be assigned to sources and destinations and allows trigger type to be assigned to sources.

When this feature is activated, a special audio configuration keypad is automatically assigned to the panel, as follows:
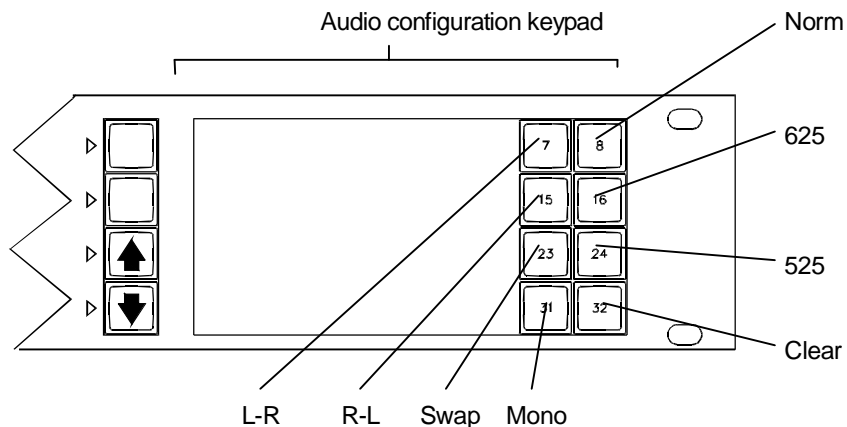
Common rules

While 'config AUD parameters' is enabled then only AUD parameters can be pre-selected (i.e. sources and destinations cannot be dialled up). Pressing <CLEAR>, while in this mode, will result in the panel returning to its previous state.

If the 'display audio parameters' function is disabled then full 8 character names will be displayed with no AUD parameter, even if the first level is Analogue Audio.

Selecting 'display audio' function results in the 8th character of the displays showing the AUD parameter assigned for the most significant active level.

Assuming 'display audio parameters' is enabled then:-

The 8th character in PRESET and STATUS displays is:-

- Steady (non-flashing) when source AUD parameter is NORMAL
- Flashing when source AUD parameter is NOT NORMAL, i.e. SWAP

8th character in PRESET window shows AUD parameter of the pre-selected source displayed for the most significant active level in the system.

8th character in STATUS displays shows AUD parameter of combined source and destination taken for the most significant active level.

8th character in DESTINATION displays shows the destination AUD parameter of the destination displayed for the most significant active level in the system.

If <CONFIG AUDIO> pressed to enable configuration of AUD parameters and no buttons are pressed within a 1 minute timeout period then this function is automatically disabled and the panel is returned to its previous state.

Enabling configuration of audio parameters always results in 'display audio parameters' being enabled.

The 'N' character to denote Normal is only used in AUD parameter pre-selecting. Usually 8th character is left blank to denote Normal.

If pre-selected route is found to be inhibited (from either editable route inhibit table or internal system inhibit table) then the destination AUD parameter pre-selected will be thrown away.

If a route is protected then AUD parameters and trigger type cannot be changed.

Rules when using a 6276 X-Y panel (not designated Master)

Only Destination AUD parameters can be assigned from this panel type.

8th character in DESTINATION display is also used to show the pre-selected destination AUD parameter when character alternating with '?'.

Enabling configuration of AUD parameters by pressing <CONFIG AUDIO> will always result in selector LED being lit against DESTINATION display.

Operation 1

Press <DISPLAY AUDIO> to enable audio parameters to be displayed (optional).

Select DESTINATION display.

Dial up destination (e.g. VT 3)

Press <CONFIG AUDIO> (selector LED lit against DESTINATION display) followed by the required AUD parameter. The pre-selected AUD parameter is displayed (flashing alternately with '?') in the 8th character of the DESTINATION display.

Press <TAKE> to:-

- Assign AUD parameter to destination
- Update 8th character of DESTINATION display to indicate new AUD parameter
- Update 8th character of STATUS display with combined source and destination AUD parameter.
- Auto cancel 'config AUD parameters' mode

Operation 2

Press <DISPLAY AUDIO> to enable audio parameters to be displayed (optional).

