Triton Plus

ANALOG STEREO AUDIO ROUTERS

User Manual

Revision 13

JANUARY 2009

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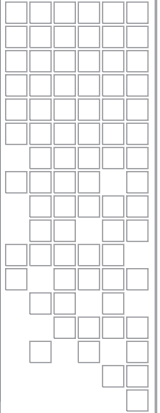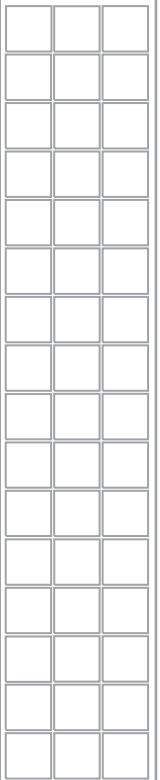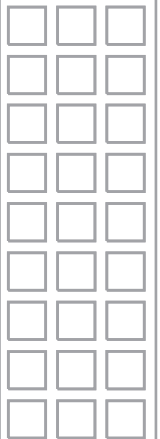
Triton Plus

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Grass Valley Web Site

The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

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Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

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For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Contents

Contents

Triton Plus Analog Stereo Audio Router

Product Overview

Thomson Grass Valley is proud to present the second generation of the compact small and medium routing switcher family – Triton Plus. With Triton Plus, Thomson Grass Valley now provides a stable and proven product line including the most complete signal format and size offering available.

With the new ultra-slim, multi-format and flexible product range, Triton Plus fulfils the most demanding requirements from the professional broadcast market.

This User Manual presents the features listed below, installation and operation procedures of the Analog Stereo Audio routers of the Triton Plus range.

- Router range from 8x8 to 64x64
- RS-232 and NCB Control (RJ-45)
- Multi- single- and dual-bus control panels
- Ultra-slim frame depth
- Low power, high reliability design
- Redundant power supply system with front indicators
- Interoperability with existing Triton Plus routers
- Future-proof and flexible product range

Triton Plus provides many of the powerful control features that drove the Triton Modular range to success. Triton Plus is ideal for general purpose facilities, on-air routing, mobile outside broadcast applications, and sophisticated A/V applications.

Product Versions

The following versions of the Triton Plus Analog Stereo Audio Routers are available:

• Analog Stereo Audio – 19 in., 1 RU, Depth - 5 cm (see Table 1)

• Analog Stereo Audio – 19 in., 2 RU, Depth - 5 cm (see Table 2)

• Analog Stereo Audio – 19 in., 4 RU, Depth - 5 cm (see Table 3)

Table 1. Analog Stereo Audio – 19 in., 1 RU, Depth - 5 cm

Model	Description
TPS-A0808/ TPS-A0808CP	8x8 Analog Stereo Audio Router (100MHz). Balanced audio in/out, router partitioning, X-Y control panel (on CP version)
TPS-A1616 / TPS-A1616CP	16x16 Analog Stereo Audio Router (100MHz). Balanced audio in/out, router partitioning, X-Y control panel (on CP version)
TPS-A1602 / TPS-A1602CP	16x2 Analog Stereo Audio Router (100MHz). Balanced audio in/out, router partitioning, dual bus control panel (on CP version)

Table 2. Analog Stereo Audio – 19 in., 2 RU, Depth - 5 cm

Model	Description
TPS-A3232/ TPS-A3232CP	32x32 Analog Stereo Audio Router (100MHz). Balanced audio in/out, router partitioning, X-Y control panel (on CP version)

Table 3. Analog Stereo Audio – 19 in., 4 RU, Depth - 5 cm

Model	Description
TPS-A6464/ TPS-A6464CP	64x64 Analog Stereo Audio Router (100MHz). Balanced audio in/out, router partitioning, X-Y control panel (on CP version)

The following control panel versions are available for the Triton Plus series:

- 19 in. 1 RU (Table 4)
- 19 in. 2 RU (Table 5)
- 19 in. 4 RU (Table 6)

