



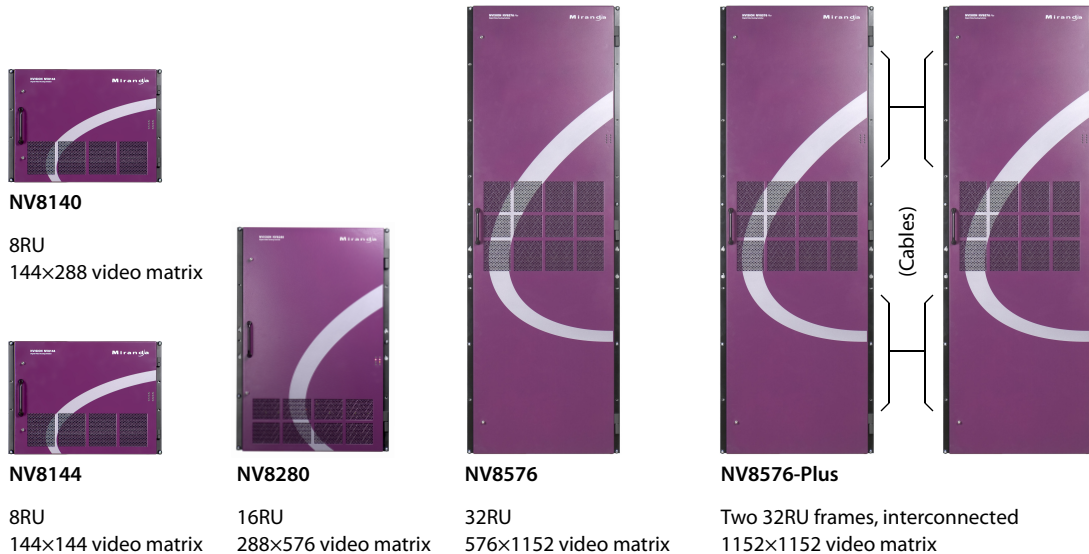
This document describes the NV8500 router family and presents information that you can use to determine the components of the router you want to order, and presents information that will help you configure the router.

Topics include:	Page
• Introduction	2
• Router Organization	5
• Power Connections	9
• I/O Connections	12
• Connectors	19
• Monitors	26
• Control Connections	31
• Expansion Connections	35
• Configuration Software	36
• Router Configuration in NV9000-SE Utilities	36
• DHP	44
• Kaleido Multi-Viewers	45
• Specifications	47
• Other Important Documents	54
• Addendum 1 — DIN 1.0/2.3 Connectors	55
• Addendum 3 — Port Enumeration Drawings	63
• Addendum 4 — Signal Paths in an Expanded Router	101

There are many installation options and configuration options. The NV8500 router family is complex and this document contains detailed information. Please read this material carefully.

Introduction

The NV8500 family of routers comprises 5 routers:



Except for the NV8140, the routers in the NV8500 family switch both video (SD, HD, 3Gig), and audio (AES sync and async). The NV8140 does not switch AES async.

The routers support two classes of input and output cards:

- Standard—video (SD, HD, 3Gig rates automatically detected), or AES (async).
- Hybrid—combining audio with video.

There are *disembedder* cards (that extract audio from video input).

There are *embedder* cards (that insert audio into video output).

There are MADI¹ input and output cards. MADI input cards extract audio from a MADI stream. MADI output cards combine audio into a MADI stream.) MADI cards also receive and send video signals.

- ▲ If *any* hybrid I/O cards are present, the router is considered a *hybrid* router. *All* its control cards and all its crosspoint cards must be hybrid cards. Otherwise, it is considered a *standard* router and all its control cards and crosspoint cards must be standard cards.

You can have a combination of I/O card types in your router. *Standard* input cards do not disembed audio; *standard* output cards do not re-embed audio. With the *hybrid* cards, the routers can disembed audio, recombine the audio, and re-embed the recombined audio at output.

With a process called DHP (dynamic hybrid pathfinding), the routers can route standard input through an internal pool of hybrid disembedder cards after which the audio from the standard input can be recombined and re-embedded on output. The point of DHP is that it allows you to populate the router with many relatively inexpensive standard I/O cards and a few hybrid cards and still have the benefits of hybrid routing (the ability to breakaway audio entirely within the router). See [DHP](#) on page 44.

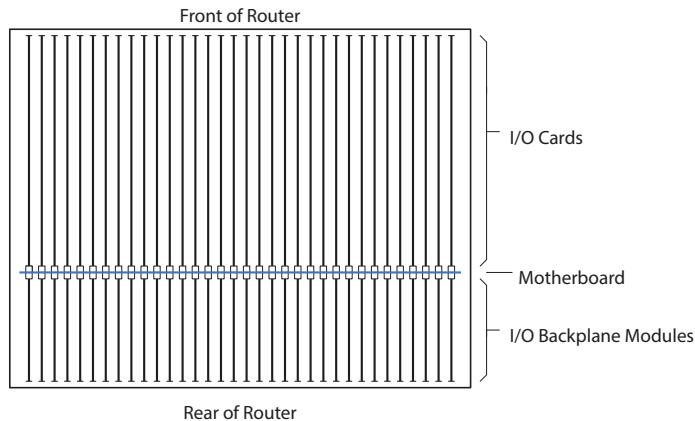
1. MADI (multi-channel audio digital interface) is time-multiplexed AES. The NV8500 supports 64-channel and 56-channel MADI. A DIP switch configures a MADI output card for 56-channel mode. MADI input cards accept any number of channels (up to 64).

These are the benefits of hybrid routing:

- Substantially less rack space.
- Less power consumption.
- Fewer external embedders and disembedders.

I/O Connectors

Input cards are coupled with input backplane modules. Output cards are coupled with output backplane modules. This diagram is a simplified top view of the cards and backplane modules:



This is a simplified drawing. The routers actually have more than one motherboard and more than one set of I/O cards.

Backplane modules typically have coax (DIN 1.0/2.3) connectors or fiber optic (SFP) connectors. (Balanced AES modules use WECO quick-release connectors.)

For Routers other than the NV8140

Input backplane modules each have 9 connectors. Output backplane modules each have 18 connectors.

Expansion output backplane modules (for the NV8576-Plus) have 9 connectors and two 28-pin expansion ports.

Standard input cards use all 9 connectors of the backplane modules. Standard output cards use all 18 connectors of the backplane modules.

Hybrid disembedder (input) cards use 8 of the 9 connectors. The 9th connector is not used. Hybrid embedder (output) cards use 16 of the 18 connectors. The 9th and 18th connectors are not used.

Hybrid MADI input cards use the first 8 connectors for video input and use the 9th connector for MADI input (up to 64 channels). Hybrid MADI output cards use connectors 1–8 and 10–17 for video output and use the 9th and 18th connectors for MADI output (56 or 64 channels each).

- ▲ Because hybrid cards have fewer ports, the number of available inputs and outputs decreases as the number of hybrid cards in the router increases. For example, an NV8576-Plus that is populated entirely with hybrid cards has 1024 video inputs and 1024 video outputs.

See [I/O Connections](#) on page 12 for more detail.

For the NV8140

Input backplane modules each have 18 connectors. Output backplane modules each have 18 connectors.

Standard input cards use all 18 connectors of the backplane modules. Standard output cards use all 18 connectors of the backplane modules.

NV8500 Pre-Installation Guide

Introduction

Hybrid disembedder (input) cards use 16 of the 18 connectors. The 9th and 18th connectors are not used. Hybrid embedder (output) cards use 16 of the 18 connectors. The 9th and 18th connectors are not used.

Hybrid MADI input cards use connectors 1–8 and 10–17 for video output and use the 9th and 18th connectors for MADI output (up to 64 channels each). Hybrid MADI output cards use connectors 1–8 and 10–17 for video output and use the 9th and 18th connectors for MADI output (56 or 64 channels each).

See [I/O Connections](#) on page 12 for more detail.

Expansion Cabling for the NV8576-Plus

The NV8576-Plus router comprises two interconnected router frames. The frames use *expansion output cards and expansion backplane modules*. Expansion output backplanes have 9 connectors and two 28-pin expansion connectors. Cables connect the 2 router frames on the expansion connectors. See [Expansion Connections](#) on page 35 for details.

Expansion *output* cards provide 9 outputs and signals to the other frame. Expansion output backplanes have 9 connectors and two 28-pin expansion connectors. Expansion *filler* cards provide **no** outputs, but support the expansion connections. Cables connect the 2 router frames on the expansion connectors. See [Expansion Connections](#) on page 35 for details.

Standard expansion output cards use all 9 outputs. The hybrid embedding expansion card use the first 8 outputs and the 9th remains unused. The hybrid MADI expansion card has 8 video outputs and 1 MADI output (56 or 64 channels). Expansion *filler* cards provide **no** outputs, but support the expansion connections.

- ▲ Hybrid expansion cards of one router frame must connect—through expansion backplane modules—to hybrid expansion cards of the other frame. Standard expansion cards must connect to standard expansion cards. Coax cards must be coupled with coax backplane modules. Fiber cards must be coupled with fiber backplane modules.
- ▲ The expansion backplane module in slot *N* in one frame must connect to the expansion backplane module in slot *N* in the other frame.]

For an NV8576-Plus, you need a minimum of 2 and a maximum of 128 expansion cables. Regardless of how many you need, you must order a full set of 128 cables. Because the cables can add a considerable amount of weight (151.5 lb) and bulk to the frames, you might need to plan on some mechanical support for the cabling. See [Expansion Cable \(WC0121-00\)](#) on page 23.

Peripherals

The NV8500 routers can use the following products, in different circumstances.

- NV8900 family MADI interfaces. There are 6 models:
 - AES-to-MADI coax (BNC). Converts (up to) 64 AES channels on 32 BNCs to a MADI stream.
 - AES-to-MADI balanced (STP²). Converts (up to) 64 AES channels on 8 DB25s to a MADI stream.
 - Analog-audio-to-MADI (STP). Converts (up to) 64 analog audio channels on 8 DB25s to a MADI stream.
 - MADI-to-AES coax (BNC). Converts a MADI stream to 64 AES channels on 32 BNCs.
 - MADI-to-AES balanced (STP). Converts a MADI stream to 64 AES channels on 8 DB25s.
 - MADI-to-analog-audio (STP). Converts a MADI stream to 64 analog output channels on 8 DB25s.

2. Shielded twisted pair.

- Miranda CWDM MUX and DEMUX (and tray).
These devices reduce the number of fiber optic cables by multiplexing up to 16 or 18 different wavelengths on a single fiber. The 1RU tray holds 4 multiplexers or demultiplexers.
No additional equipment is required for *standard* fiber connections.
- Miranda Kaleido multi-viewers. There are several models. All can work in conjunction with the NV8500 routers.

Power

There are different power requirements, depending on the router. Each involves a certain number of primary power supplies and the same number of redundant power supplies. *The redundant power supplies are optional.*

Standard routers use PS8100 power supplies; hybrid routers (except the NV8144) require PS8300s.

Router	Primary	Redundant (Optional)	NV8300s
NV8144	1 internal PS8100	1 internal PS8100	0
NV8140	1 internal PS8300	1 internal PS8300	0
NV8280	2 external PS8300s	2 external PS8300s	1
NV8576	4 external PS8300s	4 external PS8300s	2
NV8576-Plus, single frame	4 external PS8300s	4 external PS8300s	2
NV8576-Plus	8 external PS8300s	8 external PS8300s	4

External PS8300s are housed in a 3RU NV8300 power supply frame. Each power supply frame holds two primary supplies and two (optional) redundant supplies.

Each PS8100 delivers 875 W. Each PS8300 delivers 1350 W. AC current draw is unknown, but less than 15A for the PS8100 and less than 20A for the PS8300.

Any router using NV8300s requires 20 A junction boxes with NEMA L5-20P sockets. (These sockets might require additional wiring in your plant.) Every PS8300 requires one WC0157 20 A power cord and appropriate plant wiring for each PS8300 (up to 16 circuits for the NV8576-Plus).

The part number of the cable from the NV8300 to the router frame is WC0154. The cable is 3 meters (about 10 feet) in length. See [Power Cable \(WC0154-10\)](#) on page 24 for detail.

For router frames that use 2 NV8300s, the frame ID switch of one power supply frame must be set to the 1 position and the frame ID switch of the other power supply frame must be set to the 2 position

Again, every PS8300 (up to 16 of them) requires one WC0157 20A power cord and appropriate plant wiring for the PS8300.

Router Organization

The NV8500 routers contain input cards, output cards, control cards, monitor cards, and crosspoint cards. Each input card, output card, and monitor card must have a matching backplane module.

If the router contains any hybrid cards, it is considered a hybrid router and its control cards and crosspoint cards must be hybrid cards.

If the router contains only standard cards, it is considered a standard router and its control cards and crosspoint cards must be standard cards.

NV8500 Pre-Installation Guide

Router Organization

NV8144

The NV8144 is a small router at 8RU. It has a 144×144 video crosspoint matrix and a 2304×2304 audio matrix. Figure 1 shows the components of the NV8144:

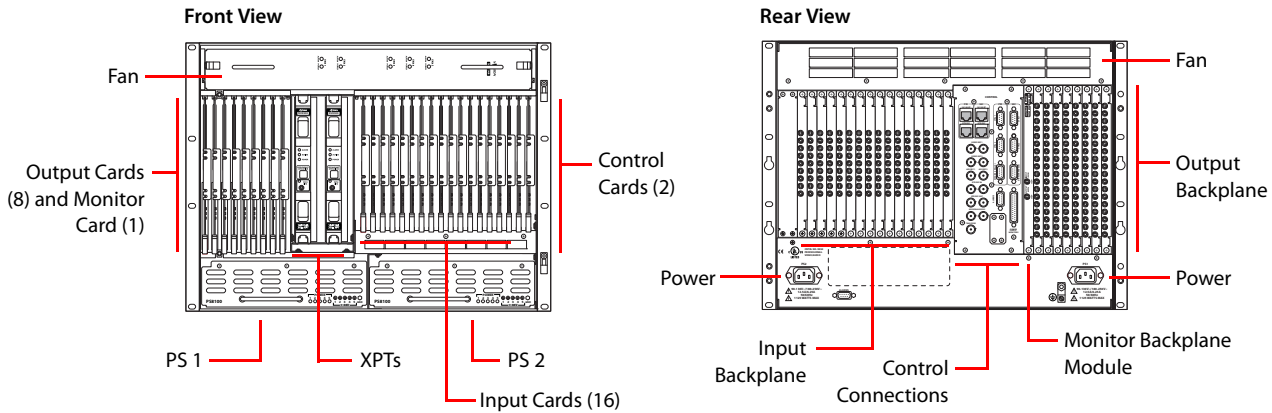


Figure 1. NV8144 Components

There are 16 input slots and 8 output slots. The NV8144 accepts a primary control card and a redundant control card. There is one slot for a monitor card that provides both input and output monitoring.

The NV8144 has 2 crosspoint card slots. One crosspoint card is redundant and is not used unless the other crosspoint card fails.

The control connections include serial and Ethernet control connections and video reference connections.

NV8140

The NV8140 is another 8RU router. It has a 144×288 video crosspoint matrix and a 2304×4608 audio matrix. Figure 2 shows the components of the NV8140:

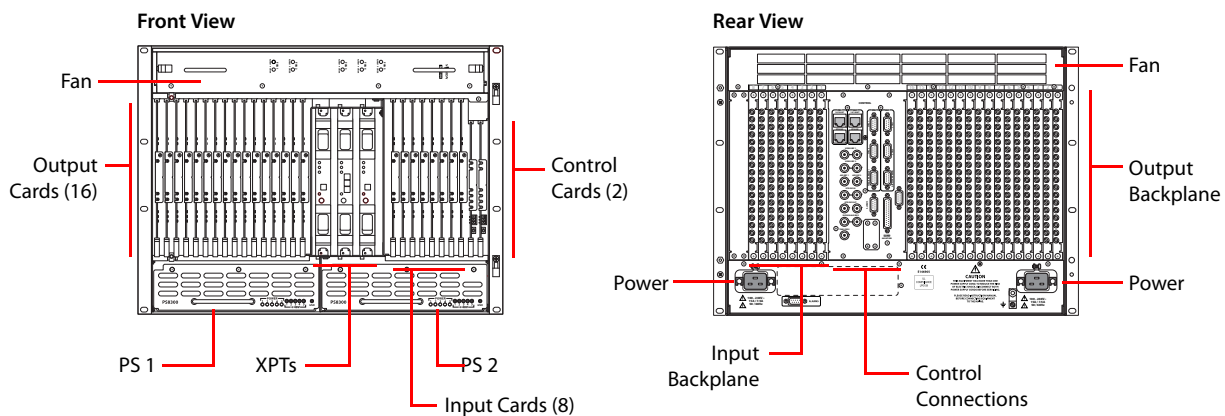


Figure 2. NV8140 Components

There are 8 input slots and 16 output slots. The NV8140 accepts a primary control card and a redundant control card. (There is no monitor slot.)

The NV8140 has 3 crosspoint card slots. The middle crosspoint card is redundant and is not used unless one of the other crosspoint card fails.

The control connections include serial and Ethernet control connections and video reference connections.

NV8280

Figure 3 shows the components of the NV8280:

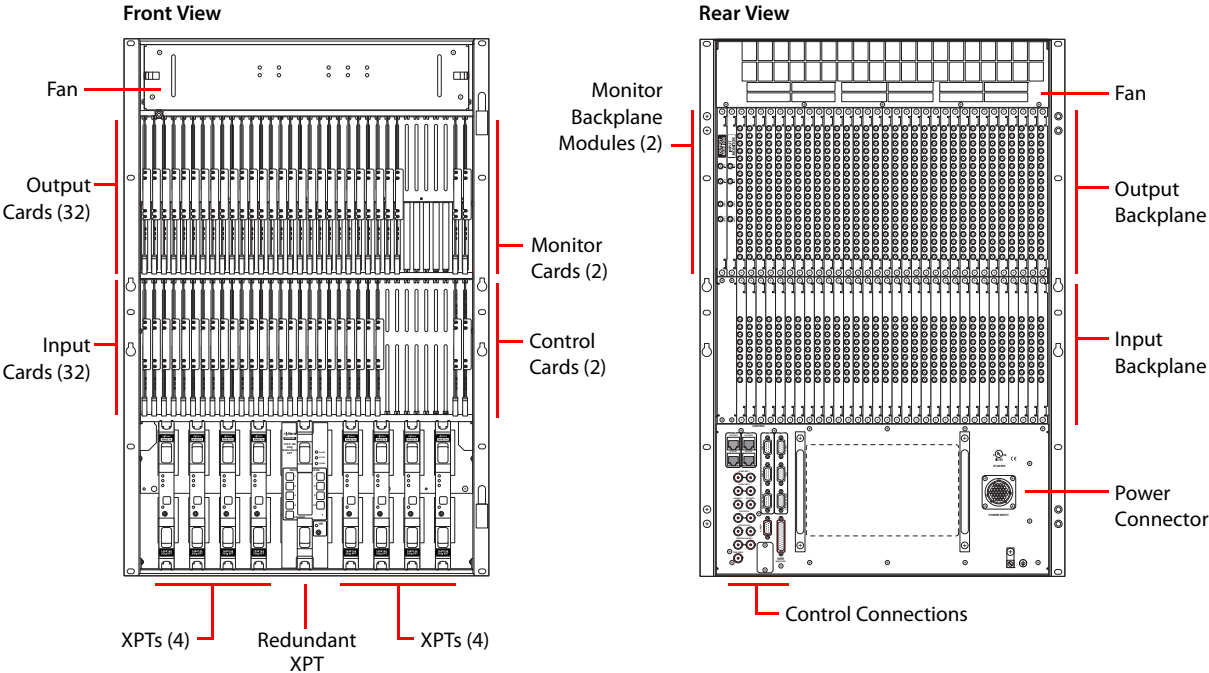


Figure 3. NV8280 Components

The NV8280 has a 288×576 video crosspoint matrix and a 4608×9216 audio matrix.

There are 32 input slots and 32 output slots. The NV8280 accepts a primary control card and a redundant control card. There are two monitor card slots, one for input and one for output.

The NV8280 has up to 8 crosspoint cards and a redundant crosspoint card. The redundant crosspoint card is not used unless one of the other crosspoint card fails.

The control connections include serial and Ethernet control connections and video reference connections.

There is a single power connector that goes to an NV8300 power supply module.g12

NV8576

NV8500 Pre-Installation Guide

Router Organization

Figure 4 shows the components of the NV8576:

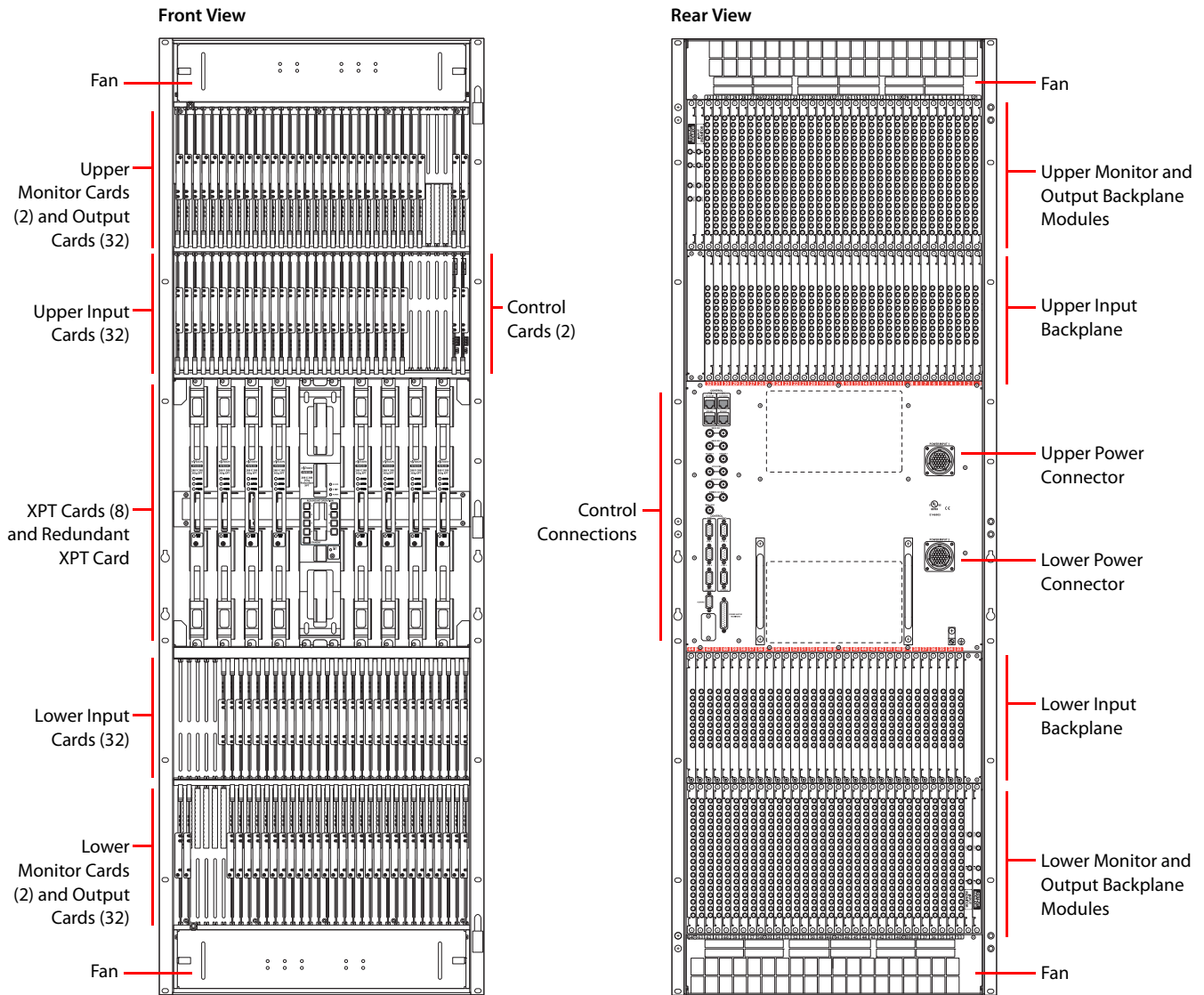


Figure 4. NV8576 Components

The NV8576 has a 576×1152 video crosspoint matrix and a 9216×18,432 audio matrix.

There are 64 input slots (32 in the upper bay and 32 in the lower bay) and 64 output slots (32 in the upper bay and 32 in the lower bay). The NV8576 accepts a primary control card and a redundant control card. There are four monitor card slots, two (input and output) in the upper bay, and two in the lower bay.

The NV8576 has up to 8 crosspoint cards and a redundant crosspoint card. The redundant crosspoint card is not used unless one of the other crosspoint card fails.

The control connections include serial and Ethernet control connections and video reference connections.

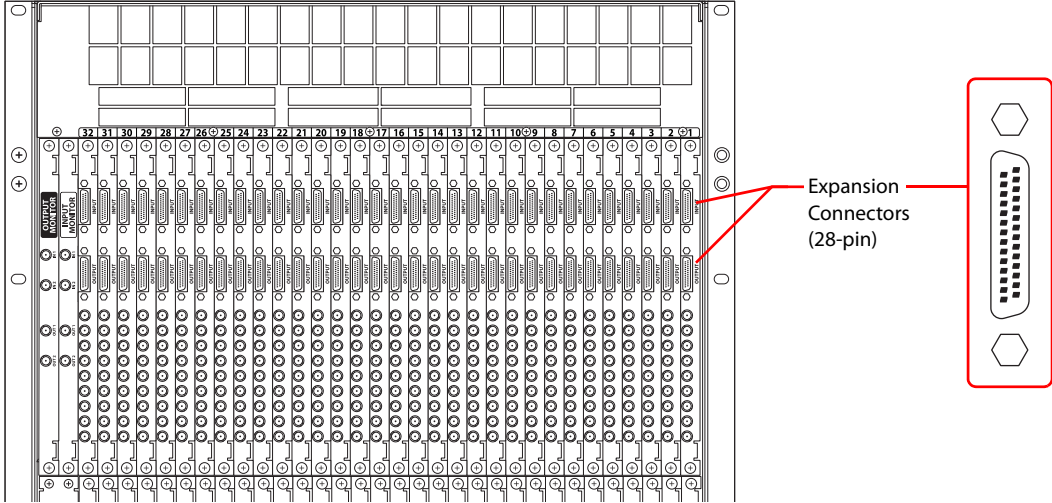
There are two power connectors. Each goes to an NV8300 power supply module.

- ▲ It is important to note that the lower bays (input and output) are rotated 180° with respect to the upper bays. Thus the monitor cards in the lower bays are on the opposite side of the router from the monitor cards in the upper bay and *the cards and backplane modules in the lower bay must be installed upside down.*

NV8576-Plus

The NV8576-Plus can be used a single frame or as an expanded dual-frame router. The single frame has a 576×576 video crosspoint matrix and a 9216×9216 audio matrix. The expanded router has a 1152×1152 video crosspoint matrix and a 18,432×18,432 audio matrix.

The two frames in the NV8576-Plus router are mechanically the same as the frames in the NV8576, with one exception. The upper and lower output bays in each frame are populated with output expansion cards (or output expansion filler cards, alternatively) and output expansion backplane modules:

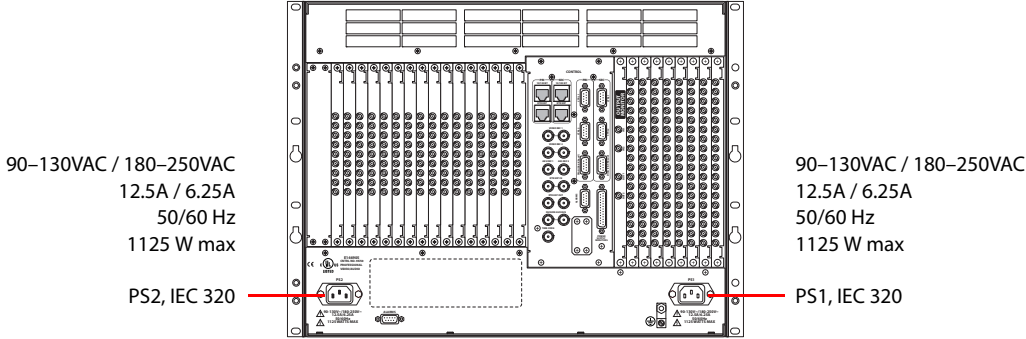


As for the NV8576, the lower input and output bays in each frame are rotated 180° with respect to the upper bays. Thus the monitor cards in the lower bays are on the opposite side of the router from the monitor cards in the upper bay and *the cards and backplane modules in the lower bay must be installed upside down*. See [Expansion Connections](#) on page 35.

Power Connections

NV8144 Power Connection

The NV8144 does *not* require an external power supply or 20A power outlets:



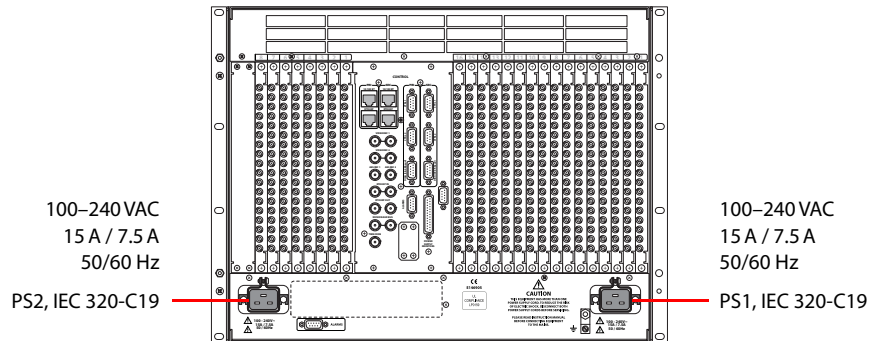
It has 2 internal PS8100 power supplies. One is optional—for redundancy.

