SmartNode 4740 Series
48–128 Port Analog High Density Gateway

User Manual

This is a Class A device and is not intended for use in a residential environment.

REGULATORY MODEL NUMBER: SN4741D4

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The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

Patton Electronics warrants all SmartNode extender components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of the shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If the product fails to perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall **Patton Electronics** be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product. **Patton Electronics** specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

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About this guide

This guide describes the SmartNode 4740 Series Analog High Density Gateway (48 to 128 ports) hardware, installation and basic configuration. For detailed software configuration information refer to the *Trinity Software Configuration Guide* and the available *Knowledgebase*, as well as the Wizard portal.

Audience

This guide is intended for the following users:

- Operators
- Installers
- Maintenance technicians

Structure

This guide contains the following chapters and appendices:

- Chapter 1 on page 15 contains what you need to quickly start using the SmartNode device.
- Chapter 2 on page 19 provides information about SN4740 features and capabilities
- Chapter 3 on page 39 provides quick start hardware installation procedures
- Chapter 4 on page 46 provides quick-start procedures for configuring the SmartNode SN4740
- Chapter 5 on page 52 contains information on contacting Patton technical support for assistance
- Appendix A on page 55 contains compliance and regulatory information for the SN4740
- Appendix B on page 57 contains specifications for the SN4740
- Appendix C on page 62 provides cable recommendations
- Appendix D on page 65 describes the SN4740's ports and pin-outs
- Appendix E on page 96 lists the factory configuration settings for SmartNode 4740 SeriesAppendix E on page 96 lists the factory configuration settings for SmartNode 4740 Series
- Appendix F on page 98 describes *RESET* button functions for the SmartNode 4740 Series
- Appendix G on page 103 provides license information that describes acceptable usage of the software provided with the SmartNode 4740 Series

For best results, read the contents of this guide *before* you install the SN4740.

Precautions

Notes, cautions, and warnings, which have the following meanings, are used throughout this guide to help you become aware of potential extender problems. *Warnings* are intended to prevent safety hazards that could result in personal injury. *Cautions* refer to potential property damage or impaired functioning.

Note Calls attention to important information.

The shock hazard symbol and WARNING heading indicate a potential electric shock hazard. Strictly follow the warning instructions to avoid injury caused by electric shock.

The alert symbol and WARNING heading indicate a potential safety hazard. Strictly follow the warning instructions to avoid personal injury.

The shock hazard symbol and CAUTION heading indicate a potential electric shock hazard. Strictly follow the instructions to avoid property damage caused by electric shock.

The alert symbol and CAUTION heading indicate a potential hazard. Strictly follow the instructions to avoid property damage.

Safety when working with electricity

The SmartNode device contains no user serviceable parts, and is not be opened by the user. The equipment shall be returned to Patton Electronics for repairs or repaired by qualified service personnel.

Mains Voltage: In systems without a power switch, line voltages are present in the power supply when the power cord is connected. The mains outlet used to power the SmartNode device shall be within 10 feet (3 meters) of the device, be easily accessible, and protected by a circuit breaker.

For AC powered units, ensure that the power cable used meets all applicable standards for the country in which it is to be installed, and that it is connected to a wall outlet which has earth ground.

For units with an external power adapter, the adapter shall be a listed Limited Power Source.

Hazardous network voltages are present in WAN ports regardless of whether power to the SmartNode is ON or OFF. To avoid electric shock, use caution when near WAN ports. When detaching the cables, detach the end away from the SmartNode first.

Before handling the device, disconnect the telephone network cables to avoid contact with telephone line voltages. When detaching the cables, detach the end away from the SmartNode device first.

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Deutsch

Warnhinweise:

Dieses Gerät ist NICHT für den Anschluss an das Telefonnetz (PSTN) bestimmt und auch NICHT dafür zugelassen. Es ist nur für den Anschluss an Endgeräte beim Kunden vorgesehen.