Table 4. 19 in. 1 RU Control Panels

Control Panel Model	Descriptions
TPS-16XY-CP	Multi bus X-Y 16x16 panel
TPS-8XY-CP	Multi bus X-Y 8x8 panel
TPS-16D-CP	Dual bus 16x2 panel
TPS-32S-CP	Single bus 32x1 panel
TPS-32S-CP-GPI	Single bus 32x1 panel with GPI/Joystick/Tally interface
TPS-16S-CP	Single bus 16x1 panel
TPS-16S-CP-GPI	Single bus 16x1 panel with GPI/Joystick/Tally interface
TPS-8S-CP	Single bus 8x1 panel
TPS-8S-CP-GPI	Single bus 8x1 panel with GPI/Joystick/Tally interface
TPS-16XY-CP	Multi bus X-Y 16x16 panel

Table 5. 19 in. 2 RU Control Panels

Control Panel Model	Descriptions
TPS-32XY-CP	Multi bus X-Y 32x32 panel
TPS-64S-CP	Single bus 64x1 panel
TPS-64S-CP-GPI	Single bus 64x1 panel with GPI/Joystick/Tally interface

Table 6. 19 in. 4 RU Control Panels

Control Panel Model	Descriptions
TPS-64XY-CP	Multi bus X-Y 64x64 panel

Connection Details

Available connectors at the back panel of the Triton Plus Routers are shown in Figure 1.

Note   Figure 1 shows a 1 RU Triton Plus router. However, the connectors are identical to the 1 RU also on the 2 RU and 4 RU units. The only connectors that differ are the applicable signal connectors.

Figure 1. Triton Router Connectors

- SYNC: Synchronization signal (in). Black burst/composite/tri-level sync reference input with passive loop-through for vertical interval switching.

- LOOP: Synchronization signal (out). Loop-through of SYNC input.

- NCB IN: Network Control Bus Input. The protocol of this bus is equal, and compatible to the MIDI bus protocol.

- NCB OUT: Network Control Bus Output.

- ETHERNET: Not supported at this time.

- RS-232: RS-232 for external control protocols.

- POWER A: ±15VDC Power Input.

- POWER B: ±15VDC Power Input, redundant supply.

- CONFIGURATION: Configuration switches (8 pcs).

Power Supply Pinouts

The DB9 power pinouts for Triton Plus routers and Control Panels are given in Table 7.

Table 7. Power Supply Pinouts

Pin Number	Description
1	GND
2	Not Connected
3	Not Connected
4	+15 VDC
5	Not Connected
6	Not Connected
7	Not Connected
8	-15 VDC
9	Not Connected

Configuration

In order to get an overview of the parts that form the Triton Plus Analog Stereo Audio Router, this section highlights some of the main components.

Router Level

Switches 1-4 on the configuration switch set the router's level for communication with the Router Management System and other units in the NCB system. The panels on the NCB dedicated to operate with the router must be configured to the same level as that router.

If several routers are combined to form an Audio Follow Video, RGB or similar system, these routers must be configured to the same level.

The levels can be switched according to the patterns given in Table 8. The default level is 1.

Table 8. Level Switch Patterns

SW 1	SW 2	SW 3	SW 4	Level	NCB Address
Off	Off	Off	Off	1	0
Off	Off	Off	**On**	2	1
Off	Off	**On**	Off	3	2
Off	Off	**On**	**On**	4	3
Off	**On**	Off	Off	5	4
Off	**On**	Off	**On**	6	5
Off	**On**	**On**	Off	7	6
Off	**On**	**On**	**On**	8	7
On	Off	Off	Off	9	8
On	Off	Off	**On**	10	9
On	Off	**On**	Off	11	10
On	Off	**On**	**On**	12	11
On	**On**	Off	Off	13	12
On	**On**	Off	**On**	14	13
On	**On**	**On**	Off	15	14
On	**On**	**On**	**On**	16	15

Router Mode

Router Mode on NxN Square Routers

The Triton Plus A/V router allows switching in different modes.

For a 1 RU Triton Plus router you can choose among the modes given in Table 9.

Table 9. 1 RU Triton Plus Modes

Router Layers	8x8 Router	16x16 Router
1 layer	8x8	16x16
2 layers	4x4	8x8
3 layers	N/A	5x5
4 layers	2x2	4x4

For a 2 RU Triton Plus router you can choose among the modes given in Table 10.

Table 10. 2 RU Triton Plus Modes

Router Layers	32x32 Router
1 layer	32x32
2 layers	16x16
3 layers	10x10
4 layers	8x8

For a 4 RU Triton Plus router you can choose among the modes given in Table 11.