Select DESTINATION display (selector LED lit against DESTINATION display)

Dial up destination (e.g. VT 3)

Select PRESET display (selector LED lit against PRESET display)

Dial up a source (e.g. VT 7)

Press <CONFIG AUDIO> (selector LED lit against DESTINATION display) followed by an AUD parameter. The pre-selected AUD parameter is displayed (flashing alternately with '?') in the 8th character of the DESTINATION display.

Press <TAKE> to:-

- Assign AUD parameter to destination
- Update 8th character of DESTINATION display to indicate new AUD parameter
- Update 8th character of STATUS display with combined source and destination AUD parameter
- Auto cancel 'config AUD parameters' mode

Rules when using 6277 multi-output panels

Only Destination AUD parameters can be assigned from this panel type.

When DEST-IDENT activated the 8th character in STATUS displays shows AUD parameter of the destination for the most significant active level in the system.

8th character in PRESET display normally shows AUD parameter of the pre-selected source displayed for the most significant active level in the system. It is also used to show the pre-selected destination AUD parameter.

Operation 1

Press <DISPLAY AUDIO> to enable audio parameters to be displayed (optional).

Clear PRESET display.

Press <CONFIG AUDIO> and select an AUD parameter. An 8 character name is displayed in the PRESET display to indicate destination AUD parameter pre-selected.

Press <TAKE> to:-

- Assign AUD parameter to destination
- Update 8th character of STATUS display with combined source and destination AUD parameter
- Auto cancel 'config AUD parameters' mode and blank PRESET display

Operation 2

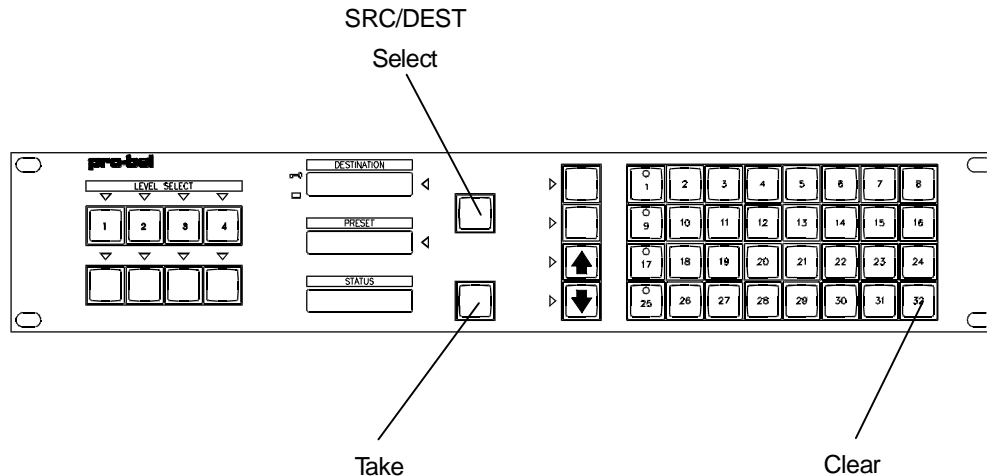Press <DISPLAY AUDIO> to enable audio parameters to be displayed (optional).

Dial up source in PRESET display.

Press <CONFIG AUDIO> and select an AUD parameter. The pre-selected AUD parameter is displayed (flashing alternately with '?') in the 8th character of the PRESET display.

Press <TAKE> to:-

- Assign AUD parameter to destination
- Update 8th character of STATUS display with combined source and destination AUD parameter
- Revert to showing source AUD parameter in 8th character of PRESET display
- Auto cancel 'config AUD parameters' mode

Rules when using Master 6276 X-Y panel

SRC/DEST
Select

Take   Clear

The operation of this panel is identical to that of a Normal 6276 X-Y panel but has the option of being able to configure AUD parameters and trigger type for sources as well as being able to unprotect destinations set from another panel if <PROTECT> assigned.

To assign AUD parameters and trigger type to sources:-

Press <DISPLAY AUDIO> to enable audio parameters to be displayed.

Dial up source in PRESET display.

Press <CONFIG AUDIO> (DESTINATION display selector LED lights).