- Das Gerät entält keine austauschbaren Komponenten und ist vom Benutzer nicht zu öffnen. Bei Systemen ohne Netzschalter und ohne externes Netzteil liegt Netzspannung im Gerät an, wenn das Netzkabel angeschlossen ist.
- Bei Geräten mit externem Netzteil muss das Netzteil die Anforderungen an eine zugelassene Stromquelle mit begrenzter Leistung erfüllen. Die Steckdose, die für die Stromversorgung des Gerätes verwendet wird, sollte höchstens 3 Meter vom Gerät entfernt und leicht zugänglich sein sowie durch einen den örtlichen regulatorischen Anforderungen entsprechenden Schutzschalter abgesichert sein.
- Für mit Wechselstrom betriebene Geräte muss sichergestellt sein, dass das verwendete Netzkabel alle gültigen Normen des Landes erfüllt, in dem es eingesetzt werden soll.
- Für mit Wechselstrom betriebene Geräte, die 3-polige Netzstecker haben (L1, L2 u. GND oder Phase, Neutralleiter u. Schutzleiter), muss die Steckdose geerdet sein.
- Für mit Gleichstrom betriebene Geräte muss sichergestellt sein, dass die Verbindungskabel für Spannung, Strom, erwartete Temperatur, Entflammbarkeit und mechanische Wartbarkeit geeignet sind.
- WAN-, LAN- u. PSTN-Ports (Anschlüsse) können unter gefährlicher Spannung stehen, unabhängig davon, ob das Gerät ein- oder ausgeschaltet ist. PSTN bezieht sich auf Schnittstellen wie Telefon, FXS, FXO, DSL, xDSL, T1, E1, ISDN, Voice, usw. Diese sind als „gefährliche Netzwerkspannungen“ bekannt. Um einen elektrischen Schlag zu vermeiden, muss in der Nähe dieser Anschlüsse mit Vorsicht gearbeitet werden. Werden Kabel von diesen Anschlüssen getrennt, zuerst das Kabel am anderen Ende herausziehen.
- Während eines Gewitters darf nicht am Gerät gearbeitet werden und es dürfen keine Kabel angeschlossen oder vom Netz getrennt werden.

In Übereinstimmung mit den Anforderungen der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte (WEEE) muss sichergestellt sein, dass Altgeräte von anderem Abfall und Schrott getrennt werden und dem Sammel- und Verwertungssystem für Elektro- und Elektronik-Altgeräte in Ihrem Land zum Recycling zugeführt werden.

General observations

Do not stack multiple SmartNode devices directly on top of one another, and do not place items on top of the device. If you will be installing equipment above the SmartNode device, leave at least 2 inches (5 cm) of clearance between the devices.

Furthermore, leave at least 2 inches (5 cm) to the left, right, front, and rear of the SmartNode device for proper ventilation.

- Clean the case with a soft slightly moist anti-static cloth
- Place the unit on a flat surface and ensure free air circulation
- Avoid exposing the unit to direct sunlight and other heat sources
- Protect the unit from moisture, vapors, and aggressive liquids

Typographical conventions used in this document

This section describes the typographical conventions and terms used in this guide.

General conventions

The procedures described in this manual use the following text conventions:

Table 1. General conventions

Convention	Meaning
Garamond blue type	Indicates a cross-reference hyperlink that points to a figure, graphic, table, or section heading. Clicking on the hyperlink jumps you to the reference. When you have finished reviewing the reference, click on the **Go to Previous View** button in the Adobe® Acrobat® Reader toolbar to return to your starting point.
Helvetica bold type	Commands and keywords are in **boldface** font.
Helvetica bold-italic type	Parts of commands, which are related to elements already named by the user, are in ***boldface italic*** font.
Italicized Helvetica type	Variables for which you supply values are in *italic* font
Helvetica type	Indicates the names of fields or windows.
Garamond bold type	Indicates the names of command buttons that execute an action.
< >	Angle brackets indicate function and keyboard keys, such as <SHIFT>, <CTRL>, <C>, and so on.
[ ]	Elements in square brackets are optional.
{a | b | c}	Alternative but required keywords are grouped in braces ({ }) and are separated by vertical bars (|)
`blue screen`	Information you enter is in `blue screen` font.
`screen`	Terminal sessions and information the system displays are in `screen font`.
node	The leading IP address or nodename of a SmartNode is substituted with ***node*** in ***boldface italic*** font.

Table 1. General conventions (Continued)

Convention	Meaning
SN	The leading **SN** on a command line represents the nodename of the SmartNode
#	An hash sign at the beginning of a line indicates a comment line.