Table 11. 4 RU Triton Plus Modes

Router Layers	32x32 Router
1 layer	64x64
2 layers	32x32
3 layers	21x21
4 layers	16x16

Switches 5 - 6 on the configuration switch set the router's mode. The Router Management System software must be configured according to the mode chosen on the router.

The default mode is 1 router layer (**SW 5** and **SW 6** off).

The modes can be switched according to the pattern given in Table 12.

Table 12. SW 5 and SW 6 Router Modes

SW 5	SW 6	Router Mode
Off	Off	1 router layer
Off	On	2 router layers
On	Off	3 router layers
On	On	4 router layers

Based on the configuration above, the I/O is connected to the router according to the following schemes in Table 13 through Table 24 where the physical limitations depend on the type of router that is purchased (8x8, 16x16, 32x32, or 64x64). Each table title identifies the number of router layers based on the router type:

Table 13. 1 Router Layer

Signal	Input	Signal	Output
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
...	...	...	...
16	16	16	16
17	17	17	17
...	...	...	...
32	32	32	32
33	33	33	33
...	...	...	...
64	64	64	64

Table 14. 2 Router Layers Based on an 8x8 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
Layer 2	**Input**	**Layer 2**	**Output**
1	5	1	5
2	6	2	6
3	7	3	7
4	8	4	8

Table 15. 2 Router Layers Based on an 16x16 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
Layer 2	**Input**	**Layer 2**	**Output**
1	9	1	9
2	10	2	10
3	11	3	11
4	12	4	12
5	13	5	13
6	14	6	14
7	15	7	15
8	16	8	16

Table 16. 2 Router Layers Based on an 32x32 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
...	...	...	...
8	8	8	8
...	...	...	...
...	...	...	...
16	16	16	16
Layer 2	Input	Layer 2	Output
1	17	1	17
2	18	2	18
3	19	3	19
...	...	...	...
8	24	8	24
9	25	9	25
...	...	...	...
16	32	16	32

Table 17. 2 Router Layers Based on an 64x64 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
...	...	...	...
16	16	16	16
...	...	...	...
...	...	...	...
32	32	32	32
Layer 2	Input	Layer 2	Output
1	33	1	33
2	34	2	34
3	35	3	35
...	...	...	...
16	48	16	48
17	49	17	49
...	...	...	...
32	64	32	64

Table 18. 3 Router Layers Based on an 16x16 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
Layer 2	**Input**	**Layer 2**	**Output**
1	6	1	6
2	7	2	7
3	8	3	8
4	9	4	9
5	10	5	10
Layer 3	**Input**	**Layer 3**	**Output**
1	11	1	11
2	12	2	12
3	13	3	13
4	14	4	14
5	15	5	15

Table 19. 3 Router Layers Based on an 32x32 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
...	...	...	...
10	10	10	10
Layer 2	**Input**	**Layer 2**	**Output**
1	11	1	11
2	12	2	12
3	13	3	13
...	...	...	...
10	20	10	20
Layer 3	**Input**	**Layer 3**	**Output**
1	21	1	21
2	22	2	22
3	23	3	23
...	...	...	...
10	30[1]	10	30[1]

[1] Inputs/Outputs 31 and 32 are not used in this setup.

Table 20. 3 Router Layers Based on an 64x64 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
...	...	...	...
21	21	21	21
Layer 2	**Input**	**Layer 2**	**Output**
1	22	1	22
2	23	2	23
3	24	3	24
...	...	...	...
21	42	21	42
Layer 3	**Input**	**Layer 3**	**Output**
1	43	1	43
2	44	2	44
3	45	3	45
...	...	...	...
21	63[1]	21	63[1]

[1] Input/Output 64 is not used in this setup.

Table 21. 4 Router Layers Based on an 8x8 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
Layer 2	**Input**	**Layer 2**	**Output**
1	3	1	3
2	4	2	4
Layer 3	**Input**	**Layer 3**	**Output**
1	5	1	5
2	6	2	6
Layer 4	**Input**	**Layer 4**	**Output**
1	7	1	7
2	8	2	8

Table 22. 4 Router Layers Based on an 16x16 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
Layer 2	**Input**	**Layer 2**	**Output**
1	5	1	5
2	6	2	6
3	7	3	7
4	8	4	8
Layer 3	**Input**	**Layer 3**	**Output**
1	9	1	9
2	10	2	10
3	11	3	11
4	12	4	12
Layer 4	**Input**	**Layer 4**	**Output**
1	13	1	13
2	14	2	14
3	15	3	15
4	16	4	16