NV8500 Pre-Installation Guide

Power Connections

NV8140 Power Connection

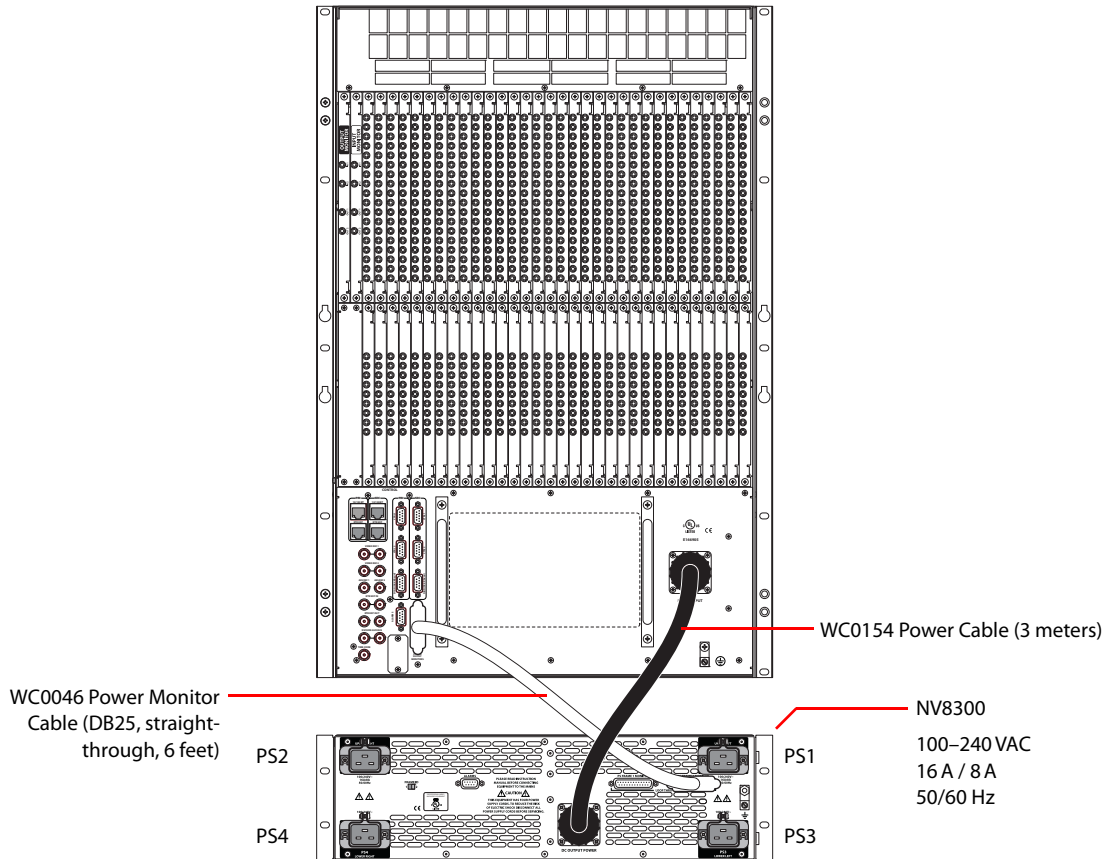
The NV8140 does **not** require an external power supply, but **does** require one 20A power outlet (NEMA L5-20P) for each PS8300 power supply:



It has 2 internal PS8300 power supplies. One is optional — for redundancy.

NV8280 Power Connection

The NV8280 requires one NV8300 power supply frame and one 20A power outlet (NEMA L5-20P) for each PS8300 power supply. One DC power cable (WC0154) connects the NV8300 to the router:



The DB25 power monitor cable (WC0046) and the WC0154 power cable are included with the NV8300 power supply frame.

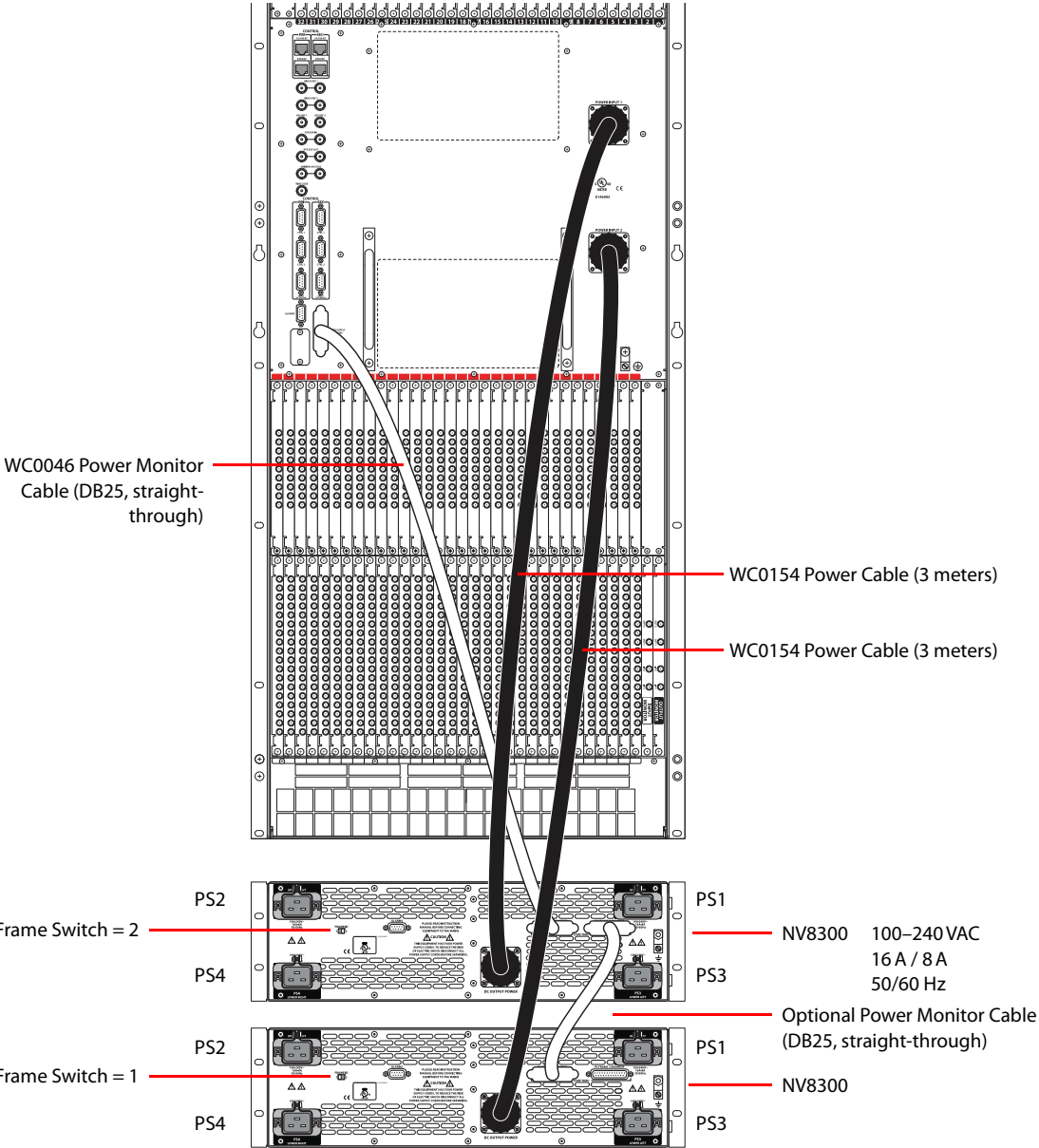
Power supply PS2 is redundant to power supply PS1. Power supply PS4 is redundant to power supply PS3. The redundant power supplies are optional.

The frame switch setting of the NV8300 is not relevant for the NV8280.

The NV8300 power supply frame can be mounted anywhere in relation to the NV8280 router frame.

NV8576 Power Connection

The NV8576 requires two NV8300 power supply frames and one 20A power outlet (NEMA L5-20P) for each PS8300 power supply. One DC power cable (WC0154) connects each NV8300 to the router:



A DB25 power monitor cable (WC0046) is included with each NV8300 power supply frame. One cable connects one NV8300 frame to another. The other extends to the NV8576 frame.

A power supply cable (WC0154) is included with each NV8300 power supply frame.

The frame switches of the NV8300s must be set differently.

The NV8300 power supply frames can be mounted anywhere in relation to the NV8576 router frame.

NV8576-Plus Power Connection

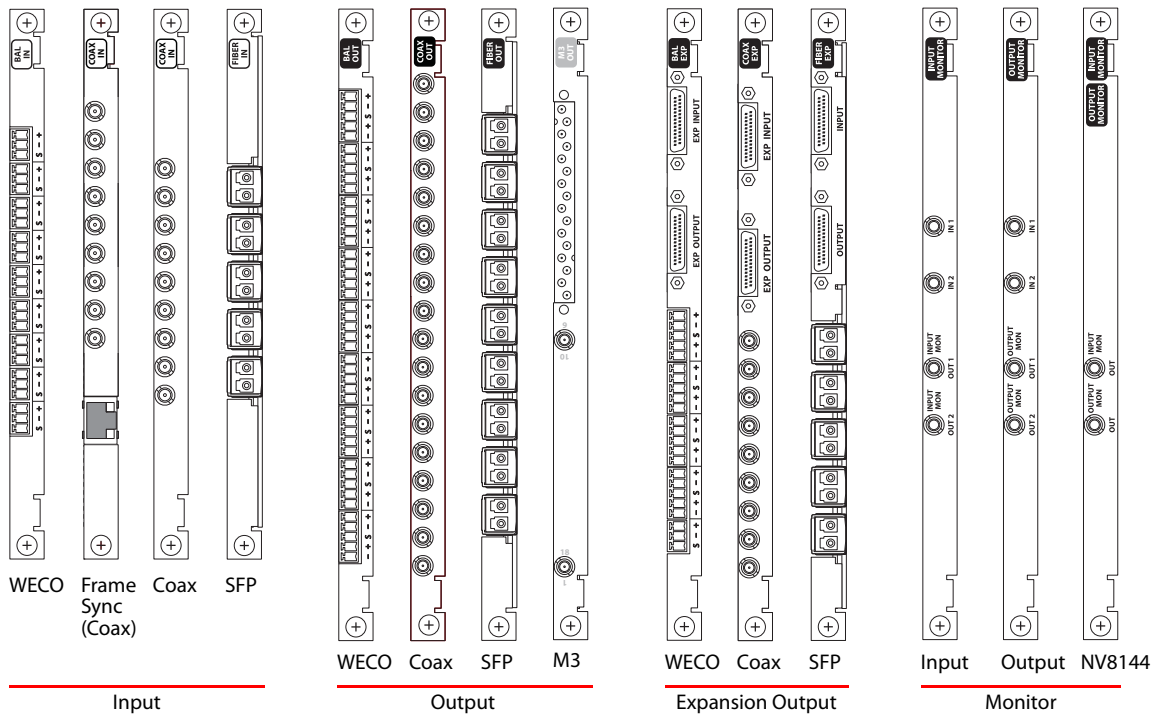
The NV8576-Plus has 2 frames. Power is connected—for each frame—as shown for the NV8576.

Two NV8300s (and two WC0154 cables and two WC0046 cables) are required for each frame.

I/O Connections

For All Routers Except the NV8140

For routers other than the NV8140, there are 13 different backplane modules:



Input modules have 9 input connectors. Output modules have 18 output connectors. Expansion output modules have 9 output connectors and two 28-pin expansion connectors (There are 5 connector pairs on the SFP input module; its last connector is not used. Similarly, there are 5 connector pairs on the SFP expansion output module; its last connector is not used.)

Frame sync input cards have an additional RJ-45 (Ethernet) connector for configuring frame sync functions.

These modules provide I/O connections for both standard and hybrid I/O cards. The expansion output modules are used only with the NV8576-Plus. The two frames of an NV8576-Plus are interconnected on its 28-pin expansion connectors.

Modules with WECO connectors support balanced (asynchronous) AES signals. (See [WECO Backplane Connectors](#) on page 20.)

Modules with SFP connectors support fiber optic cabling. (See [SFP Backplane Connectors](#) on page 21.)

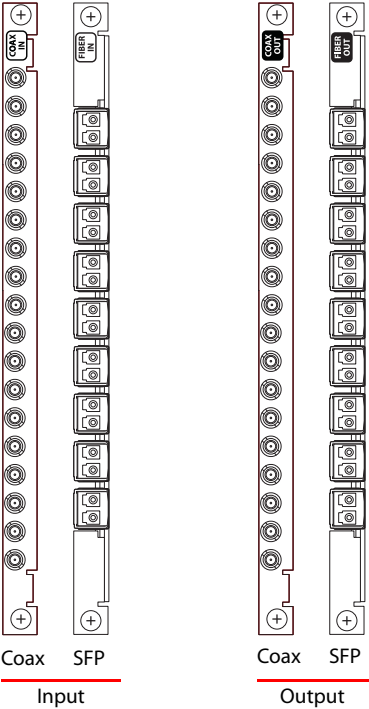
Modules with coaxial connectors (DIN 1.0/2.3) support video or unbalanced (asynchronous) AES signals.

The NV8144 uses a single monitor card and a backplane module with both input and output connectors. The NV8280, NV8576, and NV8576-Plus routers use separate monitor input and output cards and these use input and output monitor backplane modules.

▲ (Video) monitor cards are optional. Although useful, they are not required for the router to switch video and audio.

For the NV8140

For the NV8140, there are 4 different backplane modules:



Input modules and output modules have 18 connectors. (There are 9 connector pairs on each SFP module.)

Coax backplane modules provide I/O connections for both standard and hybrid I/O cards. SFP modules provide connections for standard cards. Modules with SFP connectors support fiber optic cabling.

Modules with coaxial connectors (DIN 1.0/2.3) support video with or without embedded audio.

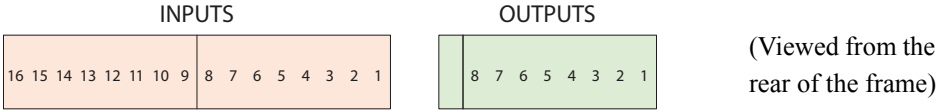
The NV8140 has no monitor card slot.

Slot Numbering

It is important to understand the slot (and port) numbering scheme.

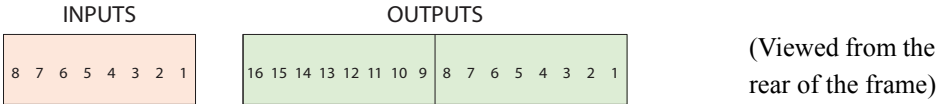
- NV8144

Slots are arranged in groups of 8 slots. For the NV8144, the slot numbering is simple:



- NV8140

Slots are arranged in groups of 8 slots. For the NV8140 also, the slot numbering is simple:

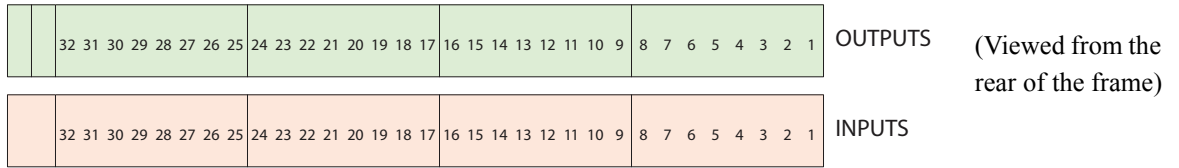


NV8500 Pre-Installation Guide

I/O Connections

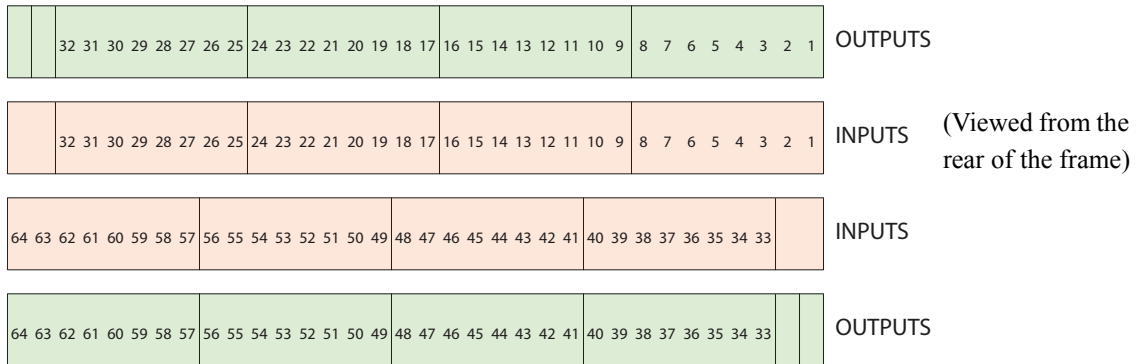
- NV8280

For the NV8280, there are 4 sets of 8 output slots and 4 sets of 8 input slots.



- NV8576, NV8576-Plus

For the NV8576, there are 8 sets of 8 output slots and 8 sets of 8 input slots:



The slots are numbered from 1 to 64, both for inputs and for outputs.

For the NV8576-Plus, slots in both frames have this same numbering.

- ▲ The labels on the rear of the NV8576 frame(s) reflect this numbering. However, slots are ordered differently with respect to port numbering. See [Port Numbering](#) on page 17.

Connector Numbering

For any card in any slot in any of the routers, connector numbering proceeds from top to bottom, the lowest numbered port at the top of the card and the highest numbered ports at the bottom of the card.

The NV8576 and NV8576-Plus have upper and lower input bays and upper and lower output bays. Cards and backplane modules are installed in the lower bays are *upside down*. Nevertheless, the connector numbering is still *top to bottom*.

Standard vs. Hybrid

Hybrid cards (disembedder, embedder, or MADI) are coupled with coax backplane modules. The use of the connectors and the numbering of the signals on the connectors differs according to the type of card:

Standard	Input	(Other than NV8140) 9 video
Disembedder	Input	(Other than NV8140) 8 video (16 channels embedded audio for each) + 1 unused
MADI	Input	(Other than NV8140) 8 video + 1 MADI input (64 AES channels)
Standard	Input	(NV8140) 18 video
Disembedder	Input	(NV8140) 16 video (16 channels embedded audio for each) + 2 unused
MADI	Input	(NV8140) 16 video + 2 MADI input (64 AES channels)
Standard	Output	18 video
Embedder	Output	16 video (16 channels embedded audio for each) + 2 unused
MADI	Output	16 video + 2 MADI input (56 or 64 AES channels each)

Backplane Modules

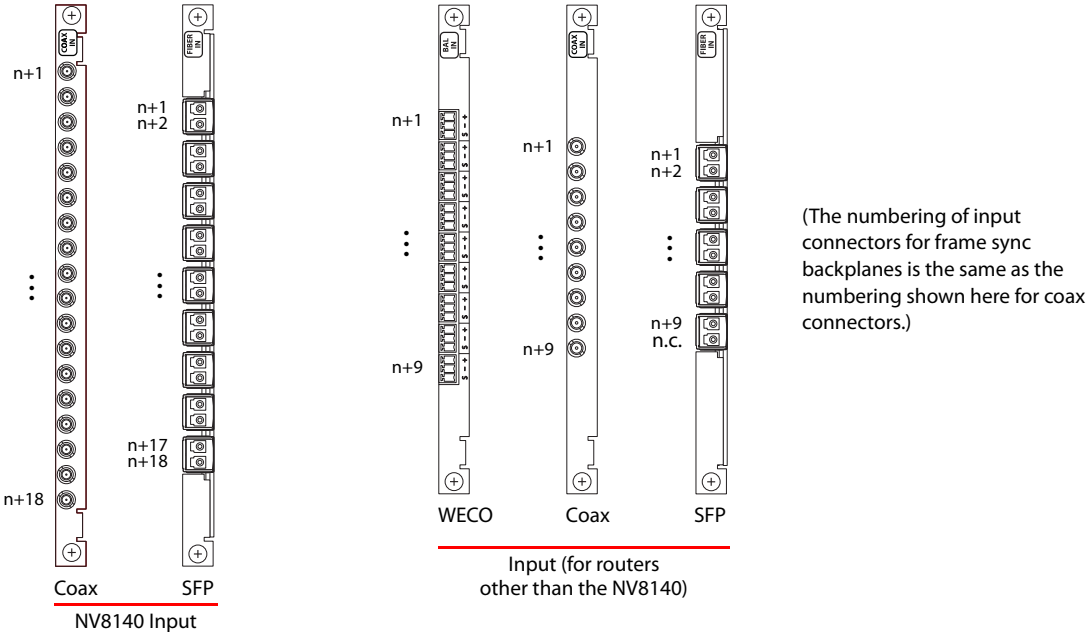
Although standard I/O cards and hybrid I/O cards differ, the same backplane modules are used for standard and hybrid cards. It is only the use of the ports that differs.

Because the backplane modules support both the different card types, it is often possible to rearrange input cards or output cards without changing the backplane module. For instance, a coax input backplane can be used with a standard input card, a disembedder card, or a MADI input card. Therefore, it can be advantageous to connect cables to the connectors of “unused” ports, because with a simple card swap, the ports can be come active.

Note that changing from a coax *card* to a fiber *card*, for example, **does** require a change of backplane module.

Connector Numbering for a Backplane Module

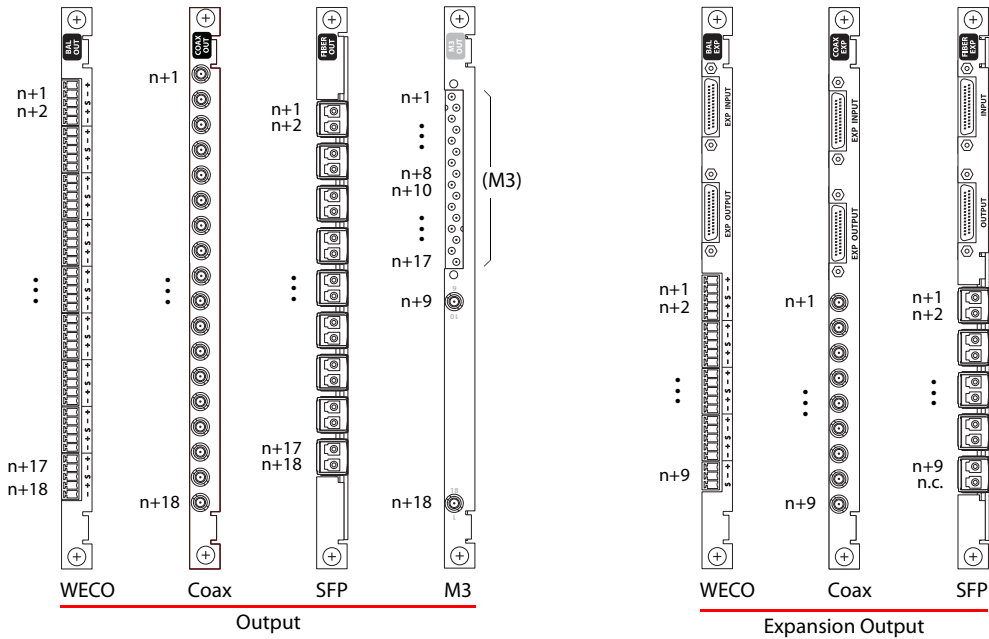
The numbering for backplane connectors used with standard cards is very simple. This illustration shows input backplanes:



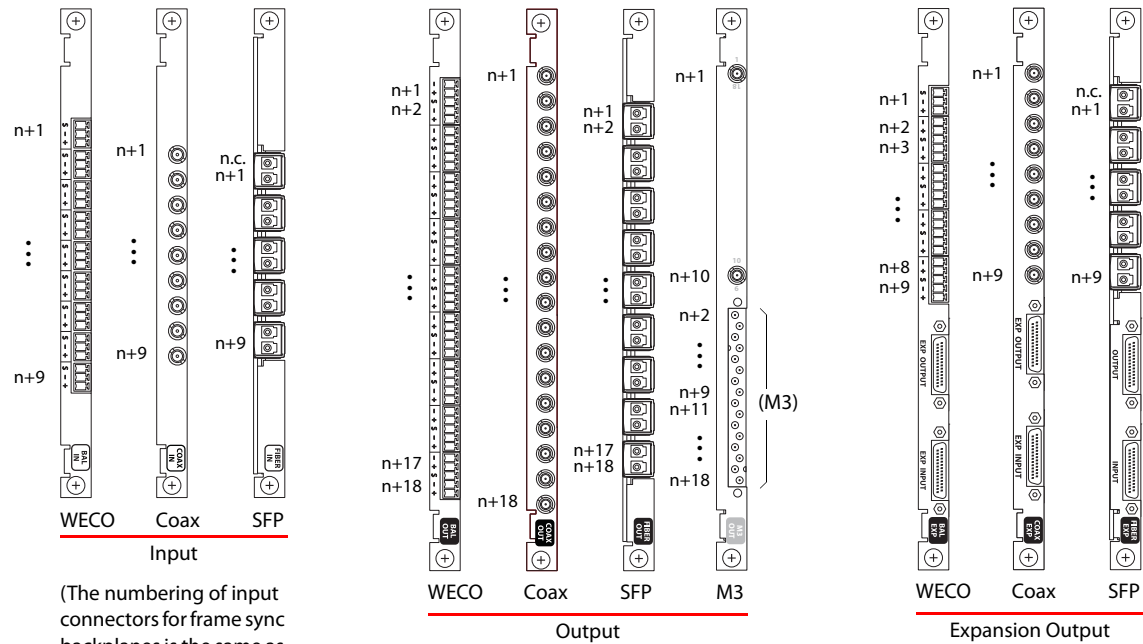
NV8500 Pre-Installation Guide

I/O Connections

This illustration shows output backplanes (the NV8140, NV8144, and NV8280 frames and in the upper bays of the NV8576 and NV8576-Plus:



The numbering for backplane connectors, input or output, that are upside down in the lower bays of the NV8576 and NV8576-Plus, is also simple, but different:



(The numbering of input connectors for frame sync backplanes is the same as the numbering shown here for coax connectors.)

The notation “n.c.” means not connected (internally).

The notation “n+” means that the ports are numbered with respect to a base number (n) that is specific to the slot in which the card and backplane are placed. For instance, if n = 27, the ports for the backplane range from 28 to 36.

The ports used by disembedder and embedder cards are numbered as for standard cards. The video signals are numbered in the same way, but the 9th connector on input and expansion backplanes is *not used by the input card* and the 9th and 18th connectors on output backplanes are *not used by the output card*.

The ports used by MADi cards are numbered slightly differently. Ports 1–8 on the backplane support video signals and are numbered as for standard cards. However, the 9th connector on input and expansion backplanes feed a MADi input on the card and the 9th and 18th connectors on output backplanes receive MADi output from the card.

The MADi connectors support time-multiplexed AES signals. The input cards accept up to 64 AES channels. The output cards support either 56 or 64 channels. Each channel is treated as a *numbered MADi port*.

▲ When preparing your configuration, and in your configuration’s documentation, you should account for **all** ports, whether they are unused or not. Otherwise, the port numbers in your documentation will not match the port numbers presented by MRC and NV9000-SE Utilities.

For example, if you have two hybrid disembedder cards in the first two input slots, their ports are numbered 1–9 (in slot 1) and 10–18 (in slot 2) where ports 9 and 18 are not used. You should number these ports 1–18 even though only ports 1–8 and 10–17 are actually used.

Port Numbering

NV8144, NV8140, or NV820

Port numbering for the NV8144, NV8140, and NV8280 follows the labeled slot numbers.

NV8576

Port numbering for the NV8576 does **not** follow the labeled slot numbers, but follow a different ordering,³ shown in figures 5 and 6. An NV8576 has 64 output slots (32 upper and 32 lower) and 64 input slots (32 upper and 32 lower).

This is the ordering of slots for input, for the purpose of port numbering, as viewed from the rear:

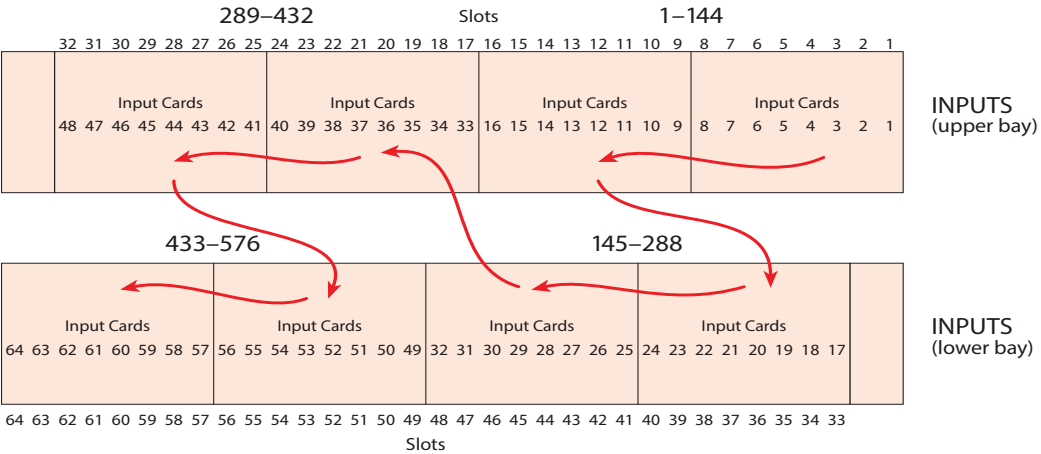


Figure 5. NV8576 Slot Order for Input Port Numbering

3. The ordering places the ports in proximity to the crosspoint cards that service them.

NV8500 Pre-Installation Guide

I/O Connections

This is the ordering of slots for output, for the purpose of port numbering:

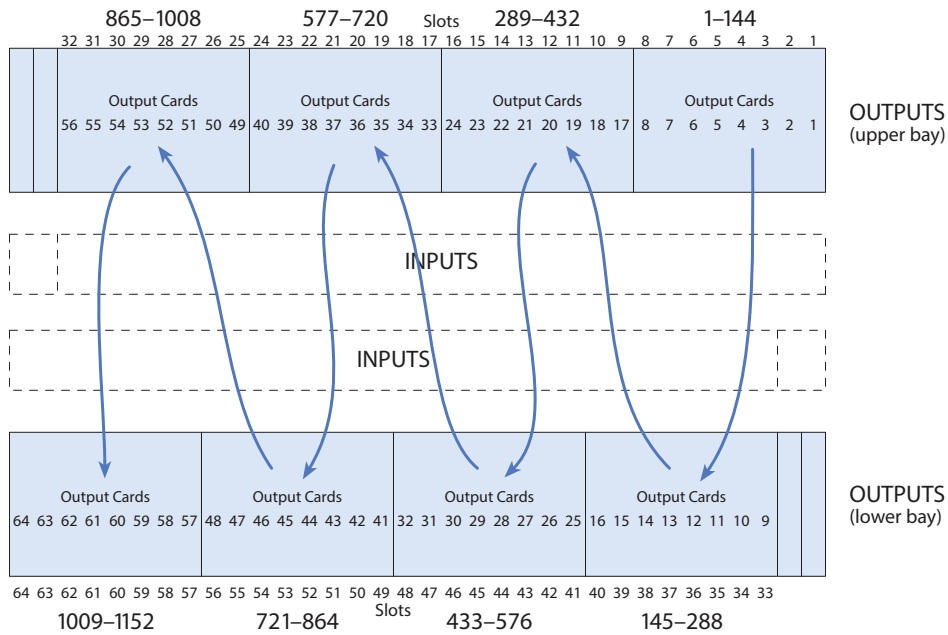


Figure 6. NV8576 Slot Order for Output Port Numbering

NV8576-Plus

Port numbering for the NV8576-Plus does *not* follow the slot numbers, but follow a different ordering, shown in figures 7 and 8. An NV8576 has 64 output slots (32 upper and 32 lower) and 64 input slots (32 upper and 32 lower).