Chapter 1 Quick Start

Chapter contents

Default IP Settings

ETH 0/0

DHCP Client

ETH 0/1

192.168.1.1 | 255.255.255.0 (DHCP Server)

smartnode.local

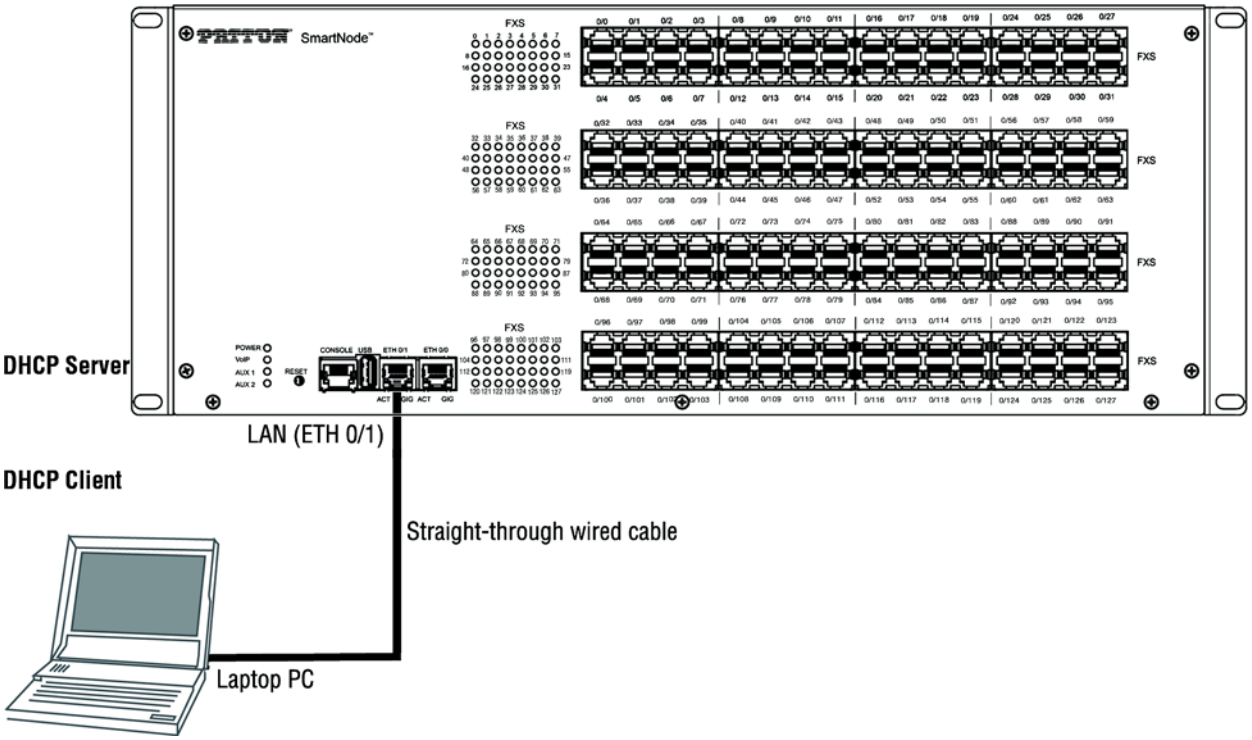


Figure 1. Default IP Settings

Default Login

Username: *admin*

Leave the password empty

Press the *Enter* key after the password prompt.