Table 23. 4 Router Layers Based on an 32x32 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
...	...	...	...
8	8	8	8
Layer 2	**Input**	**Layer 2**	**Output**
1	9	1	9
2	10	2	10
...	...	...	...
8	16	8	16
Layer 3	**Input**	**Layer 3**	**Output**
1	17	1	17
2	18	2	18
...	...	...	...
8	24	8	24
Layer 4	**Input**	**Layer 4**	**Output**
1	25	1	25
2	26	2	26
...	...	...	...
8	32	8	32

Table 24. 4 Router Layers Based on an 64x64 Router

Layer 1	Input	Layer 1	Output
1	1	1	1
2	2	2	2
...	...	...	...
16	16	16	16
Layer 2	**Input**	**Layer 2**	**Output**
1	17	1	17
2	18	2	18
...	...	...	...
16	32	16	32
Layer 3	**Input**	**Layer 3**	**Output**
1	33	1	33
2	34	2	34
...	...	...	...
16	48	16	48
Layer 4	**Input**	**Layer 4**	**Output**
1	49	1	49
2	50	2	50
...	...	...	...
16	64	16	64

Power Alarm

The power alarm can be switched with **SW 7** according to the pattern given in Table 25. The default setting is power alarm disabled.

Table 25. SW 7 – Power Alarm

SW 7	Power Alarm
Off	Disables power alarm
On	Enables power alarm

Power-up Mode

Switch **SW 8** on the configuration switch defines the power up mode on NxN square routers. The Triton Plus router provides two modes for powering up the system. The power up options can be switched according to the following pattern given in Table 26:

Table 26. SW 8 – Power Up Mode

SW 8	Power Up Mode
Off	Switches all outputs according to the buffered information in the routers processor system.
On	Switches all outputs to input 1.

Default setting switches all outputs according to the buffered information in the routers processor system.

Configuring Output on Single Bus Panels

Refer to *Input* on page 32 for more information on configuring default output to be controlled from a single bus control panel.

LED Status Indication

Start Up

The LED located at the front of the router indicates the status of the router. At start-up, the LED will alternate between red (R) and green (G) every 500ms for about two seconds. After the start-up sequence the LED will indicate the Alarm state of the router.

Alarm States

The LED can either be red (R), green (G), or have no light (N).

The LED state is described in Table 27 below with twenty letters, each representing 100ms, which totals an alarm sequence of two seconds. The X indicates that the LED keeps the color it has the moment the alarm sequence begins (green or no light).

Table 27. LED Alarm States

Description	LED State	Alarm	Comment
Continuous Green Light	GGGGG GGGGG GGGGG GGGGG	No Alarm Status OK	
Long Red Blinking	RRRRR NNNNN RRRRR NNNNN	Power is too low	
One Short Red Blink	RXXXX XXXXX XXXXX XXXXX	Power A failed	Only active if power alarm DIP is set.
Two Short Red Blinks	XXXXX XXXXX RXRXX XXXXX	Power B failed	

Router Communication

You gain access to router for communication purposes by connecting the router's serial port to your computer.

Serial Connection

Connection can by made trough the serial port(s) of the router; see also *Connection Details* on page 10 for connection details.

The communication parameters are configurable. Please refer to the protocol documentation of the appropriate communication/control protocol.

Example: The protocol parameters of the Triton Plus Compact routers are as follows:

- Bit rate: 19200 bit/s

- Data bits: 8 bits

- Stop bits: 1

- Parity: No parity

For further detail concerning this protocol, please refer to the following manual: *Compact Router Control Protocol*.

The DB9 female connector for the serial port(s) of the router has the following pinout (Table 28):

Table 28. Serial Connection Pinout

Pin #	RS-232 Mode
1	Not in use
2	Tx
3	Rx
4	Not in use
5	GND
6	GND
7	RTS
8	CTS
9	Do Not Connect!

Note   If the standard RS-232 cable specification (DCE) is followed:

A cable with Male+Male or Female+Female connectors at the cable ends is used for Rx/Tx crossed connection.

A cable with Male+Female connectors at the cable ends is used for a straight through connection.