This is the ordering of slots for input, for the purpose of port numbering, as viewed from the rear:

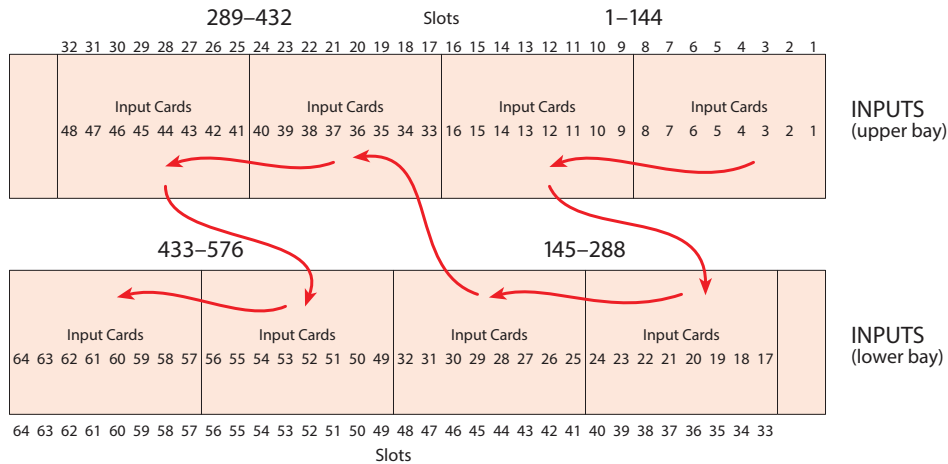


Figure 7. NV8576-Plus Slot Order for Input Port Numbering

This is the ordering of slots for output, for the purpose of port numbering:

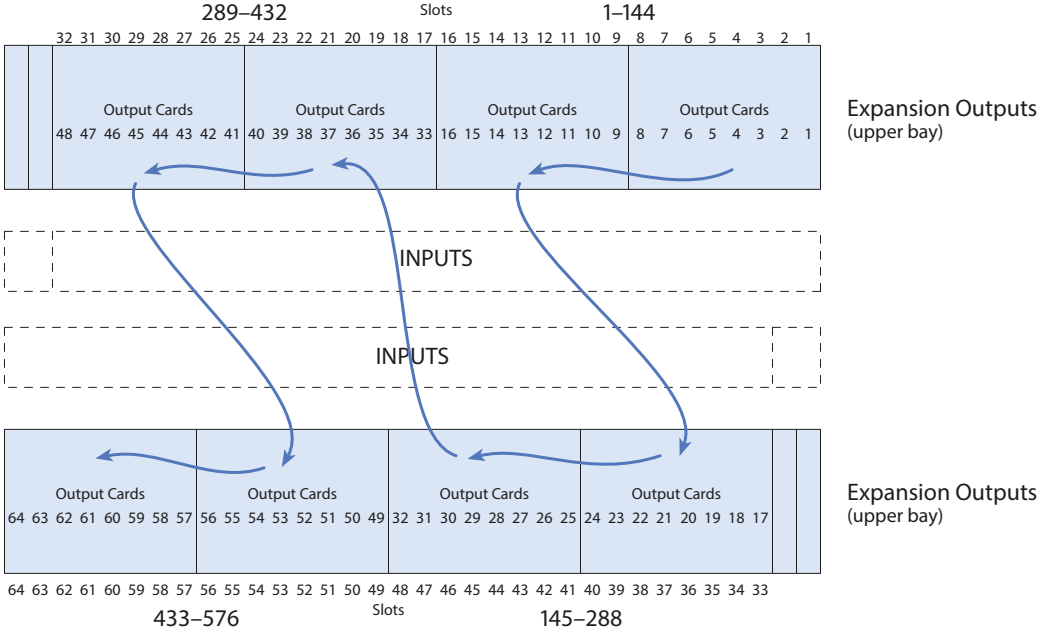


Figure 8. NV8576-Plus Slot Order for Output Port Numbering

Please refer to the drawings in [Addendum 3 — Port Enumeration Drawings](#) (page 63) for a complete enumeration of the port numbers (video and audio) for each of the routers.

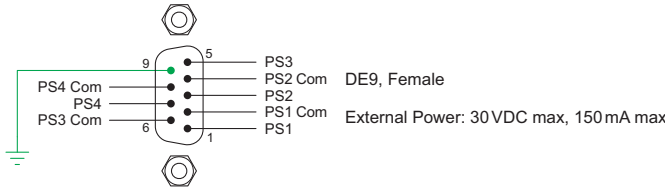
Connectors

Power Monitor

The power monitor connector(s)—for the NV8280, NV8576, NV8300 frames—are DB25s. Their pinout is not shown.

System Monitor

The system monitor connector of the NV8300 (DE9, female) might be useful:



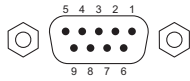
This provides connections so that you can monitor the status of each of the 4 power supplies in the frame.

NV8500 Pre-Installation Guide

Connectors

System Alarms

The system alarm connector of the router(s) is a DE9 (female):



- 1 Alarm COM 8 Alarm 5
- 2 Alarm 1 7 Alarm 6
- 3 Alarm 2 6 Alarm 7
- 4 Alarm 3 5 Alarm 8
- 5 Alarm 4 4 Alarm 9

DE9, Female

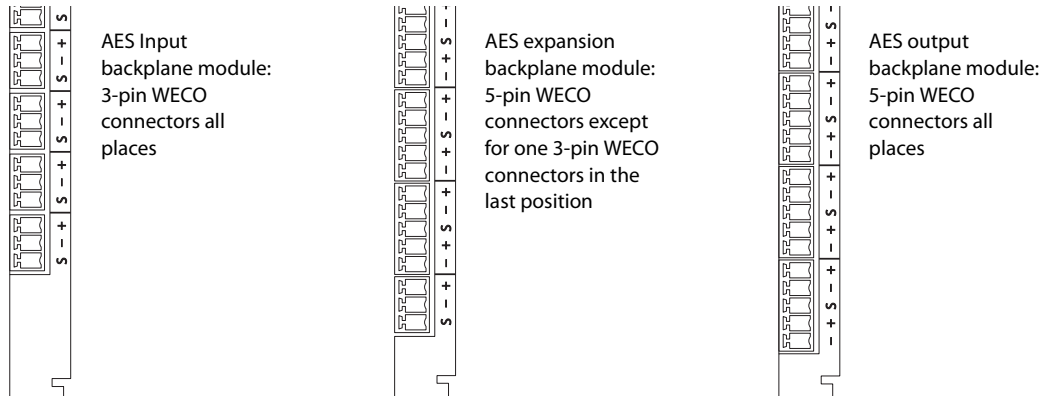
External Power: 30 VDC max, 150 mA max

Connect this to your own alarm equipment. This table identifies the alarm signals:

PIN	Signal	Description	Possible Conditions Causing the Alarm
1, 9	Alarm_COM	Common	Common connection for all alarm pins
2	Alarm_1	Major alarm	Missing reference inputs, or missing power supplies
3	Alarm_2	Minor alarm	Alarm_3 or Alarm_4 or Alarm_5 or Alarm_6
4	Alarm_3	Power supply	Missing power supply module
5	Alarm_4	Video ref	Missing video reference 1 or video reference 2
6	Alarm_5	AES ref	Not used
7	Alarm_6	Fans or temperature	A fan failure or module over temperature.
8	Alarm_7	Control module health	Any control module not “healthy.”

WECO Backplane Connectors

The AES backplane modules use 3-pin and 5-pin WECO connectors:



The 3-pin connectors provide one shielding connector (marked S) for one signal (whose connectors are marked “+” and “-”).

The 5-pin connectors provide one shielding connector (marked S) for *two* signals (whose connectors are marked “+” and “-”).

SFP Backplane Connectors

Fiber-optic backplane modules use 2-port SFP connectors:

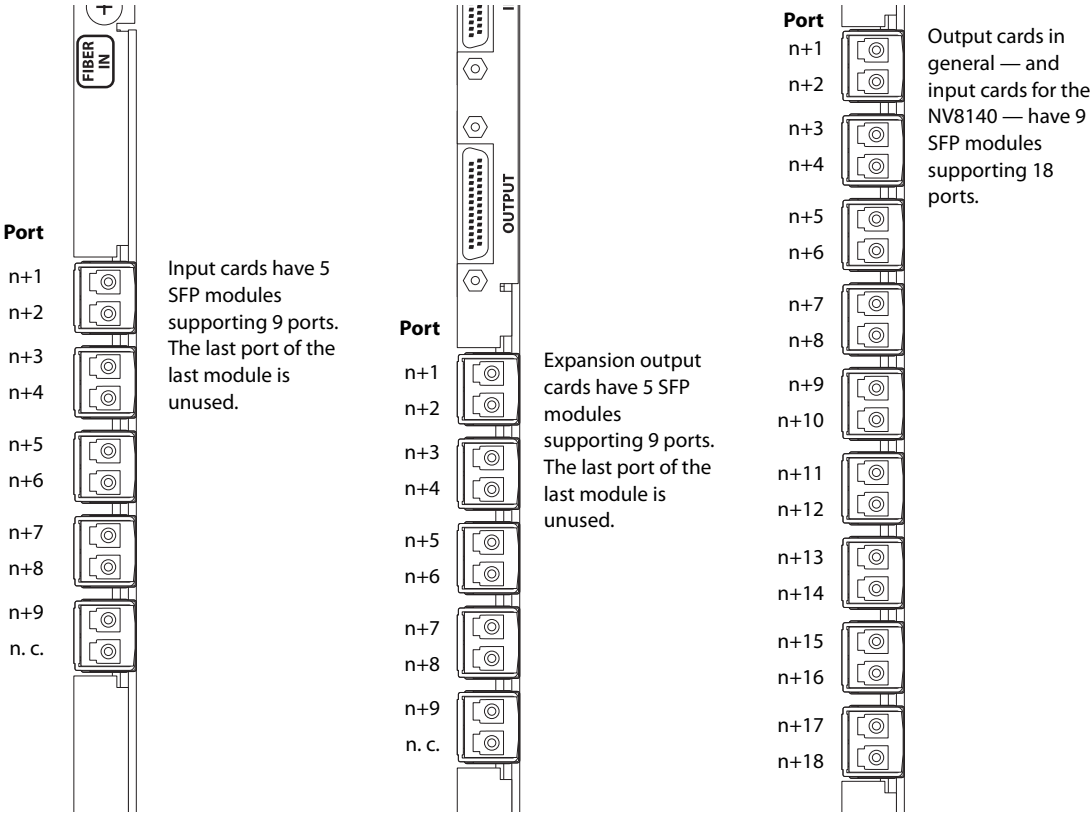


Figure 9. SFP Connectors

Interchangeable SFP modules fit in SFP cages on the backplane modules. The standard SFP module has 2 ports that operate at 1310 nanometers. These are either receivers, on the input backplane modules, or transmitters, on the output and expansion output backplane modules.

The output and expansion output backplane modules can also accept SFP modules whose ports have differing wavelengths. When a backplane module is populated with such SFP modules, it can support connection to one or more CWDM multiplexers. The CWDM multiplexers accept up to 18 fiber-optic signals. The signals must each have a different wavelength. The range of wavelengths accepted is 1271 nm to 1611 nm.

SFP Modules in NV8576 Frames

Because output cards in the lower bays of the NV8576 frames are rotated 180° with respect to the output cards in the upper bays, the orientation of SFP modules in the lower bays is likewise rotated 180° with respect to those in the upper bays.

NV8500 Pre-Installation Guide

Connectors

The SFP modules in the upper bay face left and have the “B” port at the top whereas the SFP modules in the lower bay face right and have the “B” port at the bottom. Figure 10 shows this:

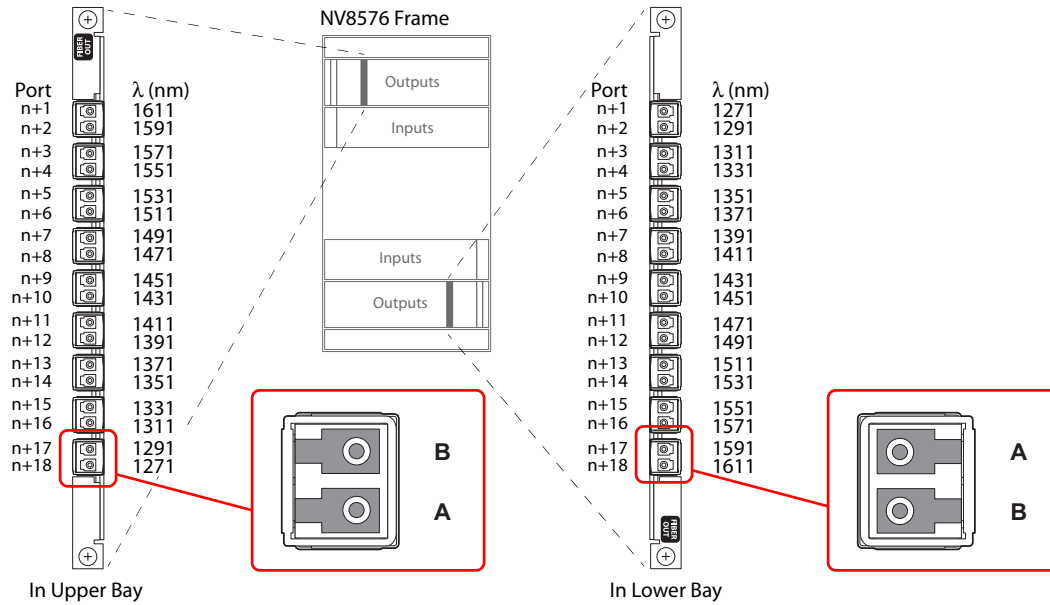


Figure 10. SFP Modules in Output Backplanes

Persons who connect SFP modules to CWDM multiplexers should be aware of the difference in orientation.

Figure 10 also shows a suggested ordering for the SFP wavelengths. It is not the only ordering possible, but it has the advantage of being uniform and identical in both orientations. A fiber-optic backplane module thus populated can be used in either the upper or lower bays.

- ▲ The orientation of SFP modules in input backplane modules is not an issue. Input cards can use standard SFP modules having two 1310 nm ports in all cases.

SFP Modules in NV8576-Plus Frames

NV8576-Plus frames use expansion output cards and backplane modules. Expansion output backplane modules have 5 SFP modules supporting 9 SFP ports. The last port of the last module is not used.

The SFP modules in the upper bay face left and have the “B” port at the top whereas the SFP modules in the lower bay face right and have the “B” port at the bottom. Figure 11 shows this:

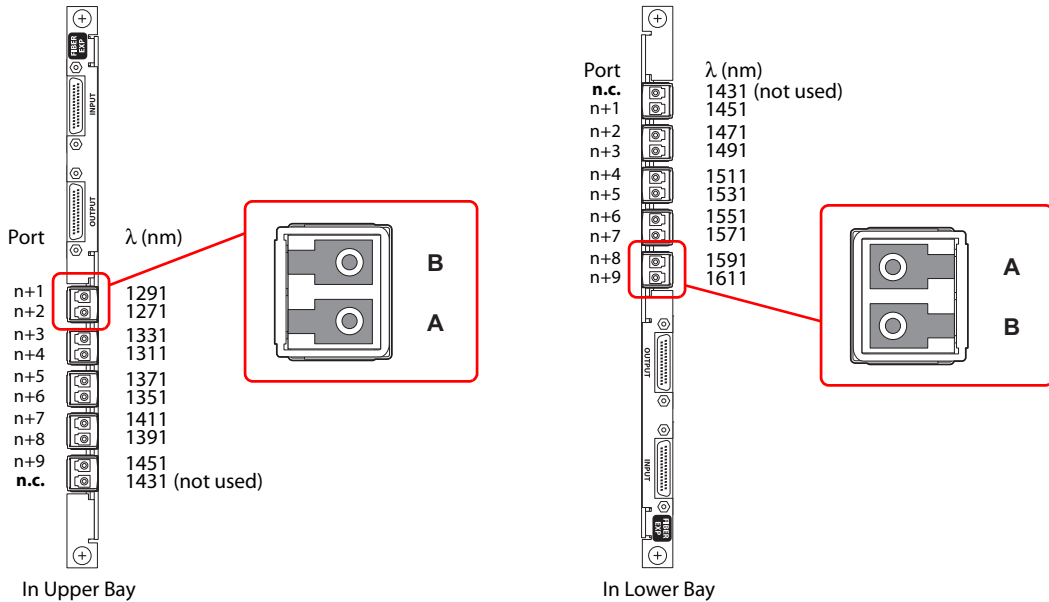


Figure 11. Expansion Output Backplanes

The wavelength of the unconnected port of the last SFP module on the backplane cannot be used.

The CWDM multiplexer can receive signals from any of the (live) ports of the router. However, its use with 9-port expansion output cards is slightly less efficient than with the 18-port output cards.

SFP Modules in NV8280, NV8140, and NV8144 Frames

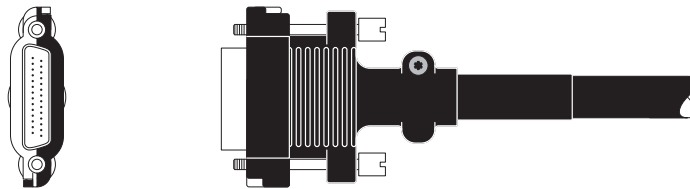
The SFP modules for these routers are oriented as shown in Figure 10 for the *upper bays*.

In addition, the ports of fiber-optic output backplanes are numbered as shown in Figure 10.

Cables

Expansion Cable (WC0121-00)

The expansion cable connects the expansion output cards of the two frames of an NV8576-Plus.



The cable is 4 meters in length (approximately 13 feet).

It is 0.35” (8.9 mm) in diameter.

Each cable weighs 0.537 kg (1.18 lb).

Figure 12. Expansion Cable Connector, 28-pin, TDP

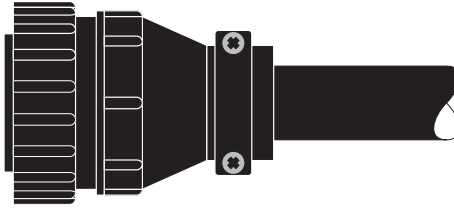
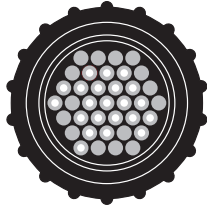
The connector is “D” shaped. It connects in only one orientation. The connectors are nickel-plated on one side and black on the other side. See [Expansion Connections](#) on page 35.

NV8500 Pre-Installation Guide

Cables

Power Cable (WC0154-10)

This cable connects the NV8300 power supply frame to NV820, NV8576, or NV8576-Plus router frames:



The cable is 3 meters in length (approximately 10 feet).

One is required for each NV8300 frame.

Because 1 frame is required for an NV8280, 1 cable is required for the NV8280.

Because 2 frames are required for an NV8576, 2 cables are required for the NV8576.

Because 4 frames are required for an NV8576-Plus, 4 cables are required for the NV8576-Plus. (If you have purchased a single NV8576-Plus frame, of course, only 2 NV8300 frames and 2 WC0154 cables are required.)

This cable is *not* required for an NV8144.

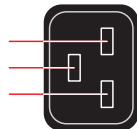
Power Cord for NV8300s (WC0157-00)

This cable connects a PS8300 in the NV8300 to a 20A plant outlet.



One is required for each PS8300 in use. The number of PS8300s varies. Sixteen are required for redundant power for an NV8576-Plus (with 2 frames).

For customers outside North America, we ship these power cords with the NEMA end cut off:

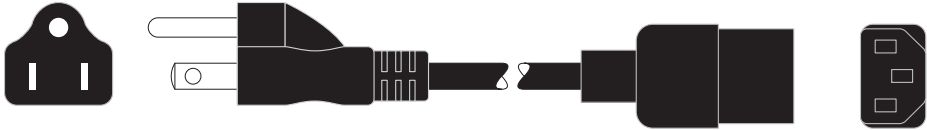


These customers must supply their own connector for the cable.

The wires are 12 AWG. Black is live, green is ground, and white is neutral. Outside the U.S., the current rating might be different.

Power Cord for NV8144s (WC0109-00)

This cable connects a PS8100 to a 10A plant outlet. These are ordinary 3-conductor power cords:



One is required for each PS8100 in use.

For customers outside North America, we ship these power cords with the end cut off:

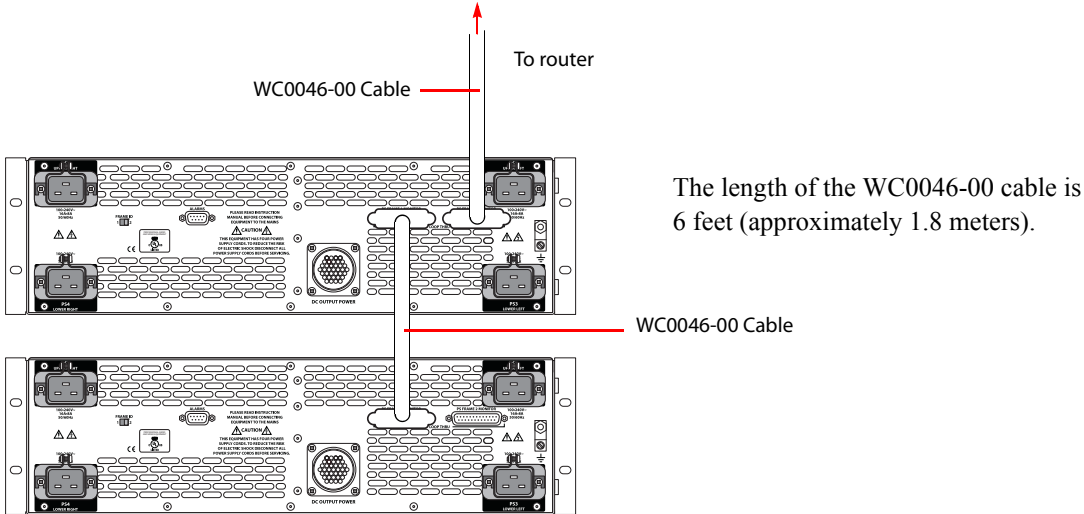


These customers must supply their own connector for the cable.

The wires are 14 AWG. Brown is live, green and yellow is ground, and blue is neutral. Outside the U.S., the current rating might be different.

Other Cables

(1) Use the WC0046-00 cable that ships with the NV8300 (or an off-the-shelf DB25 cable) to make power monitor connections. The power monitor connections exist between the NV8300 power supply frames and the router. To connect power monitor cables from two power supply frames to a single router, daisy-chain the connections:



Note: set the frame switch of one NV8300 to position one and the frame switch of the other NV8300 to position two.

- (2) Use a custom cable to make system alarm connections to the router. One end is a DE9 connector.
- (3) Use a custom cable to make a serial connection from your configuration PC to the front of the router control card. One end is a DE9 connector. The other end is a 3-pin Phoenix quick-release connector:



NV8500 Pre-Installation Guide

Monitors

- ▲ There is a small chance that pins 2 and 3 of the DE9 are Tx and Rx, respectively. If that is the case, Phoenix pin 1 must connect to DE9 pin 3 and Phoenix pin 2 must connect to DE9 pin 2.

This cable is useful for running the console application (which is necessary, in the interim, until MRC is upgraded to perform the functions of the console application). The cable can also be used when you are running UniConfig and accessing the control card through the console port.

Monitors

The NV8500 routers have optional monitor cards (and associated monitor backplane modules). With the monitor cards, you can monitor any input and any output of the router.

The NV8144 can have a single combined input/output monitor. It receives one signal from each input card and one from each output card and passes those signals to your monitoring equipment.

The NV8140 has no monitor slot and does not support monitoring.

The NV8280 can have one input monitor and one output monitor. The input monitor receives one signal from each input card and produces 2 signals for monitoring equipment. Similarly, the output monitor receives one signal from each output card and produces 2 signals for monitoring equipment.

The NV8576 can have two input monitors (one in the upper bay and one in the lower bay) and two output monitors (one in the upper bay and one in the lower bay).

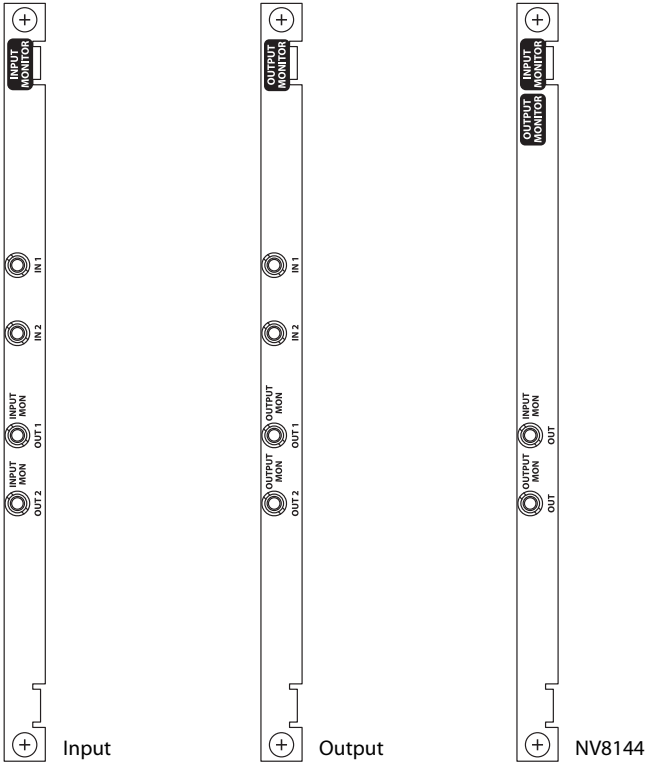
The NV8576-Plus (two frames) can have two input monitors and two output monitors in each frame.

- ▲ Where there are multiple monitor cards, only one input monitor card actually connects to your monitoring equipment. The other input monitor cards connect to that monitor card. Only one output monitor card actually connects to your monitoring equipment. The other output monitor cards connect to that monitor card. See [Monitor Usage](#) on page 29.

Monitor cards work with both standard and hybrid signals. Monitor signals are video (3Gig, HD, or SD) with or without embedded audio.

When you are installing monitor cards, note that blue card guides are for output monitors. Grey guides are for input monitors. The blue guides are closer to the frame wall than the grey. The monitor cards are the same, however.

There are 3 different monitor backplane modules:

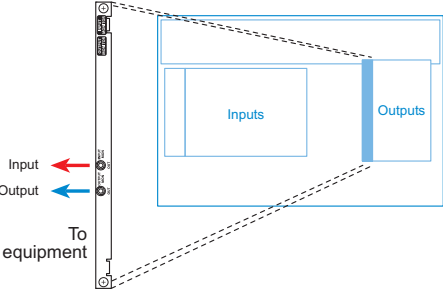


Connecting Monitors

The monitor connectors are all coax (DIN 1.0/2.3).

NV8144

The connection to monitor equipment is straightforward.



One connector is for input monitoring. The other is for output monitoring.

NV8140

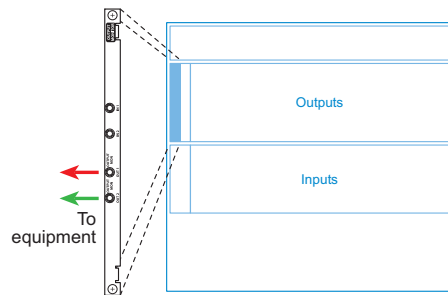
The NV8140 does not support monitoring.

NV8500 Pre-Installation Guide

Monitors

NV8280

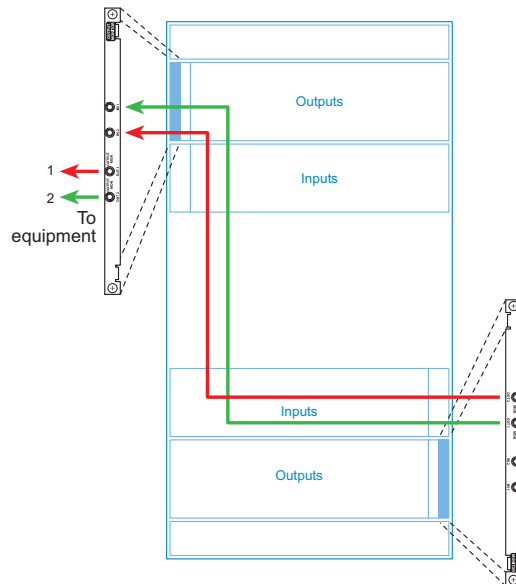
The connection to monitor equipment is straightforward



This diagram shows the output monitor backplane. The input monitor backplane (in the adjacent slot) connects the same way.