Press <S/D SELECT> to select PRESET display. N.B. There must be a source selected in the PRESET display before source AUD parameters can be changed.

DESTINATION display blanks and STATUS display shows 4 character name for trigger type assigned and 4 character name for AUD parameter assigned to source.

Pre-set AUD parameter and/or trigger type. STATUS display shows 3 character ident for trigger type and AUD parameter followed by '?' (e.g. '625 SWP?' - trigger type to remain unchanged but SWAP pre-selected as AUD parameter).

Press <TAKE> to:-

- Assign trigger type and AUD parameter to source
- Display new parameters in STATUS display for 2 seconds before reverting back to displaying source routed in STATUS display and destination in DESTINATION display.
- auto cancel 'config audio parameters'

2.13.4.18   Override inputs

Some panels allow a number of override inputs to momentarily override the current source routed to a destination with another source.

When all overrides are released the original source that was routed before any overrides were activated is restored. Shorting an override input pin to 0V, activates the override.

Each override input can have any source assigned to it and can be assigned to operate on any level.

If more than one override input is active on a panel, then the lowest number override will take priority.

When a destination is overridden no other crosspoint can be set on that destination by any means unless it is a higher priority override.

The maximum number of overrides available to any panel is 16.

2.13.4.19   Panel lock

6276 and 6277 panels have the ability to disable the keypads and TAKE keys.

This can be done either using a button on the front of the panel or by connecting a key switch or similar to the remote panel disable input.

Lock button

The lock button is the top button of the column of keys to the left of the main keypad.

To enable the lock button function DIL switches 4 and 5 on the back of the panel are used, (DIL switch 4 = UP, DIL switch 5= UP to enable lock button function, both DOWN to disable lock button function).

Toggling the Lock button changes the panel between locked and unlocked.

When the lock button is enabled:-

- The panel is locked by default
- Any functions programed to this button in the system database are ignored

Remote panel disable input

The system detects a locked panel through pin 8 of the AUX inputs located on the 15W D socket connector on the rear of the panel.

To lock the panel pin 8 needs to be connected to 0V.

Operation

When the panel is locked, the Preset display indicates 'LOCKED!' The panel is thus prevented from pre-selecting and routing sources.

The Panel Disable Input takes priority over the lock button on the front and whilst the Panel Disable Input is active the Lock button has no action.

2.13.4.20   Making selections

'Crosspoint' selections (or routes) are made provided:

- The destination and source are valid for the level
- The destination is controllable
- The level is active and controllable
- The route is not inhibited
- Destination is not protected
- An override is not active on this destination unless the source is a higher priority override
- The router is recognised as present by the Axis control card.

2.13.4.21   Panels with displays

6276 and 6277 panels have alphanumeric displays for 8 character messages. The table below defines warning messages used throughout the range.

Valid source selections are shown on 'PRESET' or 'STATUS' displays as defined by the user. These will be shown as:

- 'SSSSSSSS' for 8 character.
- 'PRESET' warning messages are enclosed by ?....?
- 'STATUS' warning messages are enclosed by <....>

Message	Explanation
'<No Dst>'	No destination association selected
'<No Src>'	No source selected because no destination assigned for any level in destination association
'<↓↓↓↓>'	No destination assigned in the selected destination association on the most significant active level but there are destinations on the lower levels

'<↑↑↑↑>'	No destination assigned in the selected destination association on the most significant active level but there are destinations on the upper levels
'<↑↑↓↓>'	No destination assigned in the selected destination association on the most significant active level but there are destinations on the upper and lower levels
'?No Src?'	Source association with no sources on any level has been selected
'*LOCKED*'	Panel <TAKE> button and source buttons are disabled via lock button or remote panel disable
'**PROT**'	Source cannot be routed as destination is protected. After a few seconds the panel name is displayed before reverting back to showing the current source routed a few seconds later
'PROTECT?'	When flashing indicates that destination will be protected on next take
'*OVRIDE*'	Source cannot be routed as destination has overridden source routed. After a few seconds the name of the device responsible for the overrride is displayed before reverting back to showing the current source routed or preset a few seconds later.
'ROUTE INH'	Source cannot be routed as route inhibited. Displayed in Preset display
'?↓↓↓↓?'	No source preselected on the most significant active level but there are sources preselected on the lower levels
'?↑↑↑↑?'	No source preselected on the most significant active level but there are sources preselected on the upper levels
'?↑↑↓↓?'	No source preselected on the most significant active level but there are sources preselected on the higher and lower levels
'SALVO'	Displayed in STATUS or IN-USE displays to indicate that a salvo has been preselected.
'NO XPT!'	Error message displayed in STATUS or IN-USE to indicate that a