Maximum Cable Length (RS-232)

IEEE has specified the maximum cable length for an RS-232 connection to 15m. Longer distances can be installed depending on the environmental conditions of the installation site. It is the responsibility of the installer/user to secure a proper installation of the RS-232 connection.

NCB Connection

Via the Network Control Bus system, several routers and control panels can be interconnected.

Up to 16 levels of routers, or combinations of routers, can be controlled. The NCB system and all RS-232 ports interchange the system status. This means that any control system, either from Grass Valley, or from a third party manufacturer, connected to any RS-232 port in the NCB loop, will have access to all communication data on the bus.

Connecting Control Panels

To get a control panel working with a specific router, configure the control panel to the same level as the router. Several panels can be configured to control the same router. Panels can also be connected to a router via the RS-232 interface. Please refer to your control panel manual for installation.

Pinout and Cable Type

Triton Plus routers and Control Panels use RJ-45 connectors for the Network Control Bus ports. The following pinout shown in Table 29 is used:

Table 29. RJ-45 Connector Pinouts

Pin #	Description	Illustration
1	Not Connected	
2	Not Connected	
3	Data (retour)	
4	Data	
5	Data	
6	Data (retour)	
7	Not Connected	
8	Not Connected	

The following connection example (Figure 2) shows connection of four Triton Plus devices with RJ-45 connectors and bus termination:

Figure 2. Four Devices Connected Together Using RJ-45
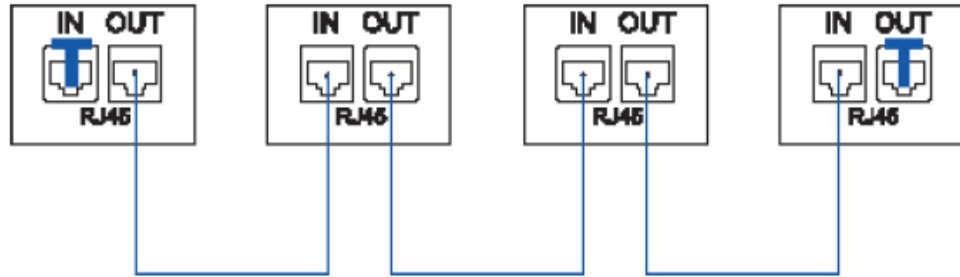
Note   Each device at the end of the chain has a termination plug, indicated with the letter T. This termination plug must be inserted in the correct connection port. If not, no NCB communication is possible.

Termination Plug

The termination plug that is mentioned in the previous chapter is necessary when you want to avoid closing the loop with a (long) cable.

The termination plug is a standard RJ-45 plug with the following internal wiring shown in Figure 3.

Figure 3. RJ-45 Termination Plug Wiring

Pin 3 is connected to Pin 4   **3 4 5 6**   Pin 5 is connected to Pin 6
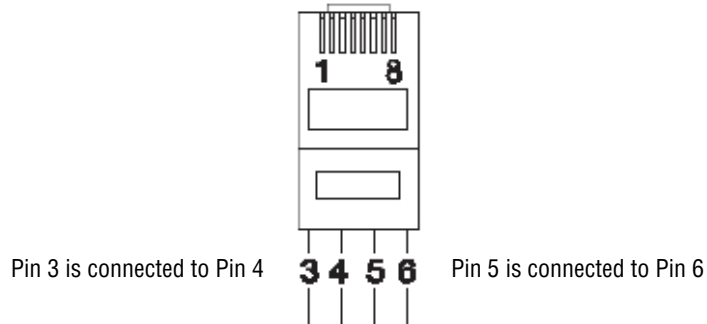
Control Bus Structure

The Network Control Bus structure follows the standard MIDI bus definition. The NCB is defined as a closed chain of units. This means that the NCB OUT of the last unit must be connected to the NCB IN of the first unit in the NCB chain. To avoid problems with the control of Triton Plus units the installer/user has to assure that the bus structure is installed according to this definition.

Note   The total number of Triton Plus devices in an NCB chain is limited to 50.

Maximum Distance Between NCB Devices

The standard MIDI definition allows a maximum cable length of 200-250 meters between two devices. Longer distances can be made with MIDI repeater units. To avoid grounding problems all NCB ports have opto-coupled inputs.

Connecting Signals to the Triton Plus Router

Audio Signals

The standard pinout for DB25 audio contacts is given in Table 30. This pinout is used for both analog and digital audio routers.