NV8576

The monitor connections for the NV8576 require more cabling than for the NV8144 or NV8280:

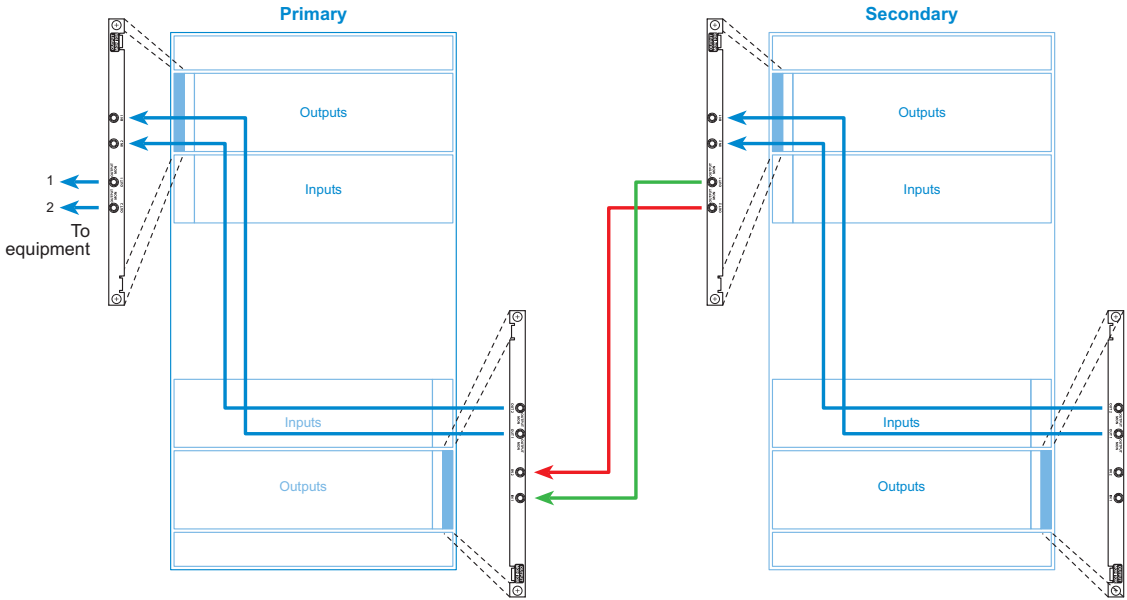


This diagram shows the output monitor backplanes. The input monitor backplanes (in the adjacent slots) connects the same way.

The outputs of the monitor backplane in the lower bay feed the inputs of the monitor backplane in the upper bay. The outputs of the monitor backplane in the upper bay feed your monitoring equipment.

NV8576-Plus

The connections for the NV8576-Plus require additional cabling:



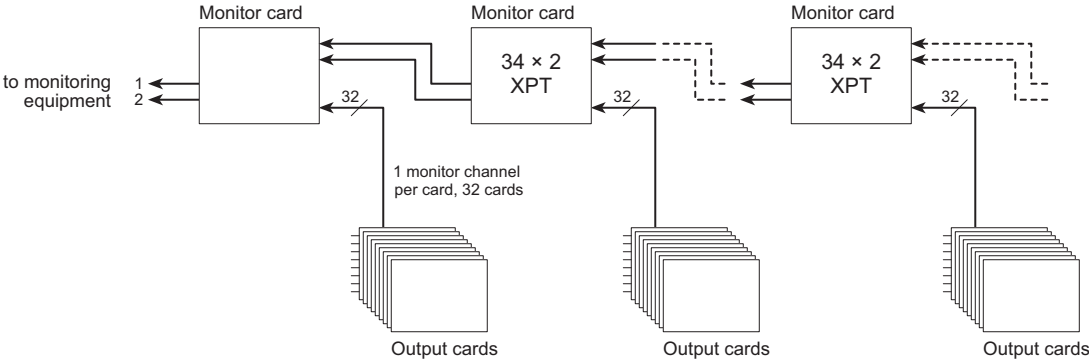
This diagram shows the output monitor backplanes. The input monitor backplanes (in the adjacent slots) connects the same way.

The monitor backplanes are “daisy chained” The outputs of one monitor backplane feed the inputs of the next monitor backplane in the chain. The outputs of the last monitor backplane (in the upper bay of the primary frame) feed your monitoring equipment.

Monitor Usage

NV8280, NV8576, and NV8576-Plus

Architecturally, output monitoring in a router (other than the NV8144) is structured this way:



Input monitoring is structured the same way.

Each output card produces one monitor signal (video with or without embedded audio) from among its outputs. A control panel operator selects the particular output to monitor. The 32 monitor outputs associated with the monitor card in an output bay feed the 34 x 2 crosspoint in the monitor card. Two additional outputs from another monitor card provide the remain 2 signals. The two monitor card outputs at the end of the chain connect to your monitoring equipment.

NV8500 Pre-Installation Guide

Monitors

Monitoring is configurable (and controllable) in MRC. For monitoring to occur, you must create a monitor level in MRC's 'Router Levels' page:

Crosspoint Ranges for Level Settings

Level	Physical Input Start	Physical Input End	Controller Source Start	Controller Source End	Null Audio Source	Pass Thru Audio Source	Physical Output Start	Physical Output End	Controller Destination Start	Controller Destination End	Signal Type
1	1	288	1	288	NA	NA	1	576	1	576	Digital Video
2	1	4608	1	4608	0	1	1	9216	1	9216	Synchronous Audio
3	1	576	1	576	NA	NA	1	4	1	4	Monitor

Update Control Card Add Level Delete Level

For the NV8280, NV8576, and NV8576-Plus, there will be 4 destinations for the level: destinations 1 and 2 are for output monitoring and destinations 3 and 4 are for input monitoring.

You can select channels to monitor in the 'Crosspoints' page of MRC:

Crosspoints

Current History Incrementing Takes

Destination	Source	Locked	Protected	LID	Status
1	27	<input type="checkbox"/>	<input type="checkbox"/>	0	Success
2	81	<input type="checkbox"/>	<input type="checkbox"/>	0	Success
3	44	<input type="checkbox"/>	<input type="checkbox"/>	0	Success
4	13	<input type="checkbox"/>	<input type="checkbox"/>	0	Success

Output Filter: Min: Max: Clear Level: 3) Monitor Tools

You can specify any output (or input) in the 'Source' column.

- ▲ Remember that destinations 1 and 2 are for output monitoring and destinations 3 and 4 are for input monitoring.
- ▲ It is important to realize that you can monitor two outputs *only if* those outputs are on *separate* output cards. That is because each output card produces only a single monitoring signal. The same is true for inputs.

It is possible for control panel operators to select monitor signals as long as the monitor level is suitable configured in NV9000-SE Utilities.

NV8144

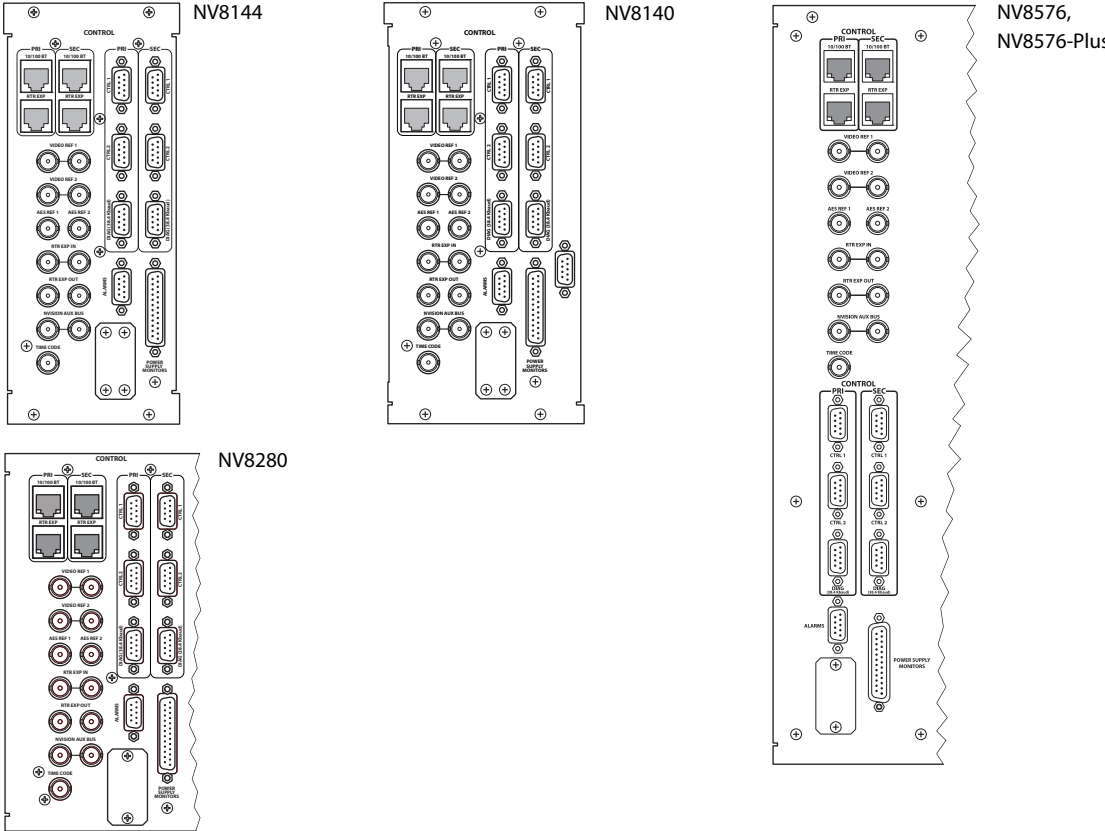
NV8144 monitor usage differs from that of the other routers. It has a single monitor card and a distinct monitor backplane module. The backplane module has one connector for input monitoring and one connector for output monitoring. (The NV8144 uses the same monitor *card* as the other routers.)

To configure monitoring (in MRC), you create a monitor level (partition) as you do for the other routers. The level created for the NV8144 has 3 destinations, not 4. That is because destination 1 is used for output monitoring and destination 3 is used for input monitoring. Destination 2 is simply ignored.

- ▲ It would be better if the monitor level display were closer to the reality of the monitor hardware. The present display (in MRC) is the result of software engineers cutting corners to meet deadlines. It does work, however, and has some semblance of logic.

Control Connections

All of the NV8500 routers have the same control connectors. The arrangement of the connectors differs slightly in each of the routers:

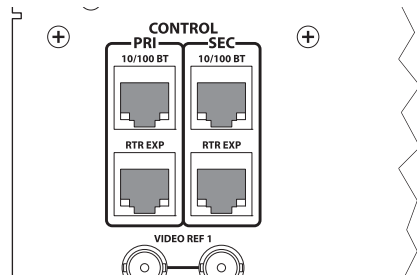


NV8500 Pre-Installation Guide

Control Connections

Ethernet Ports

There are 4 RJ-45 ports:

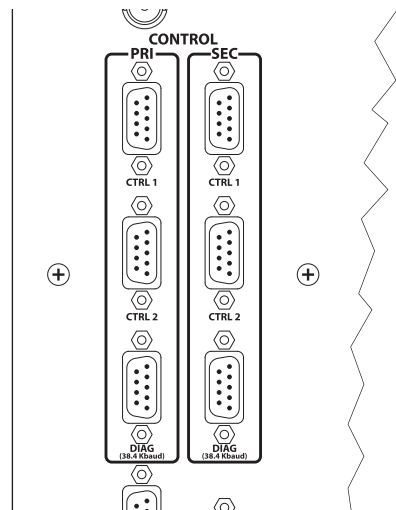


The ports labeled '10/100 BT' are the router's connections to the NV9000 router control system. Ports in the 'PRI' section are for the router's primary control card and ports in the 'SEC' section are for the router's secondary control card.

The ports labeled 'RTR EXP' are not used.

Control and Diagnostic Ports

There are 6 serial ports, all DE9 female:



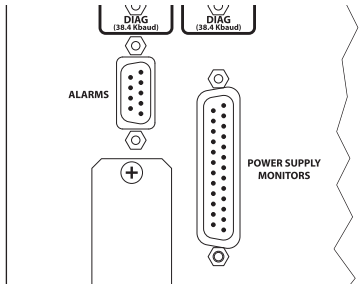
The ports labeled 'CTRL1 and CTRL2' are DE9, female, RS-422. They allow serial control of the router (by third-party control systems).

The ports labeled 'DIAG' are DE9, female, RS-422 or RS-232. They are diagnostic ports and can be used by UniConfig for diagnostic purposes or for preliminary configuration. The DIAG port connects to a COM port of your configuration PC running UniConfig.

The ports in the 'PRI' section are for the router's primary control card and ports in the 'SEC' section are for the router's secondary control card.

Alarm and Power Monitor Ports

The routers have a system alarm port (DE9, female) and a power supply monitor port (DB25, female):



See [Connectors](#) on page 19 for information.

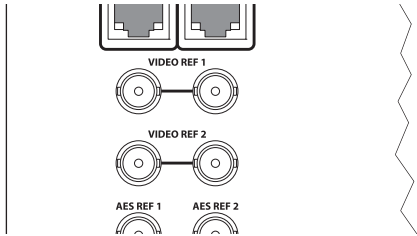
For the NV8280, NV8576, and NV8576-Plus, this port connects to the DB25 power monitor port of one of the NV8300 power supply frames.

- ▲ The power supply monitor’ connector (DB25) of the NV8144 is unused because its power supplies are internal.

BNCs

Video Reference

The routers have 2 pairs of video reference connections:



‘Video Ref 1’ and ‘Video Ref 2’. Each has a loop-through connection so you can carry the video reference signal to other devices.

You can use the same reference signal for both connections or you can use a different reference for each connection. When you use the same signal, we say the reference is *redundant*. If one reference fails, the control card fails over to the redundant reference. When you use two different references, or *dual* references, takes can occur using one or the other reference. Set the reference type in MRC or in UniConfig.

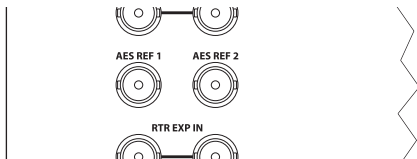
If you use only one reference signal, it would be called a “single reference.”

You need a 75Ω terminator on the unused reference connector (when a reference signal is connected.)

- ▲ Although dual reference is available for standard NV8500 routers, it is not yet available for hybrid NV8500 routers.

AES Reference

The routers have 2 AES reference connections:



- ▲ Although the NV8140 has AES reference connectors, it does not support AES async at this time.

NV8500 Pre-Installation Guide

Control Connections

They are labeled ‘AES Ref1’ and ‘AES Ref2’. Both connections are shared by the primary control card and the secondary control card. The connections are for redundant external AES references. When both references are connected, if one reference fails, the control card automatically switches to the redundant reference.

The router can also derive AES clocking from a video reference. The router accepts AES reference according a priority scheme:

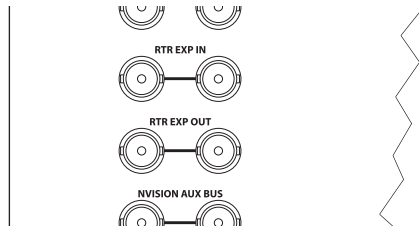
Priority	Description
1	AES Ref 1 (used if it is connected)
2	AES Ref 2 (used if it is connected and AES Ref 1 is not)
3	Video Ref 1 (used for AES reference if neither AES Ref 1 nor AES Ref 2 is connected)
4	Video Ref 2 (used for AES reference if none of the preceding references are connected)
5	Free-running (no external reference is connected)

Note that for synchronous AES (through standard or hybrid I/O cards), the router also derives AES clocking from video signals. An external AES reference is not a requirement for these signals.

Asynchronous AES cards do not make use of an AES reference signal.

‘Rtr Exp In’ and ‘Rtr Exp Out’

The routers have 2 pairs of router expansion connectors ‘Rtr Exp Out’ and ‘Rtr Exp In’:



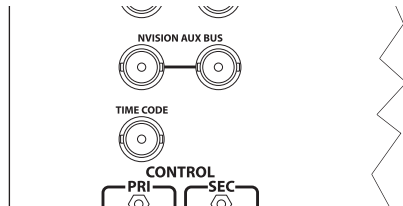
These are used only by the NV8576-Plus router so that the two frames can communicate.

Connect the ‘Rtr Exp In’ port of the primary frame to the ‘Rtr Exp Out’ port of the secondary frame. Then connect the ‘Rtr Exp In’ port of the secondary frame to the ‘Rtr Exp Out’ port of the primary frame.

Because the connectors are paired, you can have a redundant connection—in case one cable breaks.

Other BNCs

The pair of ‘Nvision Aux Bus’ connectors and the ‘Time Code’ connector are not used:

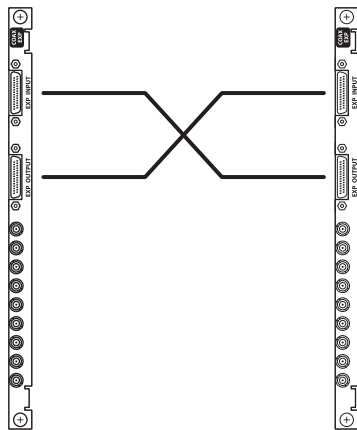


Expansion Connections

An NV8576-Plus comprises two interconnected NV8576 frames.

One frame has an Ethernet connection to the router control system. That is the considered the “master” frame. The other frame is then considered the “slave” and has a control and status connection to the master. See [‘Rtr Exp In’ and ‘Rtr Exp Out’](#) on page 34.

The two frames also require cross-connection between expansion output backplane modules. Each expansion output backplane module has an input and an output expansion connector. You must connect the backplane module in slot N of the first frame to the backplane module in the same slot (N) of the second frame.



The cables use 28-pin TDP connectors. See [Expansion Cable \(WC0121-00\)](#) on page 23. The cables are 4 meters in length.

The cards so connected in the two frames *must be alike*: AES to AES, standard to standard, or hybrid to hybrid. The following table lists the card types that can match:

Card Type	Matching Card Types
AES async	AES async; standard filler
HD	HD; standard filler
3Gig coax	3Gig coax; 3Gig fiber; standard filler
3Gig fiber	3Gig coax; 3Gig fiber; standard filler
Standard filler	AES async; HD; 3Gig coax; 3Gig fiber
Hybrid embedder	Hybrid embedder; hybrid disembedder/embedder; hybrid filler
Hybrid disembedder/embedder	Hybrid embedder; hybrid disembedder/embedder; hybrid filler
Hybrid MADI	Hybrid MADI; hybrid filler
Hybrid filler	Hybrid MADI; hybrid embedder; hybrid disembedder/embedder

Expanded NV8576-Plus frames use *filler cards* where expansion connections are desired, but the slot in one or the other of the frames has no local outputs. Although filler cards have no local outputs, the backplanes they use do have connectors (DIN 1.0/2.3 connectors) which are unused.

Configuration Software

NV9000-SE Utilities

NV9000-SE Utilities is the software that configures the NV9000 router control system. The NV9000 system configuration includes a small amount of direct router configuration and defines the configuration of any number of control panels.

An NV9000 configuration, however, contains a large amount of configuration data that apply globally, that span the different routers and panels in the system. Such data include the definition of physical levels, virtual levels, level sets, source devices,⁴ destination devices, device categories, tie-lines, and several other elements.

The NV8500 routers switch both video and audio. If the NV8500 router has hybrid I/O cards, it can combine audio from different hybrid sources.

With DHP, the NV8500 routers can combine audio from sources on either hybrid or standard cards and redirect the audio to destinations on either standard or hybrid output cards.

Miranda Router Configurator (MRC)

MRC defines router partitions, and various other attributes of the router.

MRC is for use *only* with NV8500 hybrid routers (with EM0833 control cards). It is roughly equivalent to UniConfig which is used for other routers.

UniConfig

UniConfig defines router partitions and various other attributes of the router.

UniConfig is used for NV8500 standard routers (with EM0666 control cards) and for other router types.

Console Application

The “console application” has multiple purposes, most of them diagnostic. It must be used to designate the use of the I/O slots of the hybrid router. You issue commands that identify the type of card in the various slots—standard, disembedder/embedder, or MADI.

The console application requires a cable between your configuration PC and the console port of the router’s control card. See [Other Cables](#) on page 25.

Router Configuration in NV9000-SE Utilities

Although there are many video and audio ports, and many card options, there is nothing overly complex about configuring an NV8500 router in NV9000-SE Utilities. The first consideration is that both video and audio levels (physical and virtual) are in the same router.

The second consideration is that, for hybrid cards, automated port (or device) configuration does not handle the gaps in the port numbers of hybrid cards well. Please refer to Grass Valley’s NV9000-SE Utilities documentation for more information.

4. A “device” in the NV9000 configuration is a port or a set of ports that is connected to an actual device, such as a VTR or a camera.

Reminder:

For routers other than the NV8140,

Standard input cards have 9 ports (video or AES).

Disembedder (input) cards have 8 video ports with embedded audio. The 9th connector of the backplane is unused.

MADI input cards have 8 video-only ports and 1 MADI connector supporting up to 64 channels. We are calling the 64 channels “ports” (in this document, at least).

For the NV8140,

Standard input cards have 18 ports (video or AES).

Disembedder (input) cards have 16 video ports with embedded audio. The 9th and 18th connectors of the backplane are unused.

MADI input cards have 16 video-only ports and 2 MADI connectors, the 9th and 18th, supporting up to 64 channels each. We are calling the 64 channels “ports.”

Standard output cards have 18 ports (video or AES).

Standard expansion output cards have 9 ports (video or AES).

Embedder (output) cards have 16 video ports with embedded audio. The 9th and 18th connectors of the backplane are unused.

Embedder (output) expansion cards have 8 video ports with embedded audio. The 9th connector of the backplane is unused.

MADI output cards have 16 video-only ports and 2 MADI connectors supporting 56 or 64 channels each. The choice is made on a DIP switch. We are calling the 56 or 64 channels “ports.”

MADI expansion output cards have 8 video-only ports and 1 MADI connector supporting up to 64 channels. We are calling the 56 or 64 channels “ports” (in this document, at least).

Because there are gaps in the numbering sequence, the configurator has 3 options:

- Allow the automated device creation mechanism (the ‘Add Multiple Devices’ function in the software) to assign devices to unused ports. You can then either ignore those devices or delete them from the configuration later.

This is the easiest solution, but it creates device names that correspond to no inputs or outputs or, if you delete the devices, it leaves gaps in your series of device names.

- Use the automated device creation mechanism for contiguous ports, skipping unused ports.

This is a more time-consuming solution, more prone to errors, but it *does not* create gaps in your series of device names.

- Do not use the automated device creation mechanism. Create each device individually.

This is the most time-consuming solution, also prone to errors, but it allows you to name devices individually, as you wish.

The ports of a standard video card would typically belong to a level set that has 1 video level only (unless DHP is present).

The ports of a hybrid disembedder (input) or embedder (output) card typically belong to a level set that includes 17 virtual levels: 1 video level and 16 audio levels. (It might actually include other levels such as a machine control level.)

The levels assigned to the ports of a MADI card (input or output) depend on the use to which the MADI signals are put. Each of the video ports of a MADI card is assigned a video level, but no video levels are assigned to the MADI signals. If the MADI signals are stereo pairs, then a MADI device would have 2 audio levels. If a MADI signal is a “surround” set, the MADI device might have 6 audio levels.

A single level set can accommodate all card types.

NV8500 Pre-Installation Guide

Router Configuration in NV9000-SE Utilities

An example of a hybrid router configuration follows.

Hybrid Configuration Example

This example shows the configuration of inputs. Configuration of outputs (not shown) proceeds in the same way. The NV8280 in the example has

- Eighteen standard inputs (2 cards, in slots 1 and 2).
- Sixteen hybrid disembedder inputs (2 cards, in slots 3 and 4).
- Two MADI input cards in slots 5 and 6. One MADI card services 8 video inputs and 32 AES stereo pairs. The other MADI card services 8 video inputs and 10 audio “surround” signals (6 channels each).

Preliminary Configuration Steps

These are two important steps among many:

- 1 Define the router. In this example, it is an NV8280. The definition includes the router’s physical levels:

Physical Levels					
Name	#	Input Start	Input End	Output Start	Output End
Vid PL	1	1	288	1	576
Aud PL	2	1	4608	1	9216

The NV8280 supports up to 288 video inputs and 576 video outputs.

The maximum number of audio input ports is 4608 (16×288) and the maximum number of audio output ports is 9216 (16×576)

- 2 Define level sets. In this example, there is one level set. The definition maps virtual levels to physical levels:

Level Set Detail			
Display Index	Virtual Level	Physical Level	Free Source
1	HD	Vid PL	
2	AUDIO 1	Aud PL	
3	AUDIO 2	Aud PL	
4	AUDIO 3	Aud PL	
5	AUDIO 4	Aud PL	
6	AUDIO 5	Aud PL	
7	AUDIO 6	Aud PL	
8	AUDIO 7	Aud PL	
9	AUDIO 8	Aud PL	
10	AUDIO 9	Aud PL	
11	AUDIO 10	Aud PL	
12	AUDIO 11	Aud PL	
13	AUDIO 12	Aud PL	
14	AUDIO 13	Aud PL	
15	AUDIO 14	Aud PL	
16	AUDIO 15	Aud PL	
17	AUDIO 16	Aud PL	

These levels accommodate all standard cards, disembedder/embedder cards, and MADI cards.

NV8500 Pre-Installation Guide

Router Configuration in NV9000-SE Utilities

Step 2—Define the Hybrid Disembedder Inputs

The 2 disembedder cards in slots 3 and 4 have 8 video ports with 16 embedded audio channels for each. The configuration defines audio ports for all 16 audio channels for each device. This is the result of step 2:

Device	HD	Audio															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DIS 1	19	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304
DIS 2	20	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
DIS 3	21	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336
DIS 4	22	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352
DIS 5	23	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368
DIS 6	24	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384
DIS 7	25	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
DIS 8	26	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416
DIS 9	28	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448
DIS 10	29	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464
DIS 11	30	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
DIS 12	31	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496
DIS 13	32	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512
DIS 14	33	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528
DIS 15	34	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544
DIS 16	35	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560

Observe, in Figure 13, that video port 19 (in slot 3) is associated with audio ports 289–304. Similarly, video port 35 (in slot 4) is associated with audio ports 545–560.

Use the ‘Add Multiple Devices’ feature of NV9000-SE Utilities to define these signals. (How to use the ‘Add Multiple Devices’ feature is described on the next page.)

Notice that connectors 27 and 36 are unused on the disembedder backplanes. They are not included in this list. Because of this gap, they could not all be configured automatically in one step. HD ports 19–26 were configured automatically. Port 27 was skipped. Then HD ports 28–35 were configured automatically.

To define the disembedder connections, in NV9000-SE Utilities, we use the 'Add Multiple Devices' task page. This is the page for the first disembedder card:

Fields labeled in red are required.

Prefix: DIS

Description:

Suffix Start Value: 1

Fill Character: Space

Number of Devices: 8

Suffix Width: 3

LevelSet: ALL

First Device Mnemonic: DIS 1

Last Device Mnemonic: DIS 8

Previous Next Finish Cancel

The page lets you specify a prefix for a device name, a starting device number, and the number of devices to create. In the illustration, the name prefix is "DIS," the starting number as 1, and the count is 8. The devices created would be named DIS 1, DIS 2, and so on to DIS 8. The devices here belong to level set 'ALL'. After clicking 'Next', you will see the details page for the multiple devices:

Level	Max		Create		Start		Increment	
	Input	Output	Input	Output	Input	Output	Input	Output
HD	288	288	<input checked="" type="checkbox"/>	<input type="checkbox"/>	19	1	1	1
AUDIO 1	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	289	1	16	1
AUDIO 2	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	290	1	16	1
AUDIO 3	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	291	1	16	1
AUDIO 4	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	292	1	16	1
AUDIO 5	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	293	1	16	1
AUDIO 6	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	294	1	16	1
AUDIO 7	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	295	1	16	1
AUDIO 8	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	296	1	16	1
AUDIO 9	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	297	1	16	1
AUDIO 10	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	298	1	16	1
AUDIO 11	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	299	1	16	1
AUDIO 12	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	300	1	16	1
AUDIO 13	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	301	1	16	1
AUDIO 14	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	302	1	16	1
AUDIO 15	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	303	1	16	1
AUDIO 16	4608	9216	<input checked="" type="checkbox"/>	<input type="checkbox"/>	304	1	16	1

Figure 14. 'Add Multiple Devices', for Disembedder Cards (Sample)

NV8500 Pre-Installation Guide

Router Configuration in NV9000-SE Utilities

The page presents a table showing each level in the level set. For input devices, you should clear the checkboxes in the output column. For output devices, you should clear the checkboxes in the input column. Then clear the checkboxes for levels that do not apply to the inputs (or outputs) you are creating.

For any level that remains checked, enter a 'Start' value and 'Increment' value. For disembedder cards, the video level should be checked and you should enter the video port in the 'Start (Input)' column. For disembedder cards, all audio levels should be checked. Determine the audio port numbers for that video port and enter those in the appropriate places in the 'Start (Input)' column.

Next, enter the increment values. For disembedder cards, the increment is 1 for the video port, and 16 for the audio ports. See Figure 14.

To configure the second disembedder card, use the same technique. Its video range is 28–35 and its audio range is 433–560.

Step 3—Define the Hybrid MADI Inputs

Two steps are required to define each MADI input card in our example. The first defines the 8 video ports. The second defines the MADI channel assignments.

The first MADI card (slot 5) uses the 64 AES channels as stereo pairs. The second MADI card (slot 6) uses 60 of the AES channels as surround sets (10 sets of 6 channels).

Again, use the 'Add Multiple Devices' feature of NV9000-SE Utilities to define these signals.