IMPORTANT

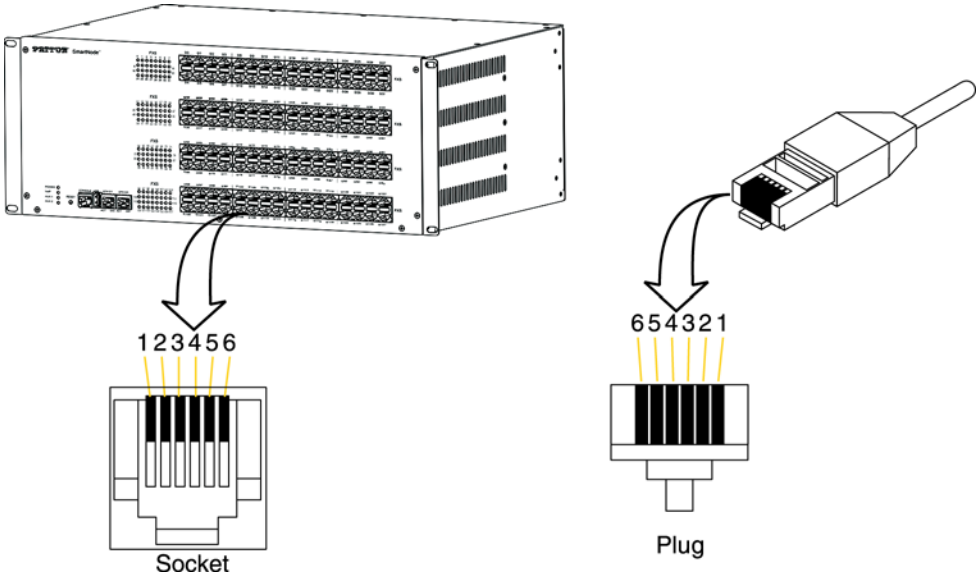
You are responsible for creating a new administrator account to maintain system security. Patton Electronics accepts no responsibility for losses or damage caused by loss or misuse of passwords. Refer to Chapter 4 "Accessing the CLI", section "Selecting a secure password" in the *Trinity Command Line Reference Guide* for more details.

Analog Port pin-out

For models with FXS ports terminated on RJ21 connectors, see the detailed pin-out in Appendix D, section "RJ21 Models" on page 67.

Models that come with RJ11 ports use a 6-position RJ11 connector. The middle 2 positions (3 and 4) are used as follows:

Note Pins not listed are not used.



Pin	Signal
3	Ring (-)
4	Tip (+)

Console port

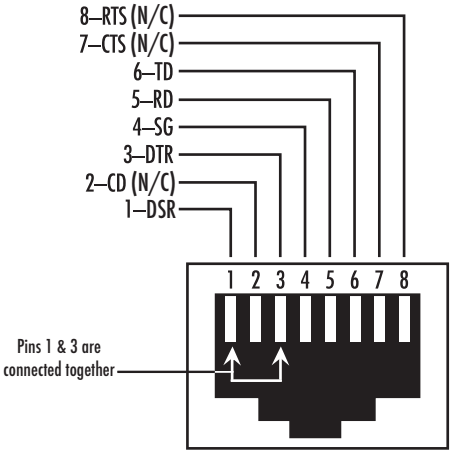


Figure 2. EIA-561 (RJ-45 8-pin) port

Note N/C means no internal electrical connection.

Console Connection Settings:

- 19200bps
- 8 bits, no parity
- 1 stop bit
- flow control off

Chapter 2 General Information

Chapter contents

SmartNode 4740 Series (48–128 Ports) Overview

The SmartNode 4740 Series are 48–128 port analog high density VoIP gateways that are available in 48, 64, 72, 96, and 128-telephony port versions.

The SN4740 is equipped with a combination of RJ11 and RJ21 telco connectors (see figure 3 for 128, 96, and 72-port models, and figure 4 on page 21 for 64 and 48-port models) or just RJ21 connectors (see figure 5 on page 21 for 64 and 48-port models, and figure 6 on page 22 for 128, 96, and 72-port models).

The gateway comes in a 19-inch rack mountable enclosure that supports an operational temperature range of 32–104°F (0–40°C). It includes ITU-T K.21 basic surge protection.