Table 30. Standard Pinout for DB25 Audio Connector

Channel #	DB25 Pin #		
	Hot +	Cold (-)	GND
1	24	12	25
2	10	23	11
3	21	9	22
4	7	20	8
5	18	6	19
6	4	17	5
7	15	3	16
8	1	14	2

All audio contacts used on the routers are female type.

The following tables indicate the order of the connectors on the rear of the audio routers:

- Table 31: TPS-A6464 Audio Cabling (page 29)
- Table 32: TPS-A3232 Audio Cabling (page 29)
- Table 34: TPS-A0808 Audio Cabling (page 29)
- Table 35: A/V Toggle Button (page 31)
- Table 36: Pinout for OUTPUT CH.1-2 of TPS-A1602/A1602-CP (page 30)
- Table 37: Pinout for Unbalanced Audio Connection (page 30)

Table 31. TPS-A6464 Audio Cabling

57-64	57-64	57-64	57-64
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
49-56	49-56	49-56	49-56
41-48	41-48	41-48	41-48
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
33-40	33-40	33-40	33-40
25-32	25-32	25-32	25-32
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
17-24	17-24	17-24	17-24
9-16	9-16	9-16	9-16
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
1-8	1-8	1-8	1-8

Table 32. TPS-A3232 Audio Cabling

25-32	25-32	25-32	25-32
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
17-24	17-24	17-24	17-24
9-16	9-16	9-16	9-16
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
1-8	1-8	1-8	1-8

Table 33. TPS-A1616 Audio Cabling

9-16	9-16	9-16	9-16
INPUT CH.1	OUTPUT CH.1	INPUT CH.2	OUTPUT CH.2
1-8	1-8	1-8	1-8

Table 34. TPS-A0808 Audio Cabling

CH.2 1-8	CH.2 1-8
INPUT	OUTPUT
CH.1 1-8	CH.1 1-8

Table 35. TPS-A1602 Audio Cabling

1-2	9-16	9-16
OUTPUT CH.1-2 [1]	INPUT CH.1	OUTPUT CH.2
	1-8	1-8

[1] Note the pinout for OUTPUT CH.1-2 of the TPS-A1602/A1602-CP in Table 36 below.

Table 36. Pinout for OUTPUT CH.1-2 of TPS-A1602/A1602-CP

Channel #	DB25 Pin #		
	Hot +	Cold (-)	GND
Left CH.1	24	12	25
Left CH.2	10	23	11
Right CH.1	21	9	22
Right CH.2	7	20	8

If you want to use the Triton Plus audio router with unbalanced audio signals you connect these signals according to Table 37.

Table 37. Pinout for Unbalanced Audio Connection

Triton Plus Device	Unbalanced Signal Connection
+	Audio
(-)	Shield
GND	Shield

Control Panel Operation

Note   This chapter is only applicable for routers with the optional local control panel.

All local control panels are given a default configuration, which includes the buttons **A/V Toggle**, **Panel Enable**, **Take On/Off**, and **Take**. In addition, **Input** and **Output** buttons are pre-configured.

Button Description

A/V Toggle

The **A/V Toggle** button enables/disables audio and video on a specified address. The address can either be read from the DIP switches or be fixed. The button toggles between three states.

Note   If the button is pressed for more than 1 second, it will go into a fourth state where both audio and video are disabled.

In this state the button will be dimmed. If the button is pressed for more than 1 second again, it will enable both audio and video if present. Refer to Table 38.

Table 38. A/V Toggle Button

Button Color	Video Enabled	Audio Enabled
Yellow	Yes	Yes
Green	Yes	No
Red	No	Yes
Dimmed	No	No

If neither audio nor video is present, it will be marked as disabled and the toggle state will not be used.

Toggle status changes will be stored in flash and used when the panel is powered up later.

Panel Enable

The panel will start up in a disabled state. In this state the button will be red and all the other buttons will be disabled. When pressing the button the panel will be enabled and the color will change to green. A status request will also be sent to get information on active levels.

Take On/Off

The **Take On/Off** button enables or disables the **Take** button. On first start-up the **Take** button is enabled. Later it will read the last status from the flash memory.

Take

The **Take** buttons LED is normally off. If the **Take On/Off** button is set to on, no commands will be sent from the panel until the **Take** button is pressed. The last selected buttons and the **Take** button will blink, until the **Take** button is pressed and the command is sent from the panel.