1 First MADI Card's Video

These ports have one video level and have no levels associated with audio:

Device	HD
MVIN 1	37
MVIN 2	38
MVIN 3	39
MVIN 4	40
MVIN 5	41
MVIN 6	42
MVIN 7	43
MVIN 8	44

2 Second MADI Card's Video

These ports also have one video level and have no levels associated with audio:

Device	HD
MVIN 9	46
MVIN 10	47
MVIN 11	48
MVIN 12	49
MVIN 13	50
MVIN 14	51
MVIN 15	52
MVIN 16	53

3 First MADI Card's Audio

These ports have no video and 2 levels associated with audio because each signal is a stereo pair:

Device	HD	Audio	
		1	2
MADI 1	—	577	578
MADI 2	—	579	580
MADI 3	—	581	582
MADI 4	—	583	584
MADI 5	—	585	586
MADI 6	—	587	588
MADI 7	—	589	590
MADI 8	—	591	592
MADI 9	—	593	594
MADI 10	—	595	596
MADI 11	—	597	598
MADI 12	—	599	600
MADI 13	—	601	602
MADI 14	—	603	604
MADI 15	—	605	606
MADI 16	—	607	608

Device	HD	Audio	
		1	2
MADI 17	—	609	610
MADI 18	—	611	612
MADI 19	—	613	614
MADI 20	—	615	616
MADI 21	—	617	618
MADI 22	—	619	620
MADI 23	—	621	622
MADI 24	—	623	624
MADI 25	—	625	626
MADI 26	—	627	628
MADI 27	—	629	630
MADI 28	—	631	632
MADI 29	—	633	634
MADI 30	—	635	636
MADI 31	—	637	638
MADI 32	—	639	640

Referring to Figure 13, observe that this set of “devices” uses all of the MADI ports of the card in slot 5.

4 Second MADI Card's Audio

These ports have no video and 6 levels associated with audio because each signal is a “surround” set:

Device	HD	Audio					
		1	2	3	4	5	6
MADI 33	—	721	722	723	724	725	726
MADI 34	—	727	728	729	730	731	732
MADI 35	—	733	734	735	736	737	738
MADI 36	—	739	740	741	742	743	744
MADI 37	—	745	746	747	748	749	750
MADI 38	—	751	752	753	754	755	756
MADI 39	—	757	758	759	760	761	762
MADI 40	—	763	764	765	766	767	768
MADI 41	—	769	770	771	772	773	774
MADI 42	—	775	776	777	778	779	780

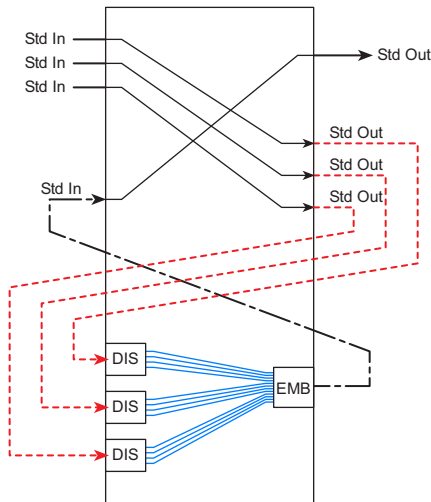
There are 10 devices using 6 channels each accounting for 60 channels. The remaining 4 channels of this MADI card (in slot 6) are unused. See Figure 13.

DHP

DHP⁵ (dynamic hybrid pathfinding) allows the NV8500 router to perform hybrid routing with relatively few hybrid cards. With DHP, the router passes standard inputs through an internal pool of hybrid disembedder cards after which the audio from the standard inputs can be recombined and re-embedded on output.

The point of DHP is that it allows you to populate the router with many relatively inexpensive standard I/O cards and a few hybrid cards and still have the benefits of hybrid routing (the ability to breakaway audio entirely within the router).

Figure 15 shows a fairly typical DHP scenario:



This scenario combines audio from 3 separate standard inputs and routes the video from one of the inputs with the combined audio on a standard output.

A disembedder port is required for each standard input port from which audio is to be extracted. An embedder port is required for the output that is to receive the recombined audio.

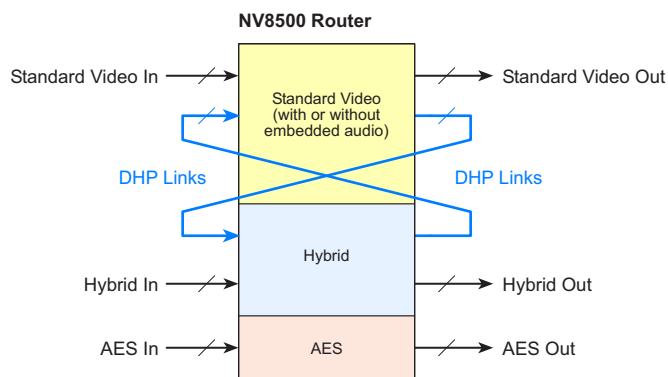
Further, an *additional* standard output port is required for each standard input port from which audio is to be extracted. An *additional* standard input port is also required for the output that is to receive the recombined audio.

The DHP service routes the signals through a pool of available hybrid cards internally. External cabling is required for every DHP path.

Figure 15. DHP Scenario—Recombining Audio from Standard Input

This is only one of about a dozen DHP scenarios. Other scenarios involve MADI inputs and outputs and AES inputs and outputs.

In the analysis of your system, you should determine the number of inputs and outputs of each type:



External cabling is required for every DHP path.

This evaluation includes the number of standard inputs and standard outputs, the number of hybrid inputs and outputs, and the number of AES inputs and outputs.

5. DHP is a licensed NV9000 option.

If your router is to perform DHP, you will also need the size of the DHP pool, i.e, the number of DHP links required by your router. This number might be difficult to determine. Keep in mind that the DHP links There are several factors to consider.

These are two of the factors:

- 1 The number of DHP paths that can be in use simultaneously.
- 2 The number of ports required for each path.

As stated earlier, and illustrated in Figure 15, a certain number of *hybrid* ports and a certain number of *additional standard* ports are required for each DHP path.

Potentially, 16 sources could provide a single audio channel to an output. This would be considered an extreme and unusual case. If all 16 audio channels come from a single source, DHP is not used for that route. Thus, the minimum number of sources for DHP is 2 and the maximum is 16. The number of destinations for DHP is always 1.

You need to determine the average number of ports among all the DHP paths in use simultaneously. The average is, of course, somewhere between 2 and 16, probably very close to 2.

Thus, letting ‘A’ be the average number of sources, and ‘N’ be the number of simultaneous DHP paths,

$$\text{Disembedder ports} = A \times N$$

$$\text{Embedder ports} = N$$

$$\text{Additional standard input ports} = N$$

$$\text{Additional standard output ports} = A \times N$$

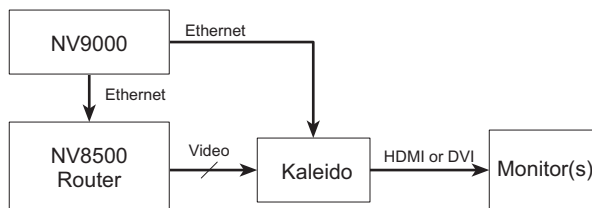
- ▲ DHP requires the presence of an NV9000 system controller. The part number for the DHP service is EC9540. The service is available by license.

Kaleido Multi-Viewers

There are several models in the Kaleido multi-viewer line. All models work well with NVISION series routers, including the NV8500 family routers. The multi-viewers have many features that too numerous to list here. Refer to the Grass Valley catalog.

Kaleido multi-viewers are configurable using Miranda’s XEdit and XAdmin software.

This is the general setup:



Crosspoint connections that feed the monitor(s) can be made in the NV8500 or in the crosspoint matrix internal to the Kaleido processor. The Kaleido processor is configured as a router in NV9000-SE Utilities.

Kaleido processors can be daisy-chained for more monitor outputs.

NV8500 Pre-Installation Guide

Kaleido Multi-Viewers

Specifications

Power Specifications for the NV8144

For the NV8144, PS8100 power supply modules are installed in the router frame.

The following are specifications for the PS8100:

Parameter	Specifications
AC input	90–130/180–250 VAC, 50/60 Hz, 10 A, automatic ranging
AC power	875 Watts
Weight	2.885 kg (6.36 lb)
Power supply alarm connection	DE9; provides status for each PS8100
Cabling	WC0109-00 is the cable from the NV8144 to the power outlet. One is required for each PS8100.
Environmental	Operating temperature: 0–40° C. Relative humidity: 0–90%, non-condensing
Regulatory compliance	UL listed and CE compliant

Power Specifications for the NV8140

For the NV8140, PS8300 power supply modules are installed in the router frame.

The following are specifications for the PS8300:

Parameter	Specifications
AC input	90–130/180–250 VAC, 50/60 Hz, 20 A, automatic ranging
AC power	1350 W
Weight	2.864 kg (6.31 lb)
Environmental	Operating temperature: 0–40° C. Relative humidity: 0–90%, non-condensing
Regulatory compliance	UL listed and CE compliant

NV8500 Pre-Installation Guide

Specifications

Power Specifications for NV8280, NV8576, NV8576-Plus

For the NV8280, NV8576, and NV8576-Plus, PS8300 power supply modules are installed in separate NV8300 power supply frames.

The following are specifications for the NV8300 and the PS8300:

Parameter	Specifications
AC input	90–130/180–250 VAC, 50/60 Hz, 20 A, automatic ranging
AC power	PS8300, 1350 W each, (up to 4 PS8300s, one IEC-320-C19 connector for each)
AC Power Usage	NV8280: (Each router frame requires one NV8300 frame) Fiber optic: 2100 W, nominal, power factor corrected Coax: 2700 W, nominal, power factor corrected NV8576, NV8576-Plus: (Each router frame requires two NV8300 frames) Fiber optic: 4250 W, nominal, power factor corrected Coax: 5400 W, nominal, power factor corrected.
Frame dimensions	3RU (5.22 inches, 132.6 mm) 19.0 inches (482.6 mm) wide Enclosure 15.85 inches (402.6 mm) deep, 16.6 overall depth. Door adds 0.8 inches to the depth
Weight	PS8300 2.864 kg (6.31 lb) Frame 19.2 lbs (8.71 kg) empty; 44.5 lbs (20.2 kg) fully loaded
Power supply alarm connection	DE9; provides status for each PS8300
Power supply monitor Connection	DB25, loop-through
Cabling	WC123-00, 3 meters; WC123-10, 6 meters. Power supply cable from the NV8300 to the router. WC0157-00 cable from the NV8300 to the power outlet, NEMA L5-20P, 20 A
Environmental	Operating temperature: 0–40° C. Relative humidity: 0–90%, non-condensing
Regulatory compliance	UL listed and CE compliant

Mechanical Specifications for Routers

Parameter	Specifications
Dimensions	<p>NV8144, NV8140: 8RU (13.97 inches, 354.8 mm) high 19.0 inches (482.6 mm) wide 17.2 inches (436.9 mm) deep</p> <p>NV8280: 16RU (27.97 inches, 710.4 mm) high 19.0 inches (482.6 mm) wide 17.2 inches (436.9 mm) deep</p> <p>NV8576, NV8576-Plus: 32RU (55.97 inches, 1421.6 mm) high 19.0 inches (482.6 mm) wide 17.2 inches (436.9 mm) deep</p>
Weight	<p>NV8144: 57.4 lbs (26.05 kg) empty. 81.3 lbs (36.90 kg) fully loaded with standard cards. 86.5 lbs (39.26 kg) fully loaded with hybrid cards.</p> <p>NV8140: 51.4 lbs (23.3 kg) empty. 97.0 lbs (43.99 kg) fully loaded with standard cards. <i>Fully loaded weight with hybrid cards to be determined.</i></p> <p>NV8280: 108.4 lbs (49.17 kg) empty. 183.0 lbs (83.02 kg) fully loaded with standard cards 197.0 lbs (89.54 kg) fully loaded with hybrid cards</p> <p>NV8576, NV8576-Plus (each frame): 169.9 lbs (77.05 kg) empty. 325.4 lbs (147.61 kg) fully loaded with standard cards 355.8 lbs (161.41 kg) fully loaded with hybrid cards</p>
Mounting	EIA 310-C, 19.0 inches (482.6 mm)

NV8500 Pre-Installation Guide

Specifications

Grounding terminal	Copper, accepts 14–6 AWG
Modules and slots	<p>NV8144: 16 input cards, 9 connectors each 8 output cards, 18 connectors each 2 crosspoint cards (1 primary, 1 optional redundant) 2 control cards (1 primary, 1 optional redundant) 1 monitor card, 1 fan module</p> <p>NV8140: 8 input cards, 18 connectors each 16 output cards, 18 connectors each 3 crosspoint cards (2 main, 1 optional redundant) 2 control cards (1 primary, 1 optional redundant) 1 fan module</p> <p>NV8280: 32 input cards, 9 connectors each 32 output cards, 18 connectors each 9 crosspoint cards (8 primary, 1 optional redundant) 2 control cards (1 primary, 1 optional redundant) 2 monitor cards, 1 fan module</p> <p>NV8576: 64 input cards, 9 connectors each 64 output cards, 18 connectors each 9 crosspoint cards (8 primary, 1 optional redundant) 2 control cards (1 primary, 1 optional redundant) 4 monitor cards, 2 fan modules</p> <p>NV8576-Plus. Each frame has: 64 input cards, 9 connectors each 64 expansion output cards, 9 connectors and 2 expansion connectors each 9 crosspoint cards (8 primary, 1 optional redundant) 2 control cards (1 primary, 1 optional redundant) 4 monitor cards, 2 fan modules</p>

Connector Specifications for Routers

Parameter	Specifications	
Diagnostic	Type	Serial port
	Standard	SMPTE 207M, RS-422/RS-232, configurable
	Connector	2, DE9, female
Serial control	Type	Serial port (2 per control card)
	Standard	SMPTE 207M, RS-422
	Connector	4, DE9, female
Ethernet	Type	10/100 Base T
	Standard	IEEE 802.3
	Protocol	Miranda Ethernet protocol
	Connector	2, RJ-45
System alarm	Connector	DE9, female
Power supply monitor	Connector	DB25, female

Environmental Specifications for Routers

Type	Parameter
Operating temperature	0–40° C
Relative humidity	0–90%, non-condensing

Audio Specifications for Routers

Parameter	Specification	
Audio reference input	Type	Serial digital audio
	Standard	AES3-id
	Sample Rate	48 kHz
	Connector	2, BNC (redundant)
	Impedance	75Ω
	Input Level	0.5 V pp to 2.0 V pp
AES3 input and output	Type	Balanced digital audio
	Standard	AES3
	Sample rate	Synchronous 48 kHz Asynchronous 32–192 kHz
	Connector	WECO
	Impedance	110Ω
	Input level	200 mV–10 V pp
	Output level	2.0 V pp

NV8500 Pre-Installation Guide

Specifications

AES3-id input and output	Type	Unbalanced digital audio
	Standard	AES3id
	Sample rate	Synchronous 48 kHz Asynchronous 32–192 kHz
	Connector	DIN 1.0/2.3
	Impedance	75Ω
	Input level	100 mV to 1.2 V pp
	Output level	1.0 V ± 10%
MADI (AES10) input and output	Type	Unbalanced digital audio
	Standard	AES10
	Sample rate	Synchronous 48 kHz
	Channel support	56 and 64
	Connector	DIN 1.0/2.3
	Impedance	75Ω
	Input level	150 mV–600 mV
	Output level	600 mV

Video Specifications for Routers

Type	Parameters	
Video reference input	Type	Analog video reference
	Standard	PAL, NTSC or tri-level sync
	Connector	Loop-through, BNC
	Impedance	75Ω or high-impedance (> 20 kΩ), not selectable
	Input level	0.5 V pp to 2.0 V pp
	Input return loss	> 30 dB, to 5 MHz

3Gig (3.0 Gb/s, HD and SD) input and output, standard and hybrid	Type	High definition serial digital video; embedded audio can be de-embedded
	Standard	SMPTE 272M, 291M, 299M
	Type	High definition serial digital video; embedded audio can be de-embedded
	Data rates	Auto re-clocking at 270 Mb/s and 1.483, 1.485, 2.967, 2.970 Gb/s or auto bypass with pass-through from 19 Mb/s to 3.0 Gb/s
	Connector	DIN1.0/2.3
	Impedance	75Ω
	Cable equalization	(For cables listed or equivalent cables) 400 m Belden 1694A, 250 m Belden 1855A at 270 Mb/s 150 m Belden 1694A, 100 m Belden 1855A at 1.5 Gb/s 100 m Belden 1694A, 45 m Belden 1855A at 3.0 Gb/s
	Router path	Non-inverting
	Input and output return loss	> 15 dB, 5 MHz to 1.5 GHz > 10 dB, 1.5 GHz to 3.0 GHz
	Output level	800 mV pp ± 10%
	Output rise/fall time	≤ 135 ps
	Output overshoot	≤ 10% of amplitude max
	Output alignment jitter	≤ 0.3 UI pp from 100 kHz to 300 MHz
Output timing jitter	≤ 2.0 UI pp from 10 Hz to 100 kHz	

Other Important Documents

Please refer to these other important documents:

- Router information:
 - UG0034-06 NV8500 Family Digital Routers Users Guide.pdf
 - NV8576 Expanded Signal Paths.pdf
- Port enumeration drawings:
 - RF0272-01 NV8144 Enumeration 3pp 8-5x11.pdf
 - RF0273-01 NV8280 Enumeration 3pp 11x17.pdf
 - RF0274-02 NV8576 Enumeration 3pp 17x22.pdf
 - RF0275-02 NV8576-Plus Frame1 Enumeration 3pp 17x22.pdf
 - RF0276-02 NV8576-Plus Frame2 Enumeration 3pp 17x22.pdf
 - RF0334-00 NV8140 Enumeration 3pp 8-5x11.pdf
- Configuration Guides:
 - UG0022-03 UniConfig Users Guide.pdf
 - UG0051-00 MRC Users Guide.pdf
 - The Console Note v4.pdf
 - UG0060-00 DHP Reference Manual.pdf
 - UG0007-06 NV9000-SE Utilities Users Guide.pdf

To obtain any of these documents, contact customer service. Most of the documents are available (or will be available soon) on the Miranda web site under the 'Products' tab.

Addendum 1—DIN 1.0/2.3 Connectors

Many of the router's backplane connectors are coaxial DIN 1.0/2.3 connectors.

The DIN 1.0/2.3 coax connector was originally introduced as a solution for the southern European telecommunications market in the 1980s. Since then, millions of these connectors have been installed in central offices worldwide.

The DIN 1.0/2.3 connector was developed to perform as a 75Ω connector that supports high data rates. This makes the connector an ideal solution for digital broadcast signal formats such as AES audio, SD video, HD video, and 3 Gb/s video, especially in high-density assemblies.

DIN 1.0/2.3 connectors were originally deployed on the NV7512 audio router. Typical installations use Belden 1855A cable terminated with mating DIN 1.0/2.3 male connectors on one end and male BNC connectors on the other. This system provides twice the density of a comparable BNC solution.

Starting with the award-winning NV8288 truck router and now the NV8500 series digital routers, Grass Valley's NVISION series routers now offer *triple* the connector density compared to BNC based frame designs.

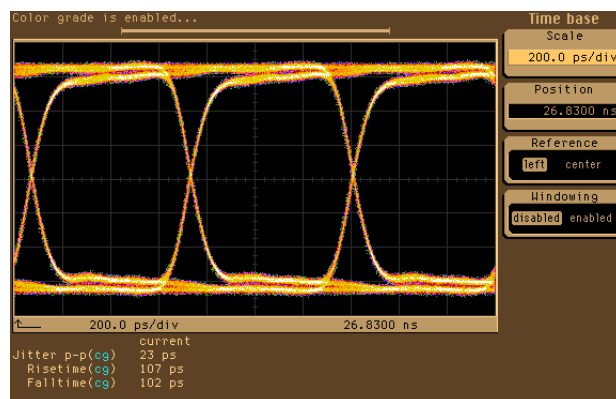
Features and Benefits

The connector is based on a simple push-pull latching design providing these benefits:

- Quick installation.
- Safe connector coupling.
- Vibration resistance. It cannot vibrate loose like an unlatched BNC.
- Connectors can be laid out in pitch densities as small as 8mm providing *triple* the density of BNC layouts.
- The connectors use the same stripping and crimping process as BNC connectors, making them easy to learn for experienced broadcast cable installers.
- The connectors support industry-leading NVISION signal quality.

Eye Patterns

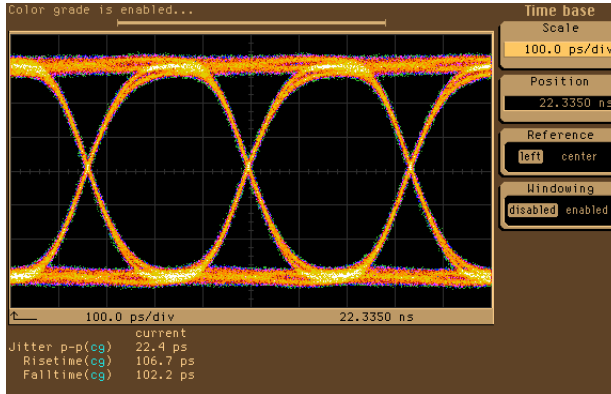
This is an 800mV BERT signal at 1.485Gb/s, passed through a DIN 1.0/2.3 input connector, equalizer, cable driver, and DIN 1.0/2.3 output connector:



NV8500 Pre-Installation Guide

Addendum 1 — DIN 1.0/2.3 Connectors

This is a 3Gig (2.97Gb/s) signal:



Mating Connectors

Cable types include:

- Argosy Image 360
- Belden 1855A
- Belden RG 179DT
- Gepco VDM230

Male mating connectors for Belden 1855A and Gepco VDM230 cable are available through connector distributors and from NVISION.

Assembly

As mentioned, DIN 1.0/2.3 connectors terminate with the same process as BNC connectors.

- ▲ A visual inspection of the male center conductor for straightness and non-protrusion beyond the connector collar is recommended to avoid bent pin errors.
- ▲ **Caution:** It is recommended that a mating connector adapter be used for continuity testing because the insertion of a test probe directly into the connector can bend the center conductor pin.

The following sections—listed by company name in alphabetical order—provide detailed installation, tooling, and performance information.

- [ITT](#)
- [Tyco](#)
- [White Sands Engineering](#)
- [Winchester Electronics](#)

ITT

The following diagram is an excerpt from ITT's data sheet:

ITT Cannon
RF PRODUCTS

Jays Close, Viable Estates,
Basingstoke, Hants. RG 22 4BA, UK
685 East, Main Street, New Britain,
Connecticut 06051, USA
(FISCH No. 96291)

N° **BBAI-1269-GB**

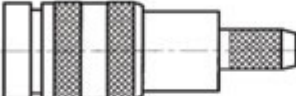
Sheet 1 of 1

Dimensions in: mm


Ins/rev
H
K5861

ASSEMBLY INSTRUCTIONS


Connector Type: 1.92.3 full-crimp/holder crimp straight plug
Cable Type: see table
Tools Required: Locator: T4852. Crimp Tool: see table



BODY ASSEMBLY



INNER MALE CONTACT



FERRULE

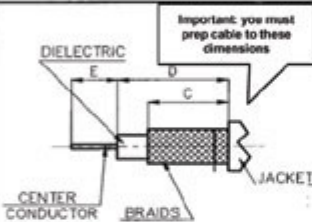
Stripping Detail

C	D	E
.315 (8.00)	.413 (10.50)	.138 (3.50)

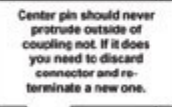
1. Prepare cable to dimensions shown, being careful not to damage the braid, foil or inner conductor. **Important:** Do not nick braid and center conductor of cable.
2. Position center contact as shown. Make sure center conductor of cable is visible inside hole of contact pin. Crimp center contact on to cables center conductor using ITT crimp frame 995-0001-584 (M22520/2-01) fitted with ITT positioner T4852. **Important:** Make sure the selector setting on the tool is set at number 4. Perform a light pull test to verify termination.
3. Slide ferrule onto cable and flair braid to facilitate insertion of body.
4. Insert rear post of body between the cables foil and braid until the center contact snaps into position. **Important:** Perform a light pull test to verify the center contact is seated and check interface to make sure center pin is straight.
5. Dress braid evenly around rear post. Slide ferrule over braid until it rests flush against body. Crimp ferrule with 213 (5.4) hex die (ITT P/N K29265) fitted onto crimp frame (ITT P/N T1025-). Perform light pull test and visually inspect finished assembly.

Tooling Parts List
 ITT P/N 995-0001-584 Center Pin Crimp Frame only
 ITT P/N T4852 Center Pin Positioner (fitted onto crimp frame 995-0001-584)
 ITT P/N T1025- Crimp Frame only for ferrule. Hex Die not included
 ITT P/N K29265 - 213 hex die (fitted onto crimp frame T1025/-)
 ITT P/N T4869 Connector Insertion/Extraction Tool


Important: you must prep cable to these dimensions



CRIMPING



Bad



Good

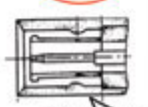


Illustration of proper center pin position inside connector body

Connectors and Tool Kit

Belden 1855A Cable (Gepco VDM230):

- Pin Crimp Tool: Daniels M22520/2-01
- Crimp Setting: Turret set to 4
- Pin Positioner: Daniels K1335
- Hex Crimp Die: 0.213" (Paladin 2653)
- Strip Tool: Paladin model Vario 3240
- Strip Dimensions: See assembly instructions

NV8500 Pre-Installation Guide

Addendum 1 — DIN 1.0/2.3 Connectors

Contact

(Tooling)

Al Mahon, for Paladin, at Newark
1-800-263-9275

Terry Myers, at Daniels
1-407-855-6161

(Connectors)

U.S.
George Blazas
ITT Industries
(860) 945-0206

UK
Graham Oakley
ITT Industries
+44-1256-323356

Tyco

This and the next illustration are excerpts from the Tyco datasheet:

tyco
Electronics

DIN 1.0 / 2.3 (75Ω) Connectors

Application Specification

114-71037

16DEC2005 Rev. A

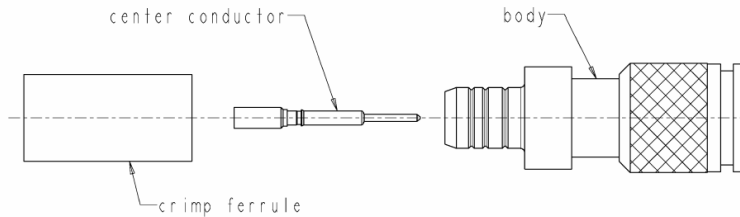
1. INTRODUCTION

This specification covers the requirements for application of Tyco Electronics DIN 1.0 / 2.3 (75Ω) straight cable jack and plug connectors. The cable is connected by crimping the cable braid to the plug or jack body and also the inner conductor is crimped with 8 indent tool.

The component drawings may differ from the parts supplied.

2. DATA TABLE

PART NUMBER	CABLE	OUTER CONTACT CRIMP TOOL	CENTER CONTACT 8 indent CRIMP TOOL	DIM. TABLE FOR CABLE PREPARATION	INTERMED. LAYER
619226-1	Belden 1855A or Gepco VDM230	734595-1 hex 4.47	986651-1 pos. 4 Use positioner K41	3.1.1.1	Yes



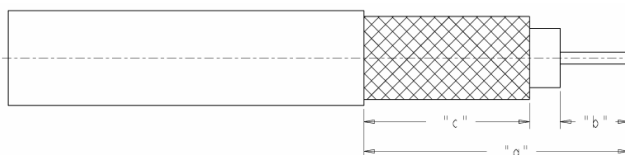
3. INSTRUCTIONS

3.1 Prepare cable

- Prepare the cable according to the dimension table 3.1.1.
- It's recommended not to remove the foil; if that causes problems with high voltage performance you can remove the foil up to the braid but leave the foil beneath the braid.
- Slide crimp ferrule over

3.1.1 Dimension table (recommended dimensions)

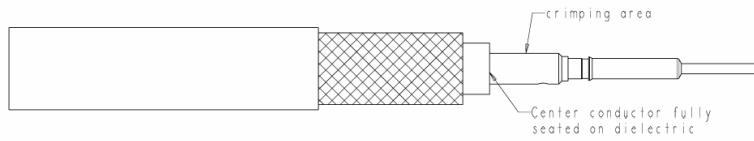
DIMENSION	"a"	"b"	"c"
3.1.1.1	10 ^{+0/-0.2}	3 ^{±0.2}	6 ^{+0/-0.5}



This is a continuation from the previous page:

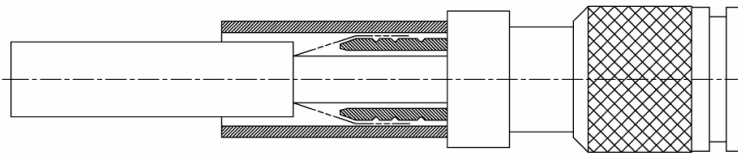
3.2 Crimp on center conductor

- Slide center contact over cable center conductor.
- Make sure that the center conductor butts on the cable dielectric.
- Crimp center conductor as close as possible to the dielectric of the cable; using the appropriate crimp mentioned in the data table section 2 page 1.



3.3 Contact assembly

- Flare braid and insert into the crimp of the body. The contact must bottom on the internal dielectric of the connector.
- Slide the crimp ferrule over the braid until it bottoms against the body. Crimp the ferrule using the appropriate crimp dies mentioned in the data table section 2 page 1.



Connectors and Tool Kit

Belden 1855A Cable (Gepeco VDM230):

Pin Crimp Tool:	Daniels M22520/2-01
Crimp Setting:	Turret set to 4
Pin Positioner:	Daniels K41
Hex Crimp Die:	0.178" (Paladin 2653)
Strip Tool:	Paladin model Vario 3240
Strip Dimensions:	See Tyco assembly instructions

Contacts

(Tooling)

Al Mahon, for Paladin, at Newark 1-800-263-9275	Terry Myers, at Daniels 1-407-855-6161
--	---

(Connectors)

TTI
Jim Sherba
jim.sherba@ttinc.com
916-987-4610 (direct)

NV8500 Pre-Installation Guide

Addendum 1 — DIN 1.0/2.3 Connectors

White Sands Engineering

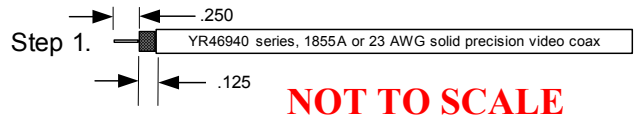
White Sands Engineering's 1.0/2.3FPB plug features a fixed pin, one-piece design that can be installed quickly and reliably in the field. It is compatible with the YR46940 mini RG59 precision video cables as well as Belden 1855A, Gepco VDM230, Commscope 7538B, and Coleman 99401. The small profile of this connector supports high-density broadcast applications such as Miranda's NV8288 digital video router. White Sands can provide connectors and tools, cable assemblies terminated with 1.0/2.3FPB, and other connectors as needed.