	crosspoint cannot be set as card not present.
'LEV CON'	Error message displayed in STATUS or IN-USE to indicate that a crosspoint was not made on a level because the level was not controllable from that panel.
'DST CON'	Error message displayed in STATUS or IN-USE to indicate that a crosspoint was not made because the X-Y panel attempting to set it is not allowed to control the destination.

The brightness of the displays on applicable panels may be changed by reconfiguring the database. It is not possible to have different brightness levels for different displays on the same panel.
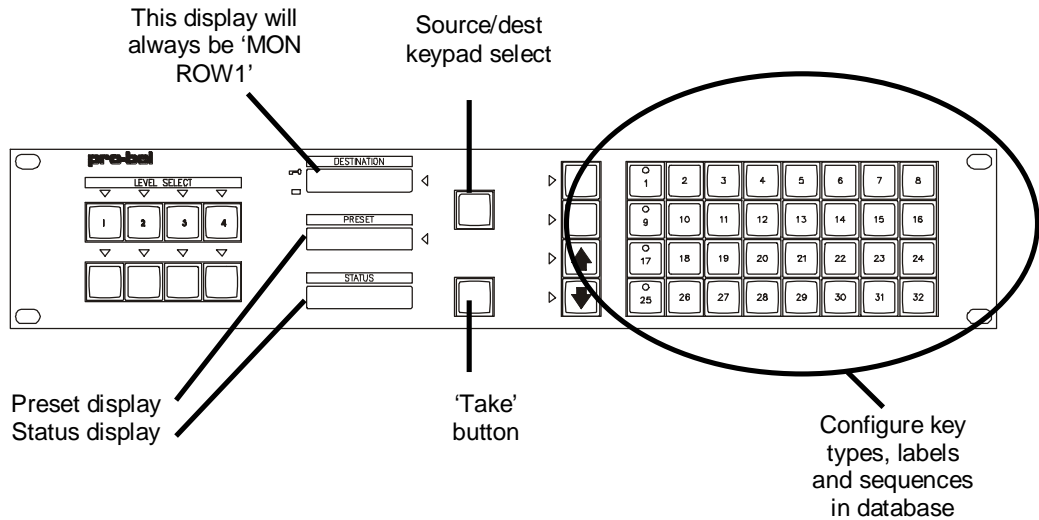
2.14 Configuring an input/output monitoring panel

When the panel type '6276 XY Mon (Sirius)' is selected and configured in the editor, it allows a standard 6276 XY panel to be used to monitor any input or output, on up to 2 levels, within the master Sirius frame. The 2426 Sirius monitoring card must be fitted in the frame (or 2 fitted in the 7U frame) in order to achieve this. Two levels will be monitored providing that the first level is a video level and the second audio, the monitoring card provides both analogue and digital outputs for both video and audio monitoring.

The monitoring panel requires a source and destination keypad to be configured, just like with a standard XY panel, and these may be BPD/BPS (single button press) or dial up (multi-button press) type keypads.

NEBULA User Guide

When configured and connected, the panel will appear like this:

This display will always be 'MON ROW1'

Source/dest keypad select

Preset display
Status display

'Take' button

Configure key types, labels and sequences in database

To use the panel, proceed as follows:

- Press the Source/destination button to select either Source (LED lights next to Preset window, or Destination (LED lights next to Destination window)

- Select the required source or destination from the keypad, any valid selection will be displayed in the Preset window

- If configured on the keypad, the 'next' and 'previous' buttons may be used to access other sources or destinations

- Press the 'take' button to monitor this source or destination, the Status display will change to show the source/destination being monitored