Output

An **Output** button is used for selecting an output. Selecting an output activates it, so that it is switched to the next input that is selected.

Input

An **Inpu**t button switches the active output to the selected input. If the **Take** button is enabled, the switch will not be executed until **Take** is pressed.

When switching using the **Input** button, all enabled audio- and video-levels will be switched from the selected input to the active output.

Note   The **Input** button can also be used to select the active output. This is useful on single bus panels. When the panel is enabled, press the **Panel Enable** button and hold it while selecting the active output by pressing an **Input** button. Then release the **Panel Enable** button. The panel will now be disabled. Press the **Panel Enable** button again to enable it.

Specifications

Note   All specifications are subject to change without notice.

Table 39. Triton Plus Analog Stereo Audio Router Specifications

Parameter	Value
Analog Audio	
Supported Formats	
Broadcast	• N10, Pflichtenheft Nr. 3/5 1995 • Balanced analog audio 20Hz to 20kHz • LTC time code
Electrical Signals	
Frequency response	20Hz to 20kHz: ±0.5dB
Gain	0dB ±0.3dB
Crosstalk	• < -100dB to 20kHz for 8x8 –32x32 routers • < -90dB up to 20kHz (< -100dB up to 5kHZ) for TPS-A6464/TPDS/A6464-CP routers
Click noise	< 50dBu
THD+N	• < 0.01% at +6dBu (40Hz to 20kHz) • < 0.01% at +22dBu (40Hz to 20kHz)
Connector	• DB25 female
Input impedance	> 10k ohm
Input CMRR	> 60dB up to 15kHz
Output impedance	< 66 ohm
Reference Inputs (Synchronization of an audio router is not necessary, but an available feature for users who intend to switch this router synchronized to video, using video synchronization signals).	
Connector	75 ohm BNC female, loop-through
Return loss	• > 40dB (100kHz to 5MHz) • > 35dB (5 to 10MHz)
Signal format	NTSC or PAL Black Burst
Signal level	Nominal 1.0V p-p
Switching field	Field 1
Timing	PAL: 30us ±5us after Hsync in Line 6 NTSC: 30us ±5us after Hsync in Line 10
Power Supply	
TPS-PWR-40	40W power supply unit for 8x8 – 16 x16 versions
TPS-PWR-90	90W power supply unit for 32x32 and 64x64 versions
AC supply voltage range	100-240VAC, 50-60Hz Max 1.6A (TPS-PWR-40)/Max 3W (TPS-PWR-90)
AC mains connector	IEC 320
DC output	• +15V, max. 2.2A/-15V, max 1.35A. Maximum 43W for 8x8 – 16x16 versions • +15V, max. 4A/-15V, max 2.5A. Maximum 90W for 32x32 and 64x64 versions
DC connector	DB9, female
Status monitoring	Via LED in front of router/CP

Specifications

Table 39. Triton Plus Analog Stereo Audio Router Specifications

Parameter	Value
Control	
Standard Features	
Serial port	RS-232 for protocol conversion, to Triton Plus compact control protocol, or to 3rd party protocols
Connector	DB9, female
NCB ports	For integration with Triton Plus compact router configuration
Connectors (2)	RJ-45 (1 in/1 out)
Ethernet	10/100BaseT Ethernet is not supported at this time
Connector	RJ-45
Synchronization	• Analog Black Burst, Looped; Both PAL and NTSC supported
	• Tri-level, Looped; For HD signal formats only
	• Distribution of synchronization signals between several routers
Connector(s)	BNC
Optional Features	
Control panel	• Optional, built-in control panel available
	• External control panels available
Environmental	
Equipment will meet guaranteed performance specifications under the following conditions:	
Operating room temperature range	0º C to 45º C
Operating relative humidity range	< 95% (non-condensing)
Equipment will operate without damage under the following conditions:	
Temperature range	-10º C to 55º C
Relative humidity range	< 95% (non-condensing)
Mechanical	
Dimensions	HxWxD = 44x483x50mm (19 in., 1 RU) HxWxD = 88x483x50mm (19 in., 2 RU) HxWxD = 176x483x50mm (19 in., 4 RU)
Safety/Emission standards	Compliant with CE EN55103-1 and 2

34   *Triton Plus - Analog Stereo Audio - User Manual*