Assembly Instructions for 1.0/2.3FPB Plug to Mini RG59 Cable

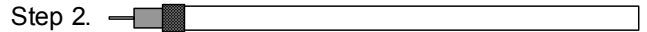
The positive locking mechanism in this connector ensures secure mating that will not be affected by vibration or accidental tugs on the cable. Connectors can only be unmated from high density panels using the "1.0REMT00L."

This is an excerpt from the White Sands documentation.

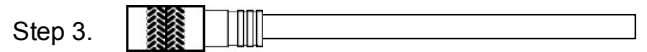
STEP 1: Use CPT7538125 tool to strip cable to proper dimensions as shown. Make sure there is no braid wrapped around the center conductor creating a short.



STEP 2: Fold Braid back over jacket. Leave foil on dielectric, ensuring foil is smooth all around dielectric.

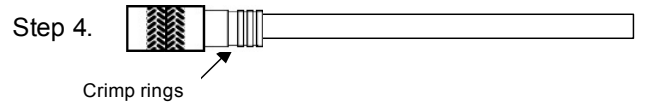


STEP 3: Insert the center conductor and dielectric with foil into the center diameter of connector. Push connector onto the cable while rotating the connector 1/2 a turn. Ensure cable is inserted completely into the connector with no braid visible behind the connector.



Note - Continuity test cable before crimping to ensure a good connection.

STEP 4: Crimp one time on all 3 rings of the connector where shown using the .213 die on the ACT483 crimp tool.



Tooling

1.0/2.3FP Cable Assembly Tools

CPT7538125 Strip tool,
1/4"×1/8" for
mini RG59 cable



ACT483 Crimp tool,
0.270" and 0.213"
hex dies for mini
RG59 connectors



I.0REMT00L Removal tool
for 1.0/2.3FP con-
nectors

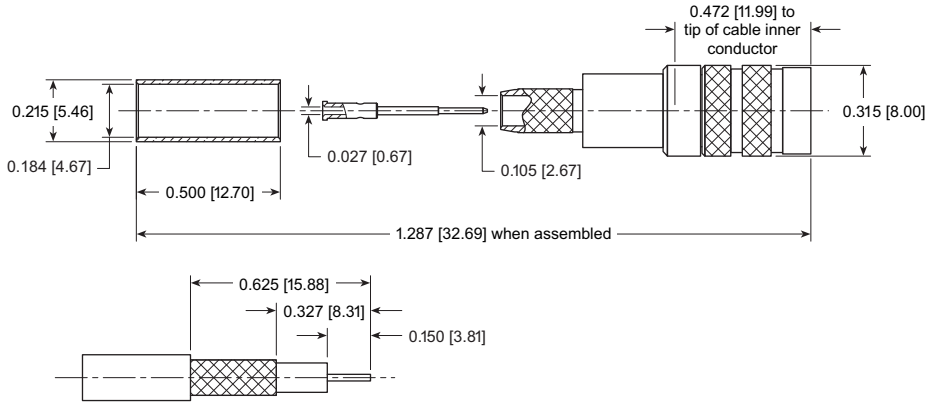


Contact (Tools and Connectors)

U.S.	UK
Dave Lindemeyer	Jonathan Rigby
1-800-586-7377 x4210	jrigby@ashcomms.com
	+44-07803-280426

Winchester Electronics

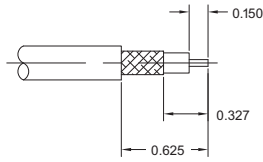
This drawing gives the connector dimensions:



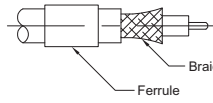
NV8500 Pre-Installation Guide

Addendum 1 — DIN 1.0/2.3 Connectors

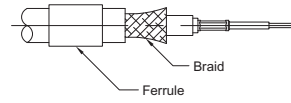
This drawing shows the assembly steps:



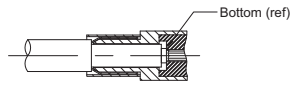
1. Strip cable to dimensions as shown.



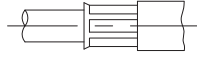
2. Slide ferrule over jacket. Flare braid.



3. Crimp (or solder) contact to cable using a 0.042" hex die.



4. Slide cable into body until contact shoulder bottoms against insulator. Slide ferrule over braid up to the shoulder of body.



5. Crimp the ferrule with hex die.

Connectors and Tool Kit

Belden 1855A Cable (Gepco VDM230):

Connector part no 0345-E00-C7202N

Pin Crimp Tool: Winchester KTH-1000

Crimp Die: KTH-2025 (braid 0.178" hex, contact 0.042" hex)

Strip Dimensions: See drawings above.

Contacts (for Tools and Connectors)

Allen Trustman, Strategic Customer Manager

Winchester Electronics Corp/Kings Brand

ph: 914-548-1931

fax: 914-488-5376

a.trustman@winchesterelectronics.com

Scott Pegoraro, Inside Sales Manager

Joseph Electronics

ph: 847-588-3800

fax: 847-588-3300

scottp@josephelectronics.com

Addendum 3—Port Enumeration Drawings

The following pages are copies of the port enumeration drawings:

RF0272-01 NV8144 Enumeration 3pp 8-5x11.pdf

RF0273-01 NV8280 Enumeration 3pp 11x17.pdf

RF0274-02 NV8576 Enumeration 3pp 17x22.pdf

RF0275-02 NV8576-Plus Frame1 Enumeration 3pp 17x22.pdf

RF0276-02 NV8576-Plus Frame2 Enumeration 3pp 17x22.pdf

RF0334-00 NV8140 Enumeration 3pp 8-5x11.pdf

You might have to adjust your printer settings to print the oversize pages.

NV8500 Pre-Installation Guide

Addendum 3 — Port Enumeration Drawings

Page Intentionally Blank

Page Intentionally Blank

NV8144 Connector Numbers—SDI+TDM (as seen from the rear of the frame)

OUTPUTS

		16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONTROL 1	CONTROL 2	INPUTS															
		136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
		2161– 2224	2017– 2080	1873– 1936	1729– 1792	1585– 1648	1441– 1504	1297– 1360	1153– 1216	1009– 1072	865– 928	721– 784	577– 640	433– 496	289– 352	145– 208	1– 64
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Legend: xxx --- video port number yyy–zzz --- audio port range</p> </div>															

		8	7	6	5	4	3	2	1
MONITOR	127	109	91	73	55	37	19	1	
	128	110	92	74	56	38	20	2	
	129	111	93	75	57	39	21	3	
	130	112	94	76	58	40	22	4	
	131	113	95	77	59	41	23	5	
	132	114	96	78	60	42	24	6	
	133	115	97	79	61	43	25	7	
	134	116	98	80	62	44	26	8	
	2017– 2080	1729– 1792	1441– 1504	1153– 1216	865– 928	577– 640	289– 352	1– 64	
	136	118	100	82	64	46	28	10	
	137	119	101	83	65	47	29	11	
	138	120	102	84	66	48	30	12	
	139	121	103	85	67	49	31	13	
	140	122	104	86	68	50	32	14	
	141	123	105	87	69	51	33	15	
	142	124	106	88	70	52	34	16	
	143	125	107	89	71	53	35	17	
2161– 2224	1873– 1936	1585– 1648	1297– 1360	1009– 1072	721– 784	433– 496	145– 208		

Page Intentionally Blank

NV8144 Connector Numbers—SDI (as seen from the rear of the frame)

OUTPUTS

		16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONTROL 1	CONTROL 2	INPUTS															
		136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
		144	135	126	117	108	99	90	81	72	63	54	45	36	27	18	9
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> Legend: 000 --- video port number </div>															

		8	7	6	5	4	3	2	1
MONITOR	127	109	91	73	55	37	19	1	
	128	110	92	74	56	38	20	2	
	129	111	93	75	57	39	21	3	
	130	112	94	76	58	40	22	4	
	131	113	95	77	59	41	23	5	
	132	114	96	78	60	42	24	6	
	133	115	97	79	61	43	25	7	
	134	116	98	80	62	44	26	8	
	135	117	99	81	63	45	27	9	
	136	118	100	82	64	46	28	10	
	137	119	101	83	65	47	29	11	
	138	120	102	84	66	48	30	12	
	139	121	103	85	67	49	31	13	
	140	122	104	86	68	50	32	14	
141	123	105	87	69	51	33	15		
142	124	106	88	70	52	34	16		
143	125	107	89	71	53	35	17		
144	126	108	90	72	54	36	18		

Page Intentionally Blank

Page Intentionally Blank

NV8280 Connector Numbers—SDI+TDM (as seen from the rear of the frame)

Legend:
xxx --- video port number
 --- audio port range
 yyy-zzz

		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
MONITOR - OUT	MONITOR - IN	559	541	523	505	487	469	451	433	415	397	379	361	343	325	307	289	271	253	235	217	199	181	163	145	127	109	91	73	55	37	19	1
		560	542	524	506	488	470	452	434	416	398	380	362	344	326	308	290	272	254	236	218	200	182	164	146	128	110	92	74	56	38	20	2
		561	543	525	507	489	471	453	435	417	399	381	363	345	327	309	291	273	255	237	219	201	183	165	147	129	111	93	75	57	39	21	3
		562	544	526	508	490	472	454	436	418	400	382	364	346	328	310	292	274	256	238	220	202	184	166	148	130	112	94	76	58	40	22	4
		563	545	527	509	491	473	455	437	419	401	383	365	347	329	311	293	275	257	239	221	203	185	167	149	131	113	95	77	59	41	23	5
		564	546	528	510	492	474	456	438	420	402	384	366	348	330	312	294	276	258	240	222	204	186	168	150	132	114	96	78	60	42	24	6
		565	547	529	511	493	475	457	439	421	403	385	367	349	331	313	295	277	259	241	223	205	187	169	151	133	115	97	79	61	43	25	7
		566	548	530	512	494	476	458	440	422	404	386	368	350	332	314	296	278	260	242	224	206	188	170	152	134	116	98	80	62	44	26	8
		8929-8992	8641-8704	8353-8416	8065-8128	7777-7840	7489-7552	7201-7264	6913-6976	6625-6688	6337-6400	6049-6112	5761-5824	5473-5536	5185-5248	4897-4960	4609-4672	4321-4384	4033-4096	3745-3808	3457-3520	3169-3232	2881-2944	2593-2656	2305-2368	2017-2080	1729-1792	1441-1504	1153-1216	865-928	577-640	289-352	1-64
		568	550	532	514	496	478	460	442	424	406	388	370	352	334	316	298	280	262	244	226	208	190	172	154	136	118	100	82	64	46	28	10
		569	551	533	515	497	479	461	443	425	407	389	371	353	335	317	299	281	263	245	227	209	191	173	155	137	119	101	83	65	47	29	11
		570	552	534	516	498	480	462	444	426	408	390	372	354	336	318	300	282	264	246	228	210	192	174	156	138	120	102	84	66	48	30	12
		571	553	535	517	499	481	463	445	427	409	391	373	355	337	319	301	283	265	247	229	211	193	175	157	139	121	103	85	67	49	31	13
		572	554	536	518	500	482	464	446	428	410	392	374	356	338	320	302	284	266	248	230	212	194	176	158	140	122	104	86	68	50	32	14
		573	555	537	519	501	483	465	447	429	411	393	375	357	339	321	303	285	267	249	231	213	195	177	159	141	123	105	87	69	51	33	15
		574	556	538	520	502	484	466	448	430	412	394	376	358	340	322	304	286	268	250	232	214	196	178	160	142	124	106	88	70	52	34	16
575	557	539	521	503	485	467	449	431	413	395	377	359	341	323	305	287	269	251	233	215	197	179	161	143	125	107	89	71	53	35	17		
9073-9136	8785-8848	8497-8560	8209-8272	7921-7984	7633-7696	7345-7408	7057-7120	6769-6832	6481-6544	6193-6256	5905-5968	5617-5680	5329-5392	5041-5104	4753-4816	4465-4528	4177-4240	3889-3952	3601-3664	3313-3376	3025-3088	2737-2800	2449-2512	2161-2224	1873-1936	1585-1648	1297-1360	1009-1072	721-784	433-496	145-208		

OUTPUTS

		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
		280	271	262	253	244	235	226	217	208	199	190	181	172	163	154	145	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
4465-4528	4321-4384	4177-4240	4033-4096	3889-3952	3745-3808	3601-3664	3457-3520	3313-3376	3169-3232	3025-3088	2881-2944	2737-2800	2593-2656	2449-2512	2305-2368	2161-2224	2017-2080	1873-1936	1729-1792	1585-1648	1441-1504	1297-1360	1153-1216	1009-1072	865-928	721-784	577-640	433-496	289-352	145-208	1-64		

INPUTS

Page Intentionally Blank

NV8280 Connector Numbers—SDI (as seen from the rear of the frame)

Legend:
xxx --- video port number
 --- audio port range
 yyy-zzz

		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
MONITOR - OUT	MONITOR - IN	559	541	523	505	487	469	451	433	415	397	379	361	343	325	307	289	271	253	235	217	199	181	163	145	127	109	91	73	55	37	19	1
		560	542	524	506	488	470	452	434	416	398	380	362	344	326	308	290	272	254	236	218	200	182	164	146	128	110	92	74	56	38	20	2
		561	543	525	507	489	471	453	435	417	399	381	363	345	327	309	291	273	255	237	219	201	183	165	147	129	111	93	75	57	39	21	3
		562	544	526	508	490	472	454	436	418	400	382	364	346	328	310	292	274	256	238	220	202	184	166	148	130	112	94	76	58	40	22	4
		563	545	527	509	491	473	455	437	419	401	383	365	347	329	311	293	275	257	239	221	203	185	167	149	131	113	95	77	59	41	23	5
		564	546	528	510	492	474	456	438	420	402	384	366	348	330	312	294	276	258	240	222	204	186	168	150	132	114	96	78	60	42	24	6
		565	547	529	511	493	475	457	439	421	403	385	367	349	331	313	295	277	259	241	223	205	187	169	151	133	115	97	79	61	43	25	7
		566	548	530	512	494	476	458	440	422	404	386	368	350	332	314	296	278	260	242	224	206	188	170	152	134	116	98	80	62	44	26	8
		567	549	531	513	495	477	459	441	423	405	387	369	351	333	315	297	279	261	243	225	207	189	171	153	135	117	99	81	63	45	27	9
		568	550	532	514	496	478	460	442	424	406	388	370	352	334	316	298	280	262	244	226	208	190	172	154	136	118	100	82	64	46	28	10
		569	551	533	515	497	479	461	443	425	407	389	371	353	335	317	299	281	263	245	227	209	191	173	155	137	119	101	83	65	47	29	11
		570	552	534	516	498	480	462	444	426	408	390	372	354	336	318	300	282	264	246	228	210	192	174	156	138	120	102	84	66	48	30	12
		571	553	535	517	499	481	463	445	427	409	391	373	355	337	319	301	283	265	247	229	211	193	175	157	139	121	103	85	67	49	31	13
		572	554	536	518	500	482	464	446	428	410	392	374	356	338	320	302	284	266	248	230	212	194	176	158	140	122	104	86	68	50	32	14
		573	555	537	519	501	483	465	447	429	411	393	375	357	339	321	303	285	267	249	231	213	195	177	159	141	123	105	87	69	51	33	15
		574	556	538	520	502	484	466	448	430	412	394	376	358	340	322	304	286	268	250	232	214	196	178	160	142	124	106	88	70	52	34	16
575	557	539	521	503	485	467	449	431	413	395	377	359	341	323	305	287	269	251	233	215	197	179	161	143	125	107	89	71	53	35	17		
576	558	540	522	504	486	468	450	432	414	396	378	360	342	324	306	288	270	252	234	216	198	180	162	144	126	108	90	72	54	36	18		

OUTPUTS

		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
INPUTS	280	271	262	253	244	235	226	217	208	199	190	181	172	163	154	145	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1	
	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2	
	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3	
	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4	
	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5	
	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6	
	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7	
	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8	
	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153	144	135	126	117	108	99	90	81	72	63	54	45	36	27	18	9	

Page Intentionally Blank

865-1008

577-720

289-432

1-144

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

MONITOR - OUT

MONITOR - IN

Table with 28 columns and 18 rows of connector numbers and ranges.

Legend: xxx video port number yyy-zz audio port range

OUTPUTS

NV8576 Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

289-432

1-144

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

Table with 28 columns and 10 rows of connector numbers and ranges.

INPUTS

UPPER BAYS

433-576

145-288

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

Table with 28 columns (64-33) and 10 rows (568-576) of connector numbers and ranges.

1009-1152

721-864

433-576

145-288

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

Main table with 28 columns (64-33) and 20 rows (1135-1152) of connector numbers and ranges.

INPUTS

OUTPUTS

MONITOR - IN

MONITOR - OUT

Legend: xxx video port number yyy-zzz audio port range

NV8576 Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

RF0274-02 06 Jan 2011

LOWER BAYS

		865-1008								577-720								289-432								1-144							
		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
MONITOR - OUT	MONITOR - IN	991	973	955	937	919	901	883	865	703	685	667	649	631	613	595	577	415	397	379	361	343	325	307	289	127	109	91	73	55	37	19	1
		992	974	956	938	920	902	884	866	704	686	668	650	632	614	596	578	416	398	380	362	344	326	308	290	128	110	92	74	56	38	20	2
		993	975	957	939	921	903	885	867	705	687	669	651	633	615	597	579	417	399	381	363	345	327	309	291	129	111	93	75	57	39	21	3
		994	976	958	940	922	904	886	868	706	688	670	652	634	616	598	580	418	400	382	364	346	328	310	292	130	112	94	76	58	40	22	4
		995	977	959	941	923	905	887	869	707	689	671	653	635	617	599	581	419	401	383	365	347	329	311	293	131	113	95	77	59	41	23	5
		996	978	960	942	924	906	888	870	708	690	672	654	636	618	600	582	420	402	384	366	348	330	312	294	132	114	96	78	60	42	24	6
		997	979	961	943	925	907	889	871	709	691	673	655	637	619	601	583	421	403	385	367	349	331	313	295	133	115	97	79	61	43	25	7
		998	980	962	944	926	908	890	872	710	692	674	656	638	620	602	584	422	404	386	368	350	332	314	296	134	116	98	80	62	44	26	8
		15841-15904	15553-15616	15265-15328	14977-15040	14689-14752	14401-14464	14113-14176	13825-13888	11233-11296	10945-11008	10657-10720	10369-10432	10081-10144	9793-9856	9505-9568	9217-9280	6625-6688	6337-6400	6049-6112	5761-5824	5473-5536	5185-5248	4897-4960	4609-4672	2017-2080	1729-1792	1441-1504	1153-1216	865-928	577-640	289-352	1-64
		1000	982	964	946	928	910	892	874	712	694	676	658	640	622	604	586	424	406	388	370	352	334	316	298	136	118	100	82	64	46	28	10
		1001	983	965	947	929	911	893	875	713	695	677	659	641	623	605	587	425	407	389	371	353	335	317	299	137	119	101	83	65	47	29	11
		1002	984	966	948	930	912	894	876	714	696	678	660	642	624	606	588	426	408	390	372	354	336	318	300	138	120	102	84	66	48	30	12
		1003	985	967	949	931	913	895	877	715	697	679	661	643	625	607	589	427	409	391	373	355	337	319	301	139	121	103	85	67	49	31	13
		1004	986	968	950	932	914	896	878	716	698	680	662	644	626	608	590	428	410	392	374	356	338	320	302	140	122	104	86	68	50	32	14
		1005	987	969	951	933	915	897	879	717	699	681	663	645	627	609	591	429	411	393	375	357	339	321	303	141	123	105	87	69	51	33	15
		1006	988	970	952	934	916	898	880	718	700	682	664	646	628	610	592	430	412	394	376	358	340	322	304	142	124	106	88	70	52	34	16
		1007	989	971	953	935	917	899	881	719	701	683	665	647	629	611	593	431	413	395	377	359	341	323	305	143	125	107	89	71	53	35	17
15985-16048	15697-15760	15409-15472	15121-15184	14833-14896	14545-14608	14257-14320	13969-14032	11377-11440	11089-11152	10801-10864	10513-10576	10225-10288	9937-10000	9649-9712	9361-9424	6769-6832	6481-6544	6193-6256	5905-5968	5617-5680	5329-5392	5041-5104	4753-4816	2161-2224	1873-1936	1585-1648	1297-1360	1009-1072	721-784	433-496	145-208		

Legend:
 --- video port number
 XXX --- audio port range
 yyy-zzz

OUTPUTS

		289-432															1-144																
		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
INPUTS	424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1	
	425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2	
	426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3	
	427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4	
	428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5	
	429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6	
	430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7	
	431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8	
6769-6832	6625-6688	6481-6544	6337-6400	6193-6256	6049-6112	5905-5968	5761-5824	5617-5680	5473-5536	5329-5392	5185-5248	5041-5104	4897-4960	4753-4816	4609-4672	2161-2224	2017-2080	1873-1936	1729-1792	1585-1648	1441-1504	1297-1360	1153-1216	1009-1072	865-928	721-784	577-640	433-496	289-352	145-208	1-64		

INPUTS

NV8576 Connector Numbers—SDI + TDM
 (as seen from the rear of the frame)

UPPER BAYS

433-576

145-288

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

9089-9152	8945-9008	8801-8864	8657-8720	8513-8576	8369-8432	8225-8288	8081-8144	7937-8000	7793-7856	7649-7712	7505-7568	7361-7424	7217-7280	7073-7136	6929-6992	4481-4544	4337-4400	4193-4256	4049-4112	3905-3968	3761-3824	3617-3680	3473-3536	3329-3392	3185-3248	3041-3104	2897-2960	2753-2816	2609-2672	2465-2528	2321-2384
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153

INPUTS

NV8576 Connector Numbers—SDI + TDM
(as seen from the rear of the frame)

RF0274-02 06 Jan 2011

1009-1152

721-864

433-576

145-288

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

18161-18224	17873-17936	17585-17648	17297-17360	17009-17072	16721-16784	16433-16496	16145-16208	13553-13616	13265-13328	12977-13040	12689-12752	12401-12464	12113-12176	11825-11888	11537-11600	8945-9008	8657-8720	8369-8432	8081-8144	7793-7856	7505-7568	7217-7280	6929-6992	4337-4400	4049-4112	3761-3824	3473-3536	3185-3248	2897-2960	2609-2672	2321-2384
1136	1118	1100	1082	1064	1046	1028	1010	848	830	812	794	776	758	740	722	560	542	524	506	488	470	452	434	272	254	236	218	200	182	164	146
1137	1119	1101	1083	1065	1047	1029	1011	849	831	813	795	777	759	741	723	561	543	525	507	489	471	453	435	273	255	237	219	201	183	165	147
1138	1120	1102	1084	1066	1048	1030	1012	850	832	814	796	778	760	742	724	562	544	526	508	490	472	454	436	274	256	238	220	202	184	166	148
1139	1121	1103	1085	1067	1049	1031	1013	851	833	815	797	779	761	743	725	563	545	527	509	491	473	455	437	275	257	239	221	203	185	167	149
1140	1122	1104	1086	1068	1050	1032	1014	852	834	816	798	780	762	744	726	564	546	528	510	492	474	456	438	276	258	240	222	204	186	168	150
1141	1123	1105	1087	1069	1051	1033	1015	853	835	817	799	781	763	745	727	565	547	529	511	493	475	457	439	277	259	241	223	205	187	169	151
1142	1124	1106	1088	1070	1052	1034	1016	854	836	818	800	782	764	746	728	566	548	530	512	494	476	458	440	278	260	242	224	206	188	170	152
1143	1125	1107	1089	1071	1053	1035	1017	855	837	819	801	783	765	747	729	567	549	531	513	495	477	459	441	279	261	243	225	207	189	171	153
18305-18368	18017-18080	17729-17792	17441-17504	17153-17216	16865-16928	16577-16640	16289-16352	13697-13760	13409-13472	13121-13184	12833-12896	12545-12608	12257-12320	11969-12032	11681-11744	9089-9152	8801-8864	8513-8576	8225-8288	7937-8000	7649-7712	7361-7424	7073-7136	4481-4544	4193-4256	3905-3968	3617-3680	3329-3392	3041-3104	2753-2816	2465-2528
1145	1127	1109	1091	1073	1055	1037	1019	857	839	821	803	785	767	749	731	569	551	533	515	497	479	461	443	281	263	245	227	209	191	173	155
1146	1128	1110	1092	1074	1056	1038	1020	858	840	822	804	786	768	750	732	570	552	534	516	498	480	462	444	282	264	246	228	210	192	174	156
1147	1129	1111	1093	1075	1057	1039	1021	859	841	823	805	787	769	751	733	571	553	535	517	499	481	463	445	283	265	247	229	211	193	175	157
1148	1130	1112	1094	1076	1058	1040	1022	860	842	824	806	788	770	752	734	572	554	536	518	500	482	464	446	284	266	248	230	212	194	176	158
1149	1131	1113	1095	1077	1059	1041	1023	861	843	825	807	789	771	753	735	573	555	537	519	501	483	465	447	285	267	249	231	213	195	177	159
1150	1132	1114	1096	1078	1060	1042	1024	862	844	826	808	790	772	754	736	574	556	538	520	502	484	466	448	286	268	250	232	214	196	178	160
1151	1133	1115	1097	1079	1061	1043	1025	863	845	827	809	791	773	755	737	575	557	539	521	503	485	467	449	287	269	251	233	215	197	179	161
1152	1134	1116	1098	1080	1062	1044	1026	864	846	828	810	792	774	756	738	576	558	540	522	504	486	468	450	288	270	252	234	216	198	180	162

MONITOR - IN

MONITOR - OUT

OUTPUTS

Legend:
xxx --- video port number
yyy-zz --- audio port range

LOWER BAYS

		865-1008								577-720								289-432								1-144							
		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
MONITOR - OUT	MONITOR - IN	991	973	955	937	919	901	883	865	703	685	667	649	631	613	595	577	415	397	379	361	343	325	307	289	127	109	91	73	55	37	19	1
		992	974	956	938	920	902	884	866	704	686	668	650	632	614	596	578	416	398	380	362	344	326	308	290	128	110	92	74	56	38	20	2
		993	975	957	939	921	903	885	867	705	687	669	651	633	615	597	579	417	399	381	363	345	327	309	291	129	111	93	75	57	39	21	3
		994	976	958	940	922	904	886	868	706	688	670	652	634	616	598	580	418	400	382	364	346	328	310	292	130	112	94	76	58	40	22	4
		995	977	959	941	923	905	887	869	707	689	671	653	635	617	599	581	419	401	383	365	347	329	311	293	131	113	95	77	59	41	23	5
		996	978	960	942	924	906	888	870	708	690	672	654	636	618	600	582	420	402	384	366	348	330	312	294	132	114	96	78	60	42	24	6
		997	979	961	943	925	907	889	871	709	691	673	655	637	619	601	583	421	403	385	367	349	331	313	295	133	115	97	79	61	43	25	7
		998	980	962	944	926	908	890	872	710	692	674	656	638	620	602	584	422	404	386	368	350	332	314	296	134	116	98	80	62	44	26	8
		999	981	963	945	927	909	891	873	711	693	675	657	639	621	603	585	423	405	387	369	351	333	315	297	135	117	99	81	63	45	27	9
		1000	982	964	946	928	910	892	874	712	694	676	658	640	622	604	586	424	406	388	370	352	334	316	298	136	118	100	82	64	46	28	10
		1001	983	965	947	929	911	893	875	713	695	677	659	641	623	605	587	425	407	389	371	353	335	317	299	137	119	101	83	65	47	29	11
		1002	984	966	948	930	912	894	876	714	696	678	660	642	624	606	588	426	408	390	372	354	336	318	300	138	120	102	84	66	48	30	12
		1003	985	967	949	931	913	895	877	715	697	679	661	643	625	607	589	427	409	391	373	355	337	319	301	139	121	103	85	67	49	31	13
		1004	986	968	950	932	914	896	878	716	698	680	662	644	626	608	590	428	410	392	374	356	338	320	302	140	122	104	86	68	50	32	14
		1005	987	969	951	933	915	897	879	717	699	681	663	645	627	609	591	429	411	393	375	357	339	321	303	141	123	105	87	69	51	33	15
		1006	988	970	952	934	916	898	880	718	700	682	664	646	628	610	592	430	412	394	376	358	340	322	304	142	124	106	88	70	52	34	16
1007	989	971	953	935	917	899	881	719	701	683	665	647	629	611	593	431	413	395	377	359	341	323	305	143	125	107	89	71	53	35	17		
1008	990	972	954	936	918	900	882	720	702	684	666	648	630	612	594	432	414	396	378	360	342	324	306	144	126	108	90	72	54	36	18		

Legend:
 --- video port number
 XXX --- audio port range
 yy-zz

OUTPUTS
 NV8576 Connector Numbers—SDI
 (as seen from the rear of the frame)

		289-432															1-144																
		32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
		424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
432	423	414	405	396	387	378	369	360	351	342	333	324	315	306	297	144	135	126	117	108	99	90	81	72	63	54	45	36	27	18	9		

INPUTS

UPPER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

433-576

145-288

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

568	559	550	541	532	523	514	505	496	487	478	469	460	451	442	433	280	271	262	253	244	235	226	217	208	199	190	181	172	163	154	145
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	226	216	207	198	189	180	171	162	153

INPUTS

RF0274-02 06 Jan 2011

NV8576 Connector Numbers—SDI
(as seen from the rear of the frame)

1009-1152

721-864

433-576

145-288

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

1135	1117	1099	1081	1063	1045	1027	1009	847	829	811	793	775	757	739	721	559	541	523	505	487	469	451	433	271	253	235	217	199	181	163	145
1136	1118	1100	1082	1064	1046	1028	1010	848	830	812	794	776	758	740	722	560	542	524	506	488	470	452	434	272	254	236	218	200	182	164	146
1137	1119	1101	1083	1065	1047	1029	1011	849	831	813	795	777	759	741	723	561	543	525	507	489	471	453	435	273	255	237	219	201	183	165	147
1138	1120	1102	1084	1066	1048	1030	1012	850	832	814	796	778	760	742	724	562	544	526	508	490	472	454	436	274	256	238	220	202	184	166	148
1139	1121	1103	1085	1067	1049	1031	1013	851	833	815	797	779	761	743	725	563	545	527	509	491	473	455	437	275	257	239	221	203	185	167	149
1140	1122	1104	1086	1068	1050	1032	1014	852	834	816	798	780	762	744	726	564	546	528	510	492	474	456	438	276	258	240	222	204	186	168	150
1141	1123	1105	1087	1069	1051	1033	1015	853	835	817	799	781	763	745	727	565	547	529	511	493	475	457	439	277	259	241	223	205	187	169	151
1142	1124	1106	1088	1070	1052	1034	1016	854	836	818	800	782	764	746	728	566	548	530	512	494	476	458	440	278	260	242	224	206	188	170	152
1143	1125	1107	1089	1071	1053	1035	1017	855	837	819	801	783	765	747	729	567	549	531	513	495	477	459	441	279	261	243	225	207	189	171	153
1144	1126	1108	1090	1070	1054	1036	1018	856	838	820	802	784	766	748	730	568	550	532	514	496	478	460	442	280	262	244	226	208	190	172	154
1145	1127	1109	1091	1073	1055	1037	1019	857	839	821	803	785	767	749	731	569	551	533	515	497	479	461	443	281	263	245	227	209	191	173	155
1146	1128	1110	1092	1074	1056	1038	1020	858	840	822	804	786	768	750	732	570	552	534	516	498	480	462	444	282	264	246	228	210	192	174	156
1147	1129	1111	1093	1075	1057	1039	1021	859	841	823	805	787	769	751	733	571	553	535	517	499	481	463	445	283	265	247	229	211	193	175	157
1148	1130	1112	1094	1076	1058	1040	1022	860	842	824	806	788	770	752	734	572	554	536	518	500	482	464	446	284	266	248	230	212	194	176	158
1149	1131	1113	1095	1077	1059	1041	1023	861	843	825	807	789	771	753	735	573	555	537	519	501	483	465	447	285	267	249	231	213	195	177	159
1150	1132	1114	1096	1078	1060	1042	1024	862	844	826	808	790	772	754	736	574	556	538	520	502	484	466	448	286	268	250	232	214	196	178	160
1151	1133	1115	1097	1079	1061	1043	1025	863	845	827	809	791	773	755	737	575	557	539	521	503	485	467	449	287	269	251	233	215	197	179	161
1152	1134	1116	1098	1080	1062	1044	1026	864	846	828	810	792	774	756	738	576	558	540	522	504	486	468	450	288	270	252	234	216	198	180	162

MONITOR - IN

MONITOR - OUT

OUTPUTS

Legend:
xxx --- video port number
yyy-zzz --- audio port range

LOWER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

289-432

1-144

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

MONITOR - OUT

MONITOR - IN

Table with 28 columns and 12 rows of connector numbers and ranges.