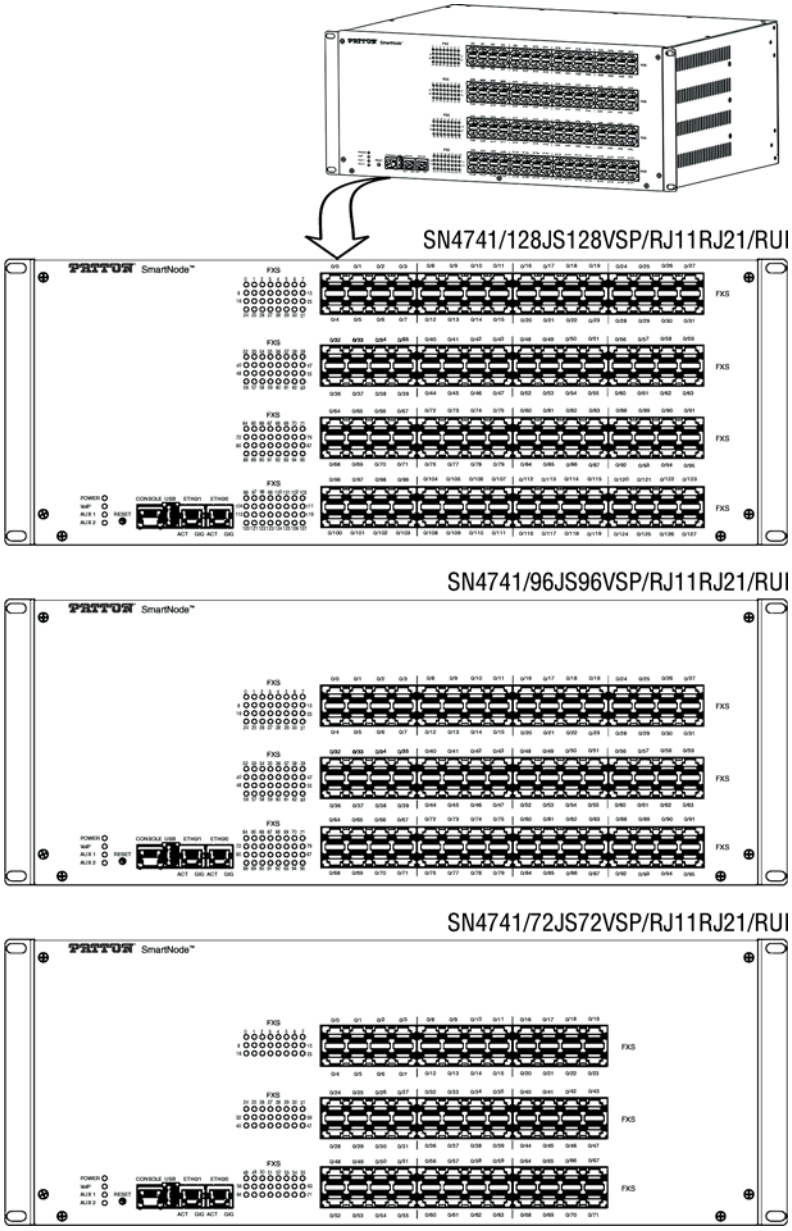


Figure 3. SN4740 128, 96, and 72-port front panels (RJ11 & RJ21 combo version)

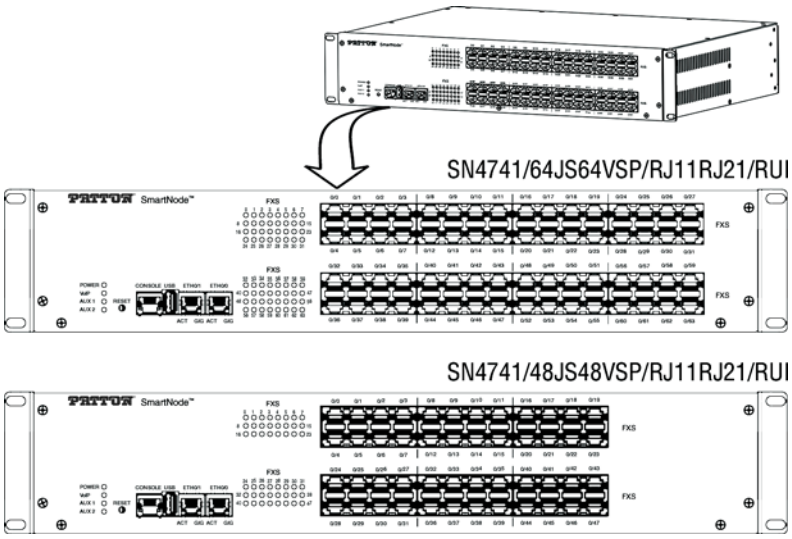


Figure 4. SN4740 64 and 48-port front panels (RJ11 & RJ21 combo version)