Legend: xxx - video port number yyy-zz --- audio port range

OUTPUTS

RF0275-02 06 Jan 2011

289-432

1-144

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

Table with 28 columns and 12 rows of connector numbers and ranges.

INPUTS

NV8576-Plus, Frame 1, Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

UPPER BAYS

433-576

145-288

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

Table with 28 columns (64-33) and 8 rows (568-576) of connector pin numbers and ranges.

433-576

145-288

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

Table with 28 columns (64-33) and 8 rows (568-576) of connector pin numbers and ranges.

MONITOR - IN

MONITOR - OUT

OUTPUTS

RF0275-02 06 Jan 2011

INPUTS

NV8576-Plus, Frame 1, Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

Legend: xxx --- video port number yy-zz --- audio port range

LOWER BAYS

289-432

1-144

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

MONITOR - OUT	MONITOR - IN	424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
		6769-6832	6625-6688	6481-6544	6337-6400	6193-6256	6049-6112	5905-5968	5761-5824	5617-5680	5473-5536	5329-5392	5185-5248	5041-5104	4897-4960	4753-4816	4609-4672	2161-2224	2017-2080	1873-1936	1729-1792	1585-1648	1441-1504	1297-1360	1153-1216	1009-1072	865-928	721-784	577-640	433-496	289-352	145-208	1-64

Legend:
 --- video port number
 XXX --- audio port range
 YY-ZZZ

OUTPUTS
MONITOR - OUT
MONITOR - IN
INPUTS
MONITOR - IN
MONITOR - OUT

NV8576-Plus, Frame 1, Connector Numbers—SDI+TDM
(as seen from the rear of the frame)

289-432

1-144

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

424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
6769-6832	6625-6688	6481-6544	6337-6400	6193-6256	6049-6112	5905-5968	5761-5824	5617-5680	5473-5536	5329-5392	5185-5248	5041-5104	4897-4960	4753-4816	4609-4672	2161-2224	2017-2080	1873-1936	1729-1792	1585-1648	1441-1504	1297-1360	1153-1216	1009-1072	865-928	721-784	577-640	433-496	289-352	145-208	1-64

UPPER BAYS

433-576

145-288

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

9089-9152	8945-9008	8801-8864	8657-8720	8513-8576	8369-8432	8225-8288	8081-8144	7937-8000	7793-7856	7649-7712	7505-7568	7361-7424	7217-7280	7073-7136	6929-6992	4481-4544	4337-4400	4193-4256	4049-4112	3905-3968	3761-3824	3617-3680	3473-3536	3329-3392	3185-3248	3041-3104	2897-2960	2753-2816	2609-2672	2465-2528	2321-2384
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153

INPUTS

NV8576-Plus, Frame 1, Connector Numbers—SDI + TDM
(as seen from the rear of the frame)

433-576

145-288

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

9089-9152	8945-9008	8801-8864	8657-8720	8513-8576	8369-8432	8225-8288	8081-8144	7937-8000	7793-7856	7649-7712	7505-7568	7361-7424	7217-7280	7073-7136	6929-6992	4481-4544	4337-4400	4193-4256	4049-4112	3905-3968	3761-3824	3617-3680	3473-3536	3329-3392	3185-3248	3041-3104	2897-2960	2753-2816	2609-2672	2465-2528	2321-2384	
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146	
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147	
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148	
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149	
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150	
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151	
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152	
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153	

MONITOR - IN

MONITOR - OUT

OUTPUTS

Legend:
xxx --- video port number
yy-zz --- audio port range

LOWER BAYS

289-432

1-144

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

MONITOR - OUT	MONITOR - IN	424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
		425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
		426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
		427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
		428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
		429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
		430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
		431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
		432	423	414	405	396	387	378	369	360	351	342	333	324	315	306	297	144	135	126	117	108	99	90	81	72	63	54	45	36	27	18	9

Legend:
 --- video port number
 XXX --- audio port range
 YY-ZZZ

OUTPUTS
NV8576-Plus, Frame 1, Connector Numbers—SDI
(as seen from the rear of the frame)

289-432

1-144

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

INPUTS	424	415	406	397	388	379	370	361	352	343	334	325	316	307	298	289	136	127	118	109	100	91	82	73	64	55	46	37	28	19	10	1
	425	416	407	398	389	380	371	362	353	344	335	326	317	308	299	290	137	128	119	110	101	92	83	74	65	56	47	38	29	20	11	2
	426	417	408	399	390	381	372	363	354	345	336	327	318	309	300	291	138	129	120	111	102	93	84	75	66	57	48	39	30	21	12	3
	427	418	409	400	391	382	373	364	355	346	337	328	319	310	301	292	139	130	121	112	103	94	85	76	67	58	49	40	31	22	13	4
	428	419	410	401	392	383	374	365	356	347	338	329	320	311	302	293	140	131	122	113	104	95	86	77	68	59	50	41	32	23	14	5
	429	420	411	402	393	384	375	366	357	348	339	330	321	312	303	294	141	132	123	114	105	96	87	78	69	60	51	42	33	24	15	6
	430	421	412	403	394	385	376	367	358	349	340	331	322	313	304	295	142	133	124	115	106	97	88	79	70	61	52	43	34	25	16	7
	431	422	413	404	395	386	377	368	359	350	341	332	323	314	305	296	143	134	125	116	107	98	89	80	71	62	53	44	35	26	17	8
	432	423	414	405	396	387	378	369	360	351	342	333	324	315	306	297	144	135	126	117	108	99	90	81	72	63	54	45	36	27	18	9

UPPER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

433-576

145-288

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

568	559	550	541	532	523	514	505	496	487	478	469	460	451	442	433	280	271	262	253	244	235	226	217	208	199	190	181	172	163	154	145
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153

INPUTS

NV8576-Plus, Frame 1, Connector Numbers—SDI
(as seen from the rear of the frame)

433-576

145-288

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

568	559	550	541	532	523	514	505	496	487	478	469	460	451	442	433	280	271	262	253	244	235	226	217	208	199	190	181	172	163	154	145
569	560	551	542	533	524	515	506	497	488	479	470	461	452	443	434	281	272	263	254	245	236	227	218	209	200	191	182	173	164	155	146
570	561	552	543	534	525	516	507	498	489	480	471	462	453	444	435	282	273	264	255	246	237	228	219	210	201	192	183	174	165	156	147
571	562	553	544	535	526	517	508	499	490	481	472	463	454	445	436	283	274	265	256	247	238	229	220	211	202	193	184	175	166	157	148
572	563	554	545	536	527	518	509	500	491	482	473	464	455	446	437	284	275	266	257	248	239	230	221	212	203	194	185	176	167	158	149
573	564	555	546	537	528	519	510	501	492	483	474	465	456	447	438	285	276	267	258	249	240	231	222	213	204	195	186	177	168	159	150
574	565	556	547	538	529	520	511	502	493	484	475	466	457	448	439	286	277	268	259	250	241	232	223	214	205	196	187	178	169	160	151
575	566	557	548	539	530	521	512	503	494	485	476	467	458	449	440	287	278	269	260	251	242	233	224	215	206	197	188	179	170	161	152
576	567	558	549	540	531	522	513	504	495	486	477	468	459	450	441	288	279	270	261	252	243	234	225	216	207	198	189	180	171	162	153

MONITOR - IN

MONITOR - OUT

OUTPUTS

Legend:
xxx --- video port number
yy-zz --- audio port range

LOWER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

1009-1152

721-864

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

Table with 34 columns (64-33) and 10 rows of connector numbers. Includes 'unused' labels for some cells.

1009-1152

721-864

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

Table with 34 columns (64-33) and 10 rows of connector numbers. Includes 'unused' labels for some cells.

MONITOR - IN

MONITOR - OUT

OUTPUTS

RF0276-02 06 Jan 2011

INPUTS

NV8576-Plus, Frame 2, Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

Legend:
xxx --- video port number
yyy-zz --- audio port range

LOWER BAYS

865-1008

577-720

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

MONITOR - OUT	MONITOR - IN	1000	991	982	973	964	955	946	937	928	919	910	901	892	883	874	865	712	703	694	685	676	667	658	649	640	631	622	613	604	595	586	577
		1001	992	983	974	965	956	947	938	929	920	911	902	893	884	875	866	713	704	695	686	677	668	659	650	641	632	623	614	605	596	587	578
		1002	993	984	975	966	957	948	939	930	921	912	903	894	885	876	867	714	705	696	687	678	669	660	651	642	633	624	615	606	597	588	579
		1003	994	985	976	967	958	949	940	931	922	913	904	895	886	877	868	715	706	697	688	679	670	661	652	643	634	625	616	607	598	589	580
		1004	995	986	977	968	959	950	941	932	923	914	905	896	887	878	869	716	707	698	689	680	671	662	653	644	635	626	617	608	599	590	581
		1005	996	987	978	969	960	951	942	933	924	915	906	897	888	879	870	717	708	699	690	681	672	663	654	645	636	627	618	609	600	591	582
		1006	997	988	979	970	961	952	943	934	925	916	907	898	889	880	871	718	709	700	691	682	673	664	655	646	637	628	619	610	601	592	583
		1007	998	989	980	971	962	953	944	935	926	917	908	899	890	881	872	719	710	701	692	683	674	665	656	647	638	629	620	611	602	593	584
		15985-16048	15841-15904	15697-15760	15553-15616	15409-15472	15265-15328	15121-15184	14977-15040	14833-14896	14689-14752	14545-14608	14401-14464	14257-14320	14113-14176	13969-14032	13825-13888	11377-11440	11233-11296	11089-11152	10945-11008	10801-10864	10657-10720	10513-10576	10369-10432	10225-10288	10081-10144	9937-10000	9793-9856	9649-9712	9505-9568	9361-9424	9217-9280

Legend:
 --- video port number
 xxx --- audio port range
 yy-zzz

OUTPUTS

MONITOR - OUT

MONITOR - IN

INPUTS

NV8576-Plus, Frame 2, Connector Numbers—SDI + TDM
 (as seen from the rear of the frame)

865-1008

577-720

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

1000	991	982	973	964	955	946	937	928	919	910	901	892	883	874	865	712	703	694	685	676	667	658	649	640	631	622	613	604	595	586	577
1001	992	983	974	965	956	947	938	929	920	911	902	893	884	875	866	713	704	695	686	677	668	659	650	641	632	623	614	605	596	587	578
1002	993	984	975	966	957	948	939	930	921	912	903	894	885	876	867	714	705	696	687	678	669	660	651	642	633	624	615	606	597	588	579
1003	994	985	976	967	958	949	940	931	922	913	904	895	886	877	868	715	706	697	688	679	670	661	652	643	634	625	616	607	598	589	580
1004	995	986	977	968	959	950	941	932	923	914	905	896	887	878	869	716	707	698	689	680	671	662	653	644	635	626	617	608	599	590	581
1005	996	987	978	969	960	951	942	933	924	915	906	897	888	879	870	717	708	699	690	681	672	663	654	645	636	627	618	609	600	591	582
1006	997	988	979	970	961	952	943	934	925	916	907	898	889	880	871	718	709	700	691	682	673	664	655	646	637	628	619	610	601	592	583
1007	998	989	980	971	962	953	944	935	926	917	908	899	890	881	872	719	710	701	692	683	674	665	656	647	638	629	620	611	602	593	584
15985-16048	15841-15904	15697-15760	15553-15616	15409-15472	15265-15328	15121-15184	14977-15040	14833-14896	14689-14752	14545-14608	14401-14464	14257-14320	14113-14176	13969-14032	13825-13888	11377-11440	11233-11296	11089-11152	10945-11008	10801-10864	10657-10720	10513-10576	10369-10432	10225-10288	10081-10144	9937-10000	9793-9856	9649-9712	9505-9568	9361-9424	9217-9280

UPPER BAYS

1009-1152															721-864																
64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
18305-18368	18161-18224	18017-18080	17873-17936	17729-17792	17585-17648	17441-17504	17297-17360	17153-17216	17009-17072	16865-16928	16721-16784	16577-16640	16433-16496	16289-16352	16145-16208	13697-13760	13553-13616	13409-13472	13265-13328	13121-13184	12977-13040	12833-12896	12689-12752	12545-12608	12401-12464	12257-12320	12113-12176	11969-12032	11825-11888	11681-11744	11537-11600
1145	1136	1127	1118	1109	1100	1091	1082	1073	1064	1055	1046	1037	1028	1019	1010	857	848	839	830	821	812	803	794	785	776	767	758	749	740	731	722
1146	1137	1128	1119	1110	1101	1092	1083	1074	1065	1056	1047	1038	1029	1020	1011	858	849	840	831	822	813	804	795	786	777	768	759	750	741	732	723
1147	1138	1129	1120	1111	1102	1093	1084	1075	1066	1057	1048	1039	1030	1021	1012	859	850	841	832	823	814	805	796	787	778	769	760	751	742	733	724
1148	1139	1130	1121	1112	1103	1094	1085	1076	1067	1058	1049	1040	1031	1022	1013	860	851	842	833	824	815	806	797	788	779	770	761	752	743	734	725
1149	1140	1131	1122	1113	1104	1095	1086	1077	1068	1059	1050	1041	1032	1023	1014	861	852	843	834	825	816	807	798	789	780	771	762	753	744	735	726
1150	1141	1132	1123	1114	1105	1096	1087	1078	1069	1060	1051	1042	1033	1024	1015	862	853	844	835	826	817	808	799	790	781	772	763	754	745	736	727
1151	1142	1133	1124	1115	1106	1097	1088	1079	1070	1061	1052	1043	1034	1025	1016	863	854	845	836	827	818	809	800	791	782	773	764	755	746	737	728
1152	1143	1134	1125	1116	1107	1098	1089	1080	1071	1062	1053	1044	1035	1026	1017	864	855	846	837	828	819	810	801	792	783	774	765	756	747	738	729

INPUTS

1009-1152															721-864																	
64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	
18305-18368	18161-18224	18017-18080	17873-17936	17729-17792	17585-17648	17441-17504	17297-17360	17153-17216	17009-17072	16865-16928	16721-16784	16577-16640	16433-16496	16289-16352	16145-16208	13697-13760	13553-13616	13409-13472	13265-13328	13121-13184	12977-13040	12833-12896	12689-12752	12545-12608	12401-12464	12257-12320	12113-12176	11969-12032	11825-11888	11681-11744	11537-11600	
1145	1136	1127	1118	1109	1100	1091	1082	1073	1064	1055	1046	1037	1028	1019	1010	857	848	839	830	821	812	803	794	785	776	767	758	749	740	731	722	
1146	1137	1128	1119	1110	1101	1092	1083	1074	1065	1056	1047	1038	1029	1020	1011	858	849	840	831	822	813	804	795	786	777	768	759	750	741	732	723	
1147	1138	1129	1120	1111	1102	1093	1084	1075	1066	1057	1048	1039	1030	1021	1012	859	850	841	832	823	814	805	796	787	778	769	760	751	742	733	724	
1148	1139	1130	1121	1112	1103	1094	1085	1076	1067	1058	1049	1040	1031	1022	1013	860	851	842	833	824	815	806	797	788	779	770	761	752	743	734	725	
1149	1140	1131	1122	1113	1104	1095	1086	1077	1068	1059	1050	1041	1032	1023	1014	861	852	843	834	825	816	807	798	789	780	771	762	753	744	735	726	
1150	1141	1132	1123	1114	1105	1096	1087	1078	1069	1060	1051	1042	1033	1024	1015	862	853	844	835	826	817	808	799	790	781	772	763	754	745	736	727	
1151	1142	1133	1124	1115	1106	1097	1088	1079	1070	1061	1052	1043	1034	1025	1016	863	854	845	836	827	818	809	800	791	782	773	764	755	746	737	728	
1152	1143	1134	1125	1116	1107	1098	1089	1080	1071	1062	1053	1044	1035	1026	1017	864	855	846	837	828	819	810	801	792	783	774	765	756	747	738	729	

MONITOR - IN

MONITOR - OUT

OUTPUTS

NV8576-Plus, Frame 2, Connector Numbers—SDI + TDM
(as seen from the rear of the frame)

RF0276-02 06 Jan 2011

Legend:
xxx --- video port number
yy-zz --- audio port range

LOWER BAYS

865-1008

577-720

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

MONITOR - OUT	MONITOR - IN	1000	991	982	973	964	955	946	937	928	919	910	901	892	883	874	865	712	703	694	685	676	667	658	649	640	631	622	613	604	595	586	577
		1001	992	983	974	965	956	947	938	929	920	911	902	893	884	875	866	713	704	695	686	677	668	659	650	641	632	623	614	605	596	587	578
		1002	993	984	975	966	957	948	939	930	921	912	903	894	885	876	867	714	705	696	687	678	669	660	651	642	633	624	615	606	597	588	579
		1003	994	985	976	967	958	949	940	931	922	913	904	895	886	877	868	715	706	697	688	679	670	661	652	643	634	625	616	607	598	589	580
		1004	995	986	977	968	959	950	941	932	923	914	905	896	887	878	869	716	707	698	689	680	671	662	653	644	635	626	617	608	599	590	581
		1005	996	987	978	969	960	951	942	933	924	915	906	897	888	879	870	717	708	699	690	681	672	663	654	645	636	627	618	609	600	591	582
		1006	997	988	979	970	961	952	943	934	925	916	907	898	889	880	871	718	709	700	691	682	673	664	655	646	637	628	619	610	601	592	583
		1007	998	989	980	971	962	953	944	935	926	917	908	899	890	881	872	719	710	701	692	683	674	665	656	647	638	629	620	611	602	593	584
		1008	999	990	981	972	963	954	945	936	927	918	909	900	891	882	873	720	711	702	693	684	675	666	657	648	639	630	621	612	603	594	585

Legend:
 --- video port number
 XXX --- audio port range
 YY-ZZ

OUTPUTS

865-1008

577-720

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

	1000	991	982	973	964	955	946	937	928	919	910	901	892	883	874	865	712	703	694	685	676	667	658	649	640	631	622	613	604	595	586	577
	1001	992	983	974	965	956	947	938	929	920	911	902	893	884	875	866	713	704	695	686	677	668	659	650	641	632	623	614	605	596	587	578
	1002	993	984	975	966	957	948	939	930	921	912	903	894	885	876	867	714	705	696	687	678	669	660	651	642	633	624	615	606	597	588	579
	1003	994	985	976	967	958	949	940	931	922	913	904	895	886	877	868	715	706	697	688	679	670	661	652	643	634	625	616	607	598	589	580
	1004	995	986	977	968	959	950	941	932	923	914	905	896	887	878	869	716	707	698	689	680	671	662	653	644	635	626	617	608	599	590	581
	1005	996	987	978	969	960	951	942	933	924	915	906	897	888	879	870	717	708	699	690	681	672	663	654	645	636	627	618	609	600	591	582
	1006	997	988	979	970	961	952	943	934	925	916	907	898	889	880	871	718	709	700	691	682	673	664	655	646	637	628	619	610	601	592	583
	1007	998	989	980	971	962	953	944	935	926	917	908	899	890	881	872	719	710	701	692	683	674	665	656	647	638	629	620	611	602	593	584
	1008	999	990	981	972	963	954	945	936	927	918	909	900	891	882	873	720	711	702	693	684	675	666	657	648	639	630	621	612	603	594	585

INPUTS

NV8576-Plus, Frame 2, Connector Numbers—SDI
 (as seen from the rear of the frame)

UPPER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

1009-1152

721-864

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

1144	1135	1126	1117	1108	1099	1090	1081	1072	1063	1054	1045	1036	1027	1018	1009	856	847	838	829	820	811	802	793	784	775	766	757	748	739	730	721
1145	1136	1127	1118	1109	1100	1091	1082	1073	1064	1055	1046	1037	1028	1019	1010	857	848	839	830	821	812	803	794	785	776	767	758	749	740	731	722
1146	1137	1128	1119	1110	1101	1092	1083	1074	1065	1056	1047	1038	1029	1020	1011	858	849	840	831	822	813	804	795	786	777	768	759	750	741	732	723
1147	1138	1129	1120	1111	1102	1093	1084	1075	1066	1057	1048	1039	1030	1021	1012	859	850	841	832	823	814	805	796	787	778	769	760	751	742	733	724
1148	1139	1130	1121	1112	1103	1094	1085	1076	1067	1058	1049	1040	1031	1022	1013	860	851	842	833	824	815	806	797	788	779	770	761	752	743	734	725
1149	1140	1131	1122	1113	1104	1095	1086	1077	1068	1059	1050	1041	1032	1023	1014	861	852	843	834	825	816	807	798	789	780	771	762	753	744	735	726
1150	1141	1132	1123	1114	1105	1096	1087	1078	1069	1060	1051	1042	1033	1024	1015	862	853	844	835	826	817	808	799	790	781	772	763	754	745	736	727
1151	1142	1133	1124	1115	1106	1097	1088	1079	1070	1061	1052	1043	1034	1025	1016	863	854	845	836	827	818	809	800	791	782	773	764	755	746	737	728
1152	1143	1134	1125	1116	1107	1098	1089	1080	1071	1062	1053	1044	1035	1026	1017	864	855	846	837	828	819	810	801	792	783	774	765	756	747	738	729

INPUTS

1009-1152

721-864

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

1144	1135	1126	1117	1108	1099	1090	1081	1072	1063	1054	1045	1036	1027	1018	1009	856	847	838	829	820	811	802	793	784	775	766	757	748	739	730	721	
1145	1136	1127	1118	1109	1100	1091	1082	1073	1064	1055	1046	1037	1028	1019	1010	857	848	839	830	821	812	803	794	785	776	767	758	749	740	731	722	
1146	1137	1128	1119	1110	1101	1092	1083	1074	1065	1056	1047	1038	1029	1020	1011	858	849	840	831	822	813	804	795	786	777	768	759	750	741	732	723	
1147	1138	1129	1120	1111	1102	1093	1084	1075	1066	1057	1048	1039	1030	1021	1012	859	850	841	832	823	814	805	796	787	778	769	760	751	742	733	724	
1148	1139	1130	1121	1112	1103	1094	1085	1076	1067	1058	1049	1040	1031	1022	1013	860	851	842	833	824	815	806	797	788	779	770	761	752	743	734	725	
1149	1140	1131	1122	1113	1104	1095	1086	1077	1068	1059	1050	1041	1032	1023	1014	861	852	843	834	825	816	807	798	789	780	771	762	753	744	735	726	
1150	1141	1132	1123	1114	1105	1096	1087	1078	1069	1060	1051	1042	1033	1024	1015	862	853	844	835	826	817	808	799	790	781	772	763	754	745	736	727	
1151	1142	1133	1124	1115	1106	1097	1088	1079	1070	1061	1052	1043	1034	1025	1016	863	854	845	836	827	818	809	800	791	782	773	764	755	746	737	728	
1152	1143	1134	1125	1116	1107	1098	1089	1080	1071	1062	1053	1044	1035	1026	1017	864	855	846	837	828	819	810	801	792	783	774	765	756	747	738	729	

MONITOR - IN

MONITOR - OUT

OUTPUTS

NV8576-Plus, Frame 2, Connector Numbers—SDI
(as seen from the rear of the frame)

Legend:
xxx --- video port number
yy-zz --- audio port range

LOWER BAYS

If you are using dual-wavelength SFP modules, be careful to observe the difference in positioning of the ports in the upper and lower output bays. See document TN0056-xx.