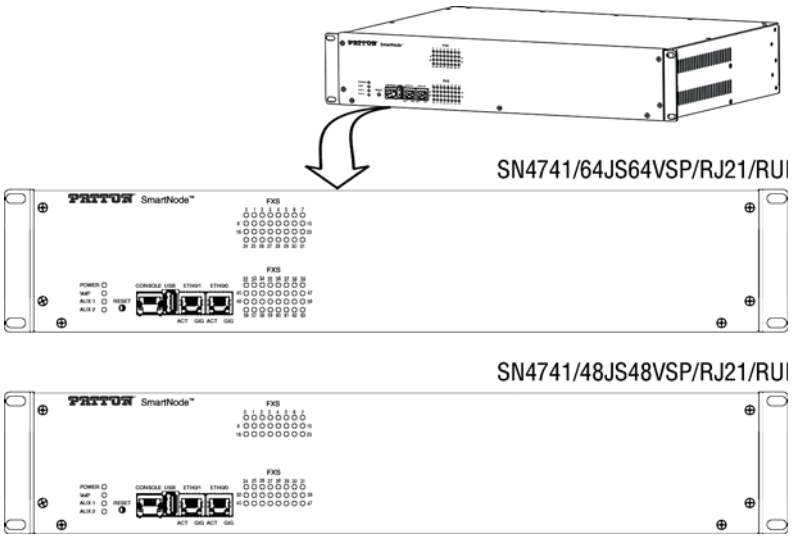


Figure 5. SN4740 64 and 48-port front panels (RJ21 version)

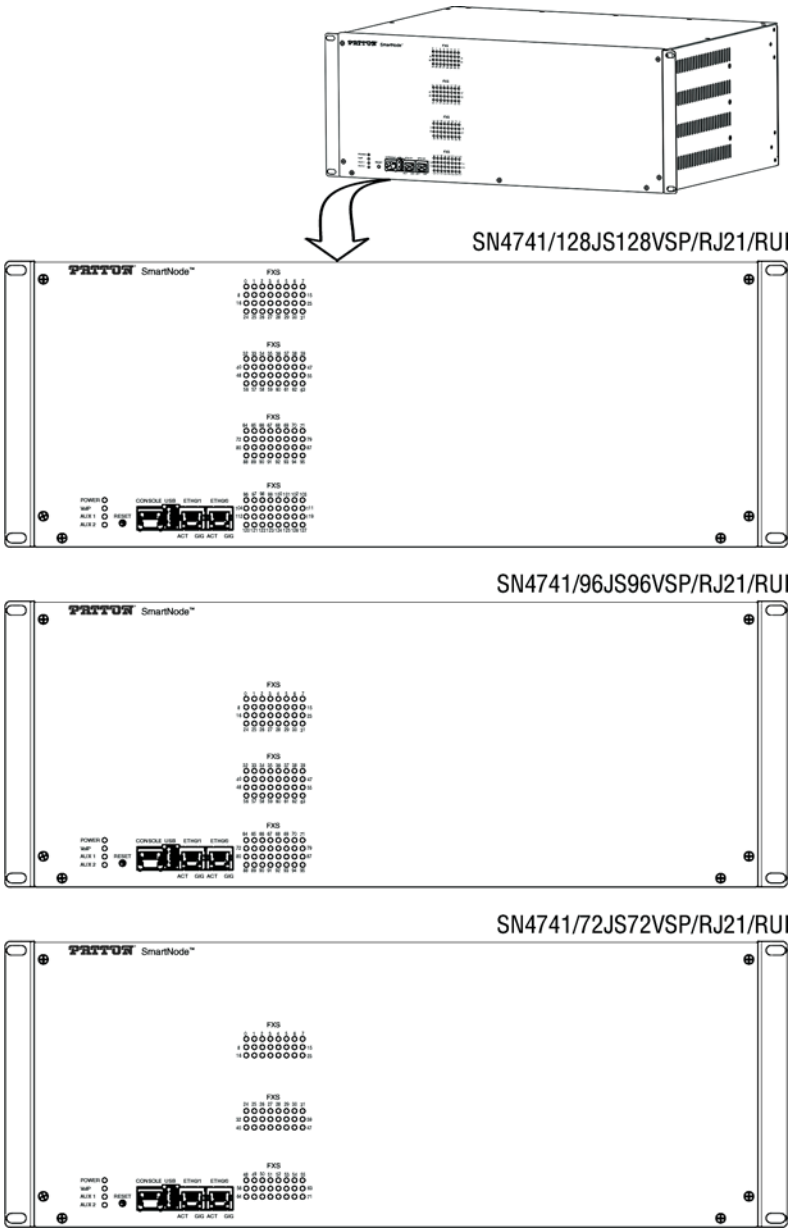


Figure 6. SN4740 128, 96, and 72-port front panels (RJ21 version)

Users for the SN4740 Series include:

- **Carriers/Service providers** looking for a way to connect analog telephones of apartment buildings or delivering telephony services by installing the SN4740 in street cabinets (MSAN approach deployment)
- **Enterprise/Campus users** deploying the SN4740 as a point of concentration supplying analog telephony to regular phones, emergency phones or fax machines in hospitality venues such as hotels and motels,
- **Industry users** such as:
  - Mining (gold, diamonds)

- Oil and Gas, Fossil Resources production
- General manufacturing plants

Applications

Applications include:

- Hospitality venues such as hotels, motels, etc. (see figure 7 on page 23)
- Residential apartments, public administration office, care homes, etc. (see figure 8 on page 23)
- Industrial: Factory Campus. Hospital - Emergency Telephones, etc. (see figure 9 on page 24)
- Mines, tunnels, etc. (see figure 10 on page 24)
- Train station platform telephones (see figure 11 on page 25)

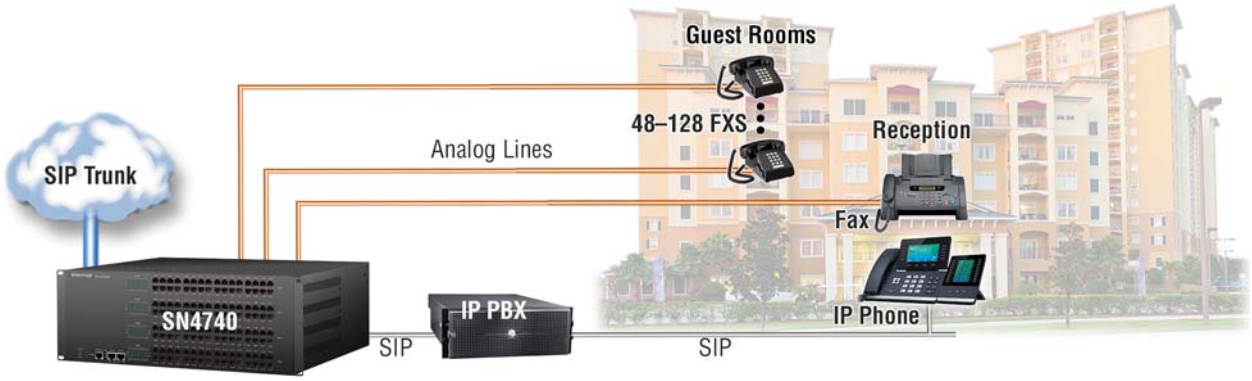


Figure 7. Hospitality venues: hotels, motels, etc.

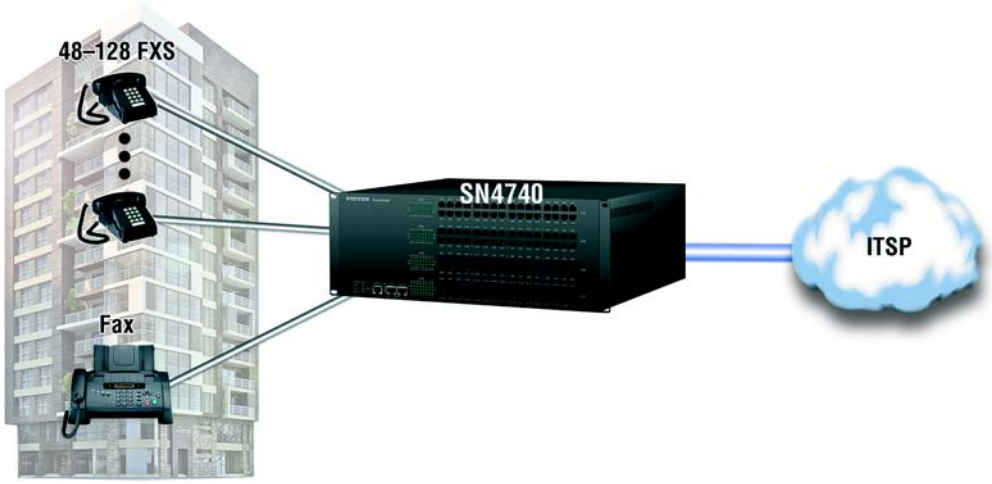


Figure 8. Residential apartments, public administration office, care homes, etc.