NV8140 Connector Numbers—Hybrid (Embedder and De-embedder) as seen from the rear of the frame

Legend:
xxx --- video port number
yyy-zzz --- audio port range

INPUTS

OUTPUTS

	8	7	6	5	4	3	2	1
CONTROL 1	127 2017- 2032	109 1729- 1744	91 1441- 1456	73 1153- 1168	55 865- 880	37 577- 592	19 289- 304	1 1-16
	128 2033- 2048	110 1745- 1760	92 1457- 1472	74 1169- 1184	56 881- 896	38 593- 608	20 305- 320	2 17-32
	129 2049- 2064	111 1761- 1776	93 1473- 1488	75 1185- 1200	57 897- 912	39 609- 624	21 321- 336	3 33-48
	130 2065- 2080	112 1777- 1792	94 1489- 1504	76 1201- 1216	58 913- 928	40 625- 640	22 337- 352	4 49-64
	131 2081- 2096	113 1793- 1808	95 1505- 1520	77 1217- 1232	59 929- 944	41 641- 656	23 353- 368	5 65-80
	132 2097- 2112	114 1809- 1824	96 1521- 1536	78 1233- 1248	60 945- 960	42 657- 672	24 369- 384	6 81-96
	133 2113- 2128	115 1825- 1840	97 1537- 1552	79 1249- 1264	61 961- 976	43 673- 688	25 385- 400	7 97- 112
	134 2129- 2144	116 1841- 1856	98 1553- 1568	80 1265- 1280	62 977- 992	44 689- 704	26 401- 416	8 113- 128
	135 unused	117 unused	99 unused	81 unused	63 unused	45 unused	27 unused	9 unused
	136 2161- 2176	118 1873- 1888	100 1585- 1600	82 1297- 1312	64 1009- 1024	46 721- 736	28 433- 448	10 145- 160
	137 2177- 2192	119 1889- 1904	101 1601- 1616	83 1313- 1328	65 1025- 1040	47 737- 752	29 449- 464	11 161- 176
	138 2193- 2208	120 1905- 1920	102 1617- 1632	84 1329- 1344	66 1041- 1056	48 753- 768	30 465- 480	12 177- 192
	139 2209- 2224	121 1921- 1936	103 1633- 1648	85 1345- 1360	67 1057- 1072	49 769- 784	31 481- 496	13 193- 208
	140 2225- 2240	122 1937- 1952	104 1649- 1664	86 1361- 1376	68 1073- 1088	50 785- 800	32 497- 512	14 209- 224
	141 2241- 2256	123 1953- 1968	105 1665- 1680	87 1377- 1392	69 1089- 1104	51 801- 816	33 513- 528	15 225- 240
142 2257- 2272	124 1969- 1984	106 1681- 1696	88 1393- 1408	70 1105- 1120	52 817- 832	34 529- 544	16 241- 256	
143 2273- 2288	125 1985- 2000	107 1697- 1712	89 1409- 1424	71 1121- 1136	53 833- 848	35 545- 560	17 257- 272	
144 unused	126 unused	108 unused	90 unused	72 unused	54 unused	36 unused	18 unused	

	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONTROL 2	271 4321- 4336	253 4033- 4048	235 3745- 3760	217 3457- 3472	199 3169- 3184	181 2881- 2896	163 2593- 2608	145 2305- 2320	127 2017- 2032	109 1729- 1744	91 1441- 1456	73 1153- 1168	55 865- 880	37 577- 592	19 289- 304	1 1-16
	272 4337- 4352	254 4049- 4064	236 3761- 3776	218 3473- 3488	200 3185- 3200	182 2897- 2912	164 2609- 2624	146 2321- 2336	128 2033- 2048	110 1745- 1760	92 1457- 1472	74 1169- 1184	56 881- 896	38 593- 608	20 305- 320	2 17-32
	273 4353- 4368	255 4065- 4080	237 3777- 3792	219 3489- 3504	201 3201- 3216	183 2913- 2928	165 2625- 2640	147 2337- 2352	129 2049- 2064	111 1761- 1776	93 1473- 1488	75 1185- 1200	57 897- 912	39 609- 624	21 321- 336	3 33-48
	274 4369- 4384	256 4081- 4096	238 3793- 3808	220 3505- 3520	202 3217- 3232	184 2929- 2944	166 2641- 2656	148 2353- 2368	130 2065- 2080	112 1777- 1792	94 1489- 1504	76 1201- 1216	58 913- 928	40 625- 640	22 337- 352	4 49-64
	275 4385- 4400	257 4097- 4112	239 3809- 3824	221 3521- 3536	203 3233- 3248	185 2945- 2960	167 2657- 2672	149 2369- 2384	131 2081- 2096	113 1793- 1808	95 1505- 1520	77 1217- 1232	59 929- 944	41 641- 656	23 353- 368	5 65-80
	276 4401- 4416	258 4113- 4128	240 3825- 3840	222 3537- 3552	204 3249- 3264	186 2961- 2976	168 2673- 2688	150 2385- 2400	132 2097- 2112	114 1809- 1824	96 1521- 1536	78 1233- 1248	60 945- 960	42 657- 672	24 369- 384	6 81-96
	277 4417- 4432	259 4129- 4144	241 3841- 3856	223 3553- 3568	205 3265- 3280	187 2977- 2992	169 2689- 2704	151 2401- 2416	133 2113- 2128	115 1825- 1840	97 1537- 1552	79 1249- 1264	61 961- 976	43 673- 688	25 385- 400	7 97- 112
	278 4433- 4448	260 4145- 4160	242 3857- 3872	224 3569- 3584	206 3281- 3296	188 2993- 3008	170 2705- 2720	152 2417- 2432	134 2129- 2144	116 1841- 1856	98 1553- 1568	80 1265- 1280	62 977- 992	44 689- 704	26 401- 416	8 113- 128
	279 unused	261 unused	243 unused	225 unused	207 unused	189 unused	171 unused	153 unused	135 unused	117 unused	99 unused	81 unused	63 unused	45 unused	27 unused	9 unused
	280 4465- 4480	262 4177- 4192	244 3889- 3904	226 3601- 3616	208 3313- 3328	190 3025- 3040	172 2737- 2752	154 2449- 2464	136 2161- 2176	118 1873- 1888	100 1600- 1616	82 1312- 1328	64 1024- 1040	46 736- 752	28 448- 464	10 160- 176
	281 4481- 4496	263 4193- 4208	245 3905- 3920	227 3617- 3632	209 3329- 3344	191 3041- 3056	173 2753- 2768	155 2465- 2480	137 2177- 2192	119 1889- 1904	101 1601- 1616	83 1313- 1328	65 1025- 1040	47 737- 752	29 449- 464	11 161- 176
	282 4497- 4512	264 4209- 4224	246 3921- 3936	228 3633- 3648	210 3345- 3360	192 3057- 3072	174 2769- 2784	156 2481- 2496	138 2193- 2208	120 1905- 1920	102 1617- 1632	84 1329- 1344	66 1041- 1056	48 753- 768	30 465- 480	12 177- 192
	283 4513- 4528	265 4225- 4240	247 3937- 3952	229 3649- 3664	211 3361- 3376	193 3073- 3088	175 2785- 2800	157 2497- 2512	139 2209- 2224	121 1921- 1936	103 1633- 1648	85 1345- 1360	67 1057- 1072	49 769- 784	31 481- 496	13 193- 208
	284 4529- 4544	266 4241- 4256	248 3953- 3968	230 3665- 3680	212 3377- 3392	194 3089- 3104	176 2801- 2816	158 2513- 2528	140 2225- 2240	122 1937- 1952	104 1649- 1664	86 1361- 1376	68 1073- 1088	50 785- 800	32 497- 512	14 209- 224
	285 4545- 4560	267 4257- 4272	249 3969- 3984	231 3681- 3696	213 3393- 3408	195 3105- 3120	177 2817- 2832	159 2529- 2544	141 2256- 2271	123 1953- 1968	105 1665- 1680	87 1377- 1392	69 1089- 1104	51 801- 816	33 513- 528	15 225- 240
286 4561- 4576	268 4273- 4288	250 3985- 4000	232 3697- 3712	214 3409- 3424	196 3121- 3136	178 2833- 2848	160 2545- 2560	142 2275- 2290	124 1969- 1984	106 1681- 1696	88 1393- 1408	70 1105- 1120	52 817- 832	34 529- 544	16 241- 256	
287 4577- 4592	269 4289- 4304	251 4001- 4016	233 3713- 3728	215 3425- 3440	197 3137- 3152	179 2849- 2864	161 2561- 2576	143 2273- 2288	125 1985- 2000	107 1697- 1712	89 1409- 1424	71 1121- 1136	53 833- 848	35 545- 560	17 257- 272	
288 unused	270 unused	252 unused	234 unused	216 unused	198 unused	180 unused	162 unused	144 unused	126 unused	108 unused	90 unused	72 unused	54 unused	36 unused	18 unused	

Page Intentionally Blank

NV8140 Connector Numbers—SDI+TDM as seen from the rear of the frame

Legend:
XXX --- video port number
 yyy-zzz --- audio port range

INPUTS

OUTPUTS

8 7 6 5 4 3 2 1

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

CONTROL 1	CONTROL 2	127	109	91	73	55	37	19	1
		128	110	92	74	56	38	20	2
		129	111	93	75	57	39	21	3
		130	112	94	76	58	40	22	4
		131	113	95	77	59	41	23	5
		132	114	96	78	60	42	24	6
		133	115	97	79	61	43	25	7
		134	116	98	80	62	44	26	8
		2017-2080	1729-1792	1441-1504	1153-1216	865-928	577-640	289-352	1-64
		136	118	100	82	64	46	28	10
		137	119	101	83	65	47	29	11
		138	120	102	84	66	48	30	12
		139	121	103	85	67	49	31	13
		140	122	104	86	68	50	32	14
141	123	105	87	69	51	33	15		
142	124	106	88	70	52	34	16		
143	125	107	89	71	53	35	17		
2161-2224	1873-1936	1585-1648	1297-1360	1009-1072	721-784	433-496	145-208		

271	253	235	217	199	181	163	145	127	109	91	73	55	37	19	1
272	254	236	218	200	182	164	146	128	110	92	74	56	38	20	2
273	255	237	219	201	183	165	147	129	111	93	75	57	39	21	3
274	256	238	220	202	184	166	148	130	112	94	76	58	40	22	4
275	257	239	221	203	185	167	149	131	113	95	77	59	41	23	5
276	258	240	222	204	186	168	150	132	114	96	78	60	42	24	6
277	259	241	223	205	187	169	151	133	115	97	79	61	43	25	7
278	260	242	224	206	188	170	152	134	116	98	80	62	44	26	8
4321-4384	4033-4096	3745-3808	3457-3520	3169-3232	2881-2944	2593-2656	2305-2368	2017-2080	1729-1792	1441-1504	1153-1216	865-928	577-640	289-352	1-64
280	262	244	226	208	190	172	154	136	118	100	82	64	46	28	10
281	263	245	227	209	191	173	155	137	119	101	83	65	47	29	11
282	264	246	228	210	192	174	156	138	120	102	84	66	48	30	12
283	265	247	229	211	193	175	157	139	121	103	85	67	49	31	13
284	266	248	230	212	194	176	158	140	122	104	86	68	50	32	14
285	267	249	231	213	195	177	159	141	123	105	87	69	51	33	15
286	268	250	232	214	196	178	160	142	124	106	88	70	52	34	16
287	269	251	233	215	197	179	161	143	125	107	89	71	53	35	17
4465-4528	4177-4240	3889-3952	3601-3664	3313-3376	3025-3088	2737-2800	2449-2512	2161-2224	1873-1936	1585-1648	1297-1360	1009-1072	721-784	433-496	145-208

Page Intentionally Blank

NV8140 Connector Numbers—SDI (as seen from the rear of the frame)

Legend:

000 --- video port number

INPUTS

OUTPUTS

		8	7	6	5	4	3	2	1
CONTROL 1	CONTROL 2	127	109	91	73	55	37	19	1
		128	110	92	74	56	38	20	2
		129	111	93	75	57	39	21	3
		130	112	94	76	58	40	22	4
		131	113	95	77	59	41	23	5
		132	114	96	78	60	42	24	6
		133	115	97	79	61	43	25	7
		134	116	98	80	62	44	26	8
		135	117	99	81	63	45	27	9
		136	118	100	82	64	46	28	10
		137	119	101	83	65	47	29	11
		138	120	102	84	66	48	30	12
		139	121	103	85	67	49	31	13
		140	122	104	86	68	50	32	14
		141	123	105	87	69	51	33	15
		142	124	106	88	70	52	34	16
143	125	107	89	71	53	35	17		
144	126	108	90	72	54	36	18		

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
271	253	235	217	199	181	163	145	127	109	91	73	55	37	19	1
272	254	236	218	200	182	164	146	128	110	92	74	56	38	20	2
273	255	237	219	201	183	165	147	129	111	93	75	57	39	21	3
274	256	238	220	202	184	166	148	130	112	94	76	58	40	22	4
275	257	239	221	203	185	167	149	131	113	95	77	59	41	23	5
276	258	240	222	204	186	168	150	132	114	96	78	60	42	24	6
277	259	241	223	205	187	169	151	133	115	97	79	61	43	25	7
278	260	242	224	206	188	170	152	134	116	98	80	62	44	26	8
279	261	243	225	207	189	171	153	135	117	99	81	63	45	27	9
280	262	244	226	208	190	172	154	136	118	100	82	64	46	28	10
281	263	245	227	209	191	173	155	137	119	101	83	65	47	29	11
282	264	246	228	210	192	174	156	138	120	102	84	66	48	30	12
283	265	247	229	211	193	175	157	139	121	103	85	67	49	31	13
284	266	248	230	212	194	176	158	140	122	104	86	68	50	32	14
285	267	249	231	213	195	177	159	141	123	105	87	69	51	33	15
286	268	250	232	214	196	178	160	142	124	106	88	70	52	34	16
287	269	251	233	215	197	179	161	143	125	107	89	71	53	35	17
288	270	252	234	216	198	180	162	144	126	108	90	72	54	36	18

Page Intentionally Blank

Addendum 4—Signal Paths in an Expanded Router

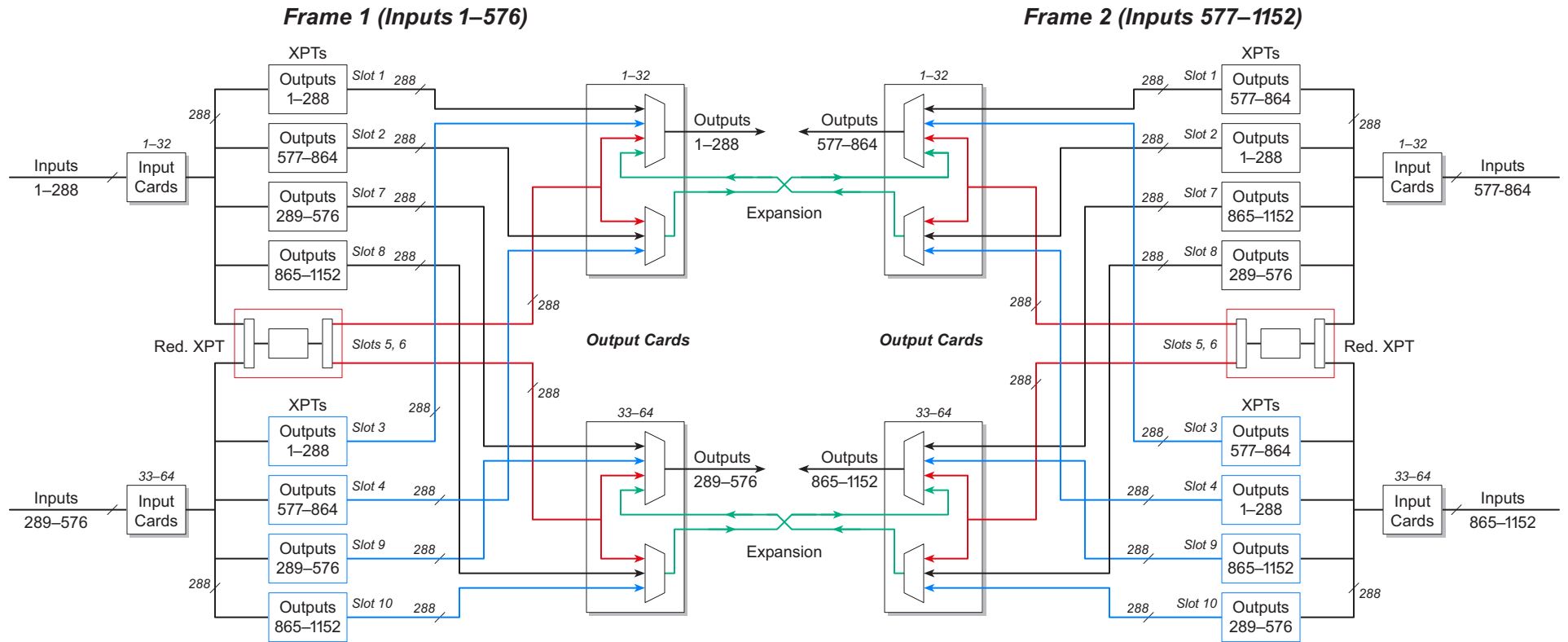
The following drawings show various signal paths in an NV8576-Plus router.

You might have to adjust your printer settings to print the oversize pages.

NV8500 Pre-Installation Guide

Addendum 4 — Signal Paths in an Expanded Router

Expanded Signal Pathways



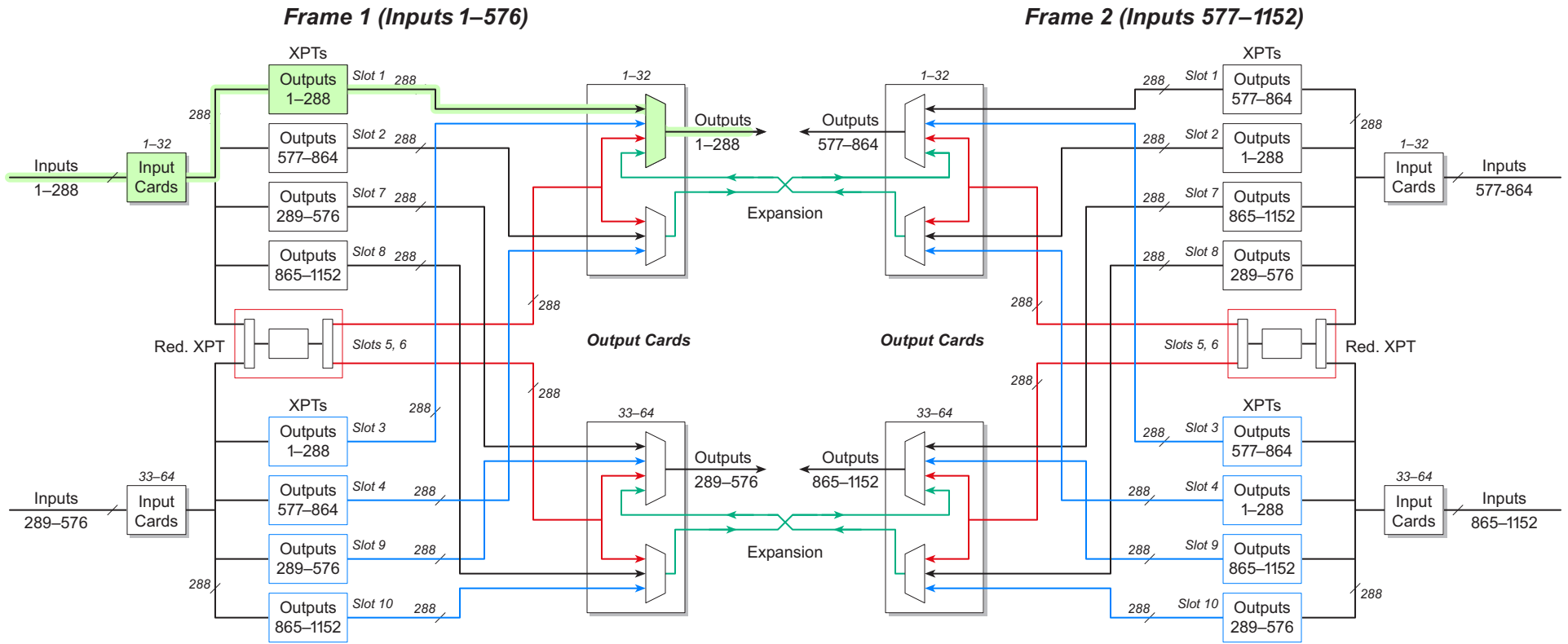
Each input card has 9 inputs.

Each output card has 9 direct outputs, 9 expansion outputs, and 9 expansion inputs.

(Consequently, each output card has 9 4-way direct multiplexors and 9 3-way expansion multiplexors.)

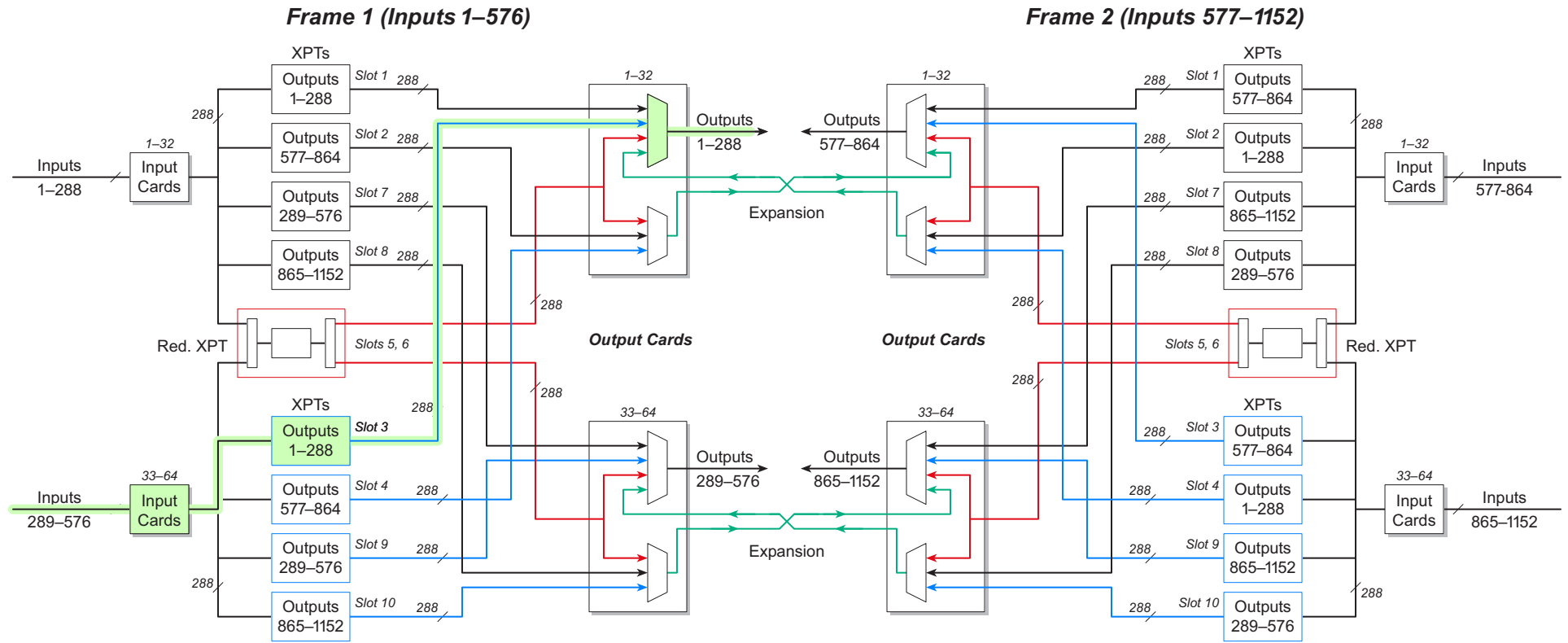
The redundant crosspoint will take over in event of any crosspoint card failure (and raise an alarm).

Example 1

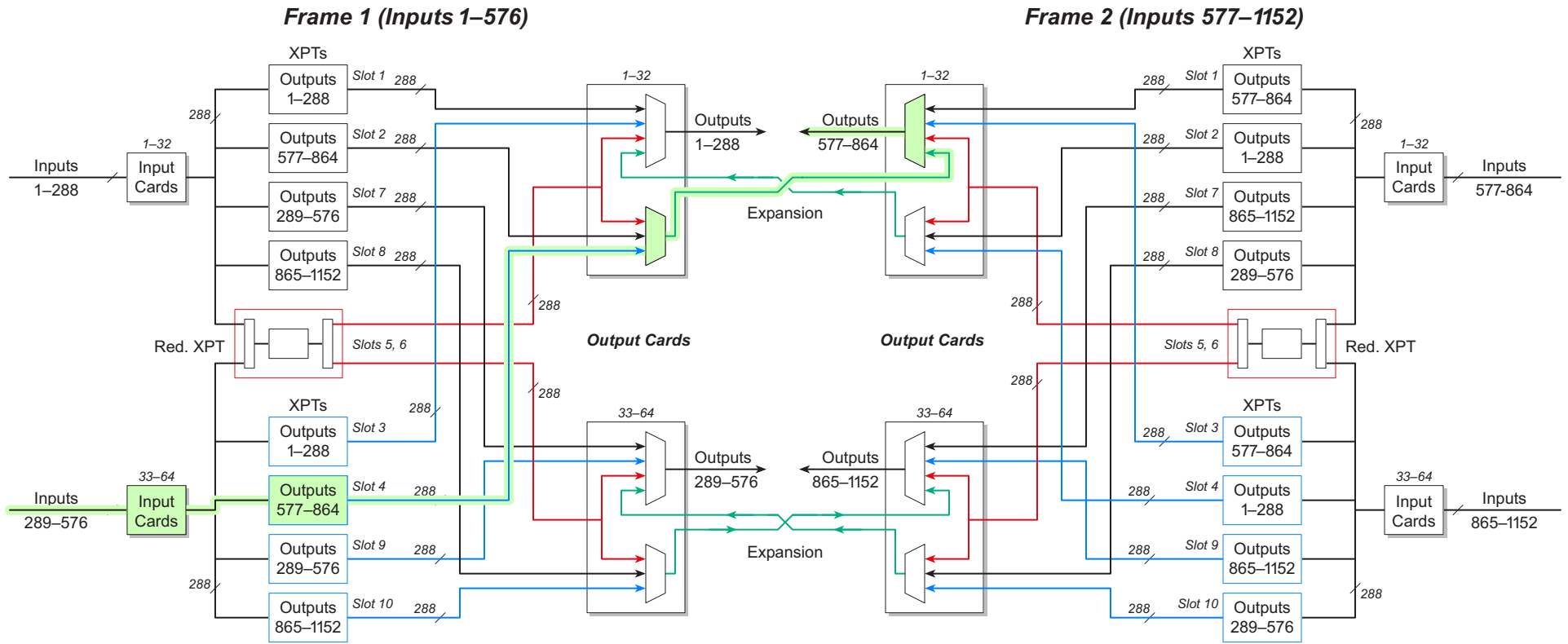


Example: take input 31 to output 217

Example 2

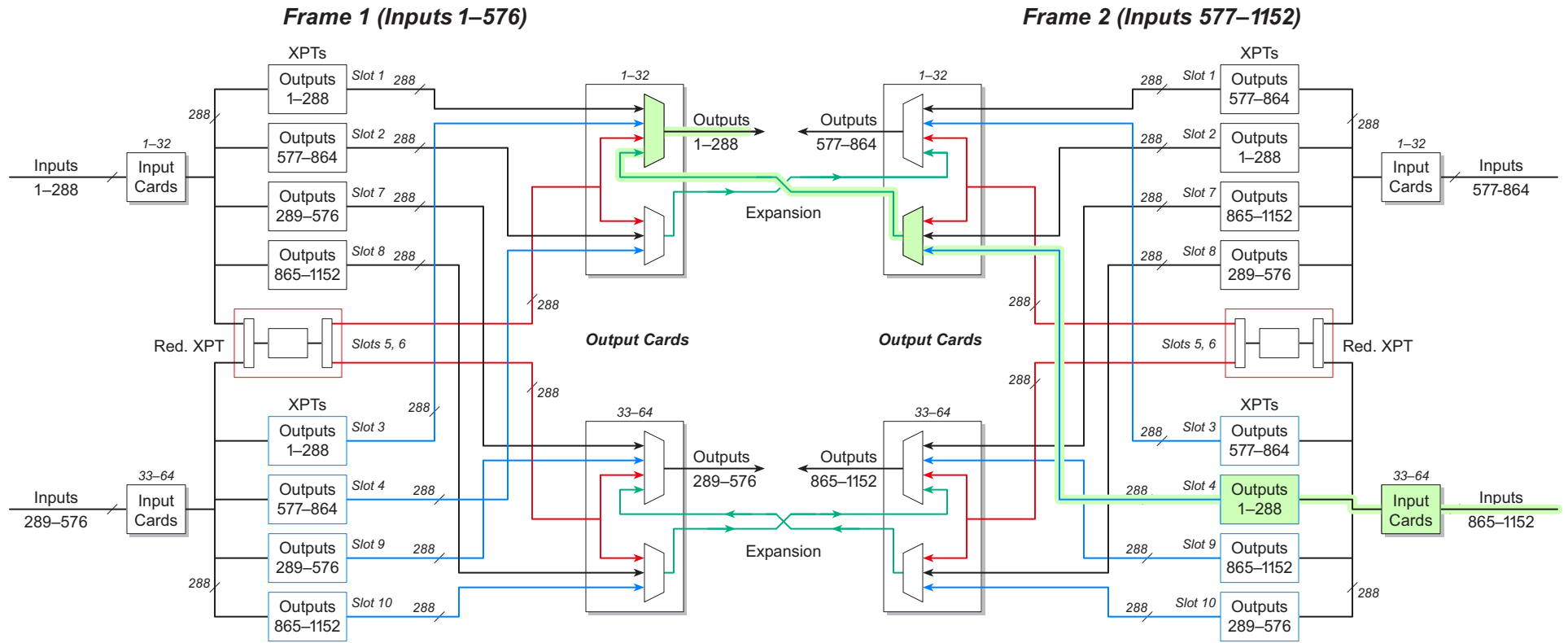


Example 3



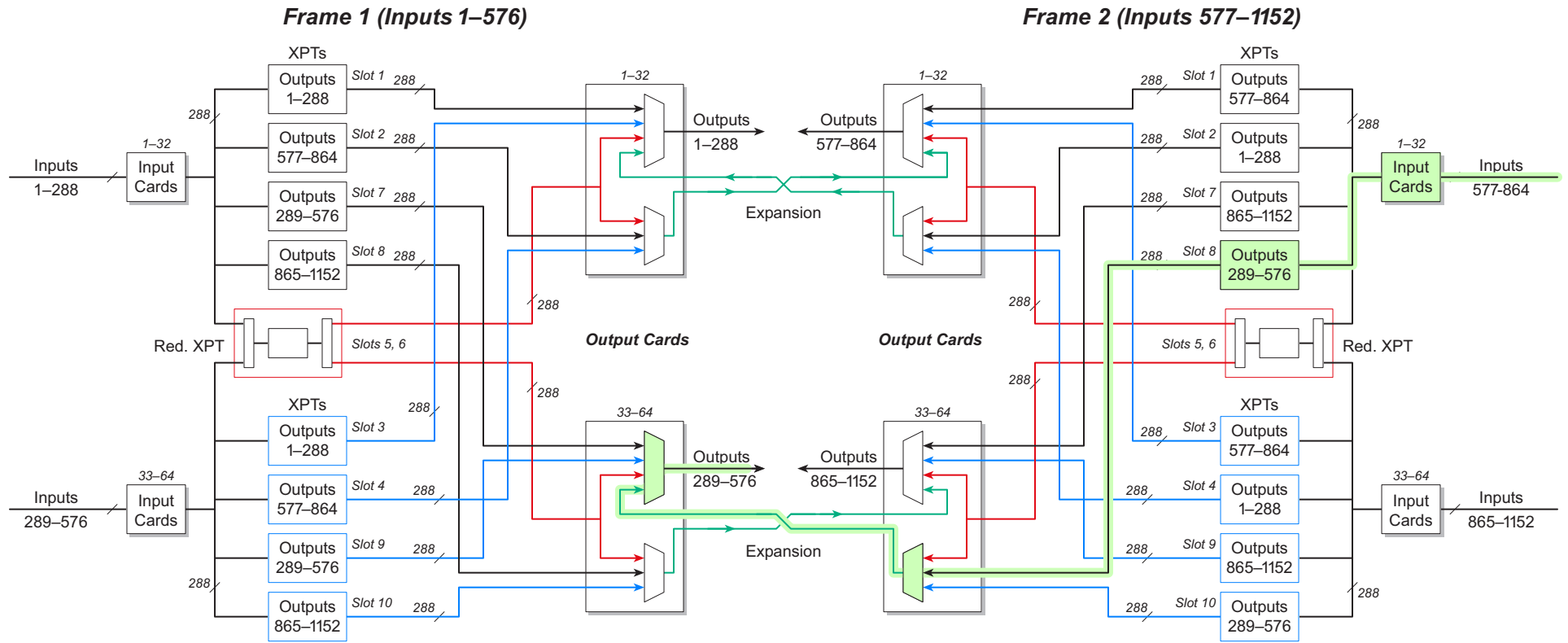
Example: take input 322 to output 687

Example 4



Example: take input 1030 to output 12

Example 4



Example: take input 732 to output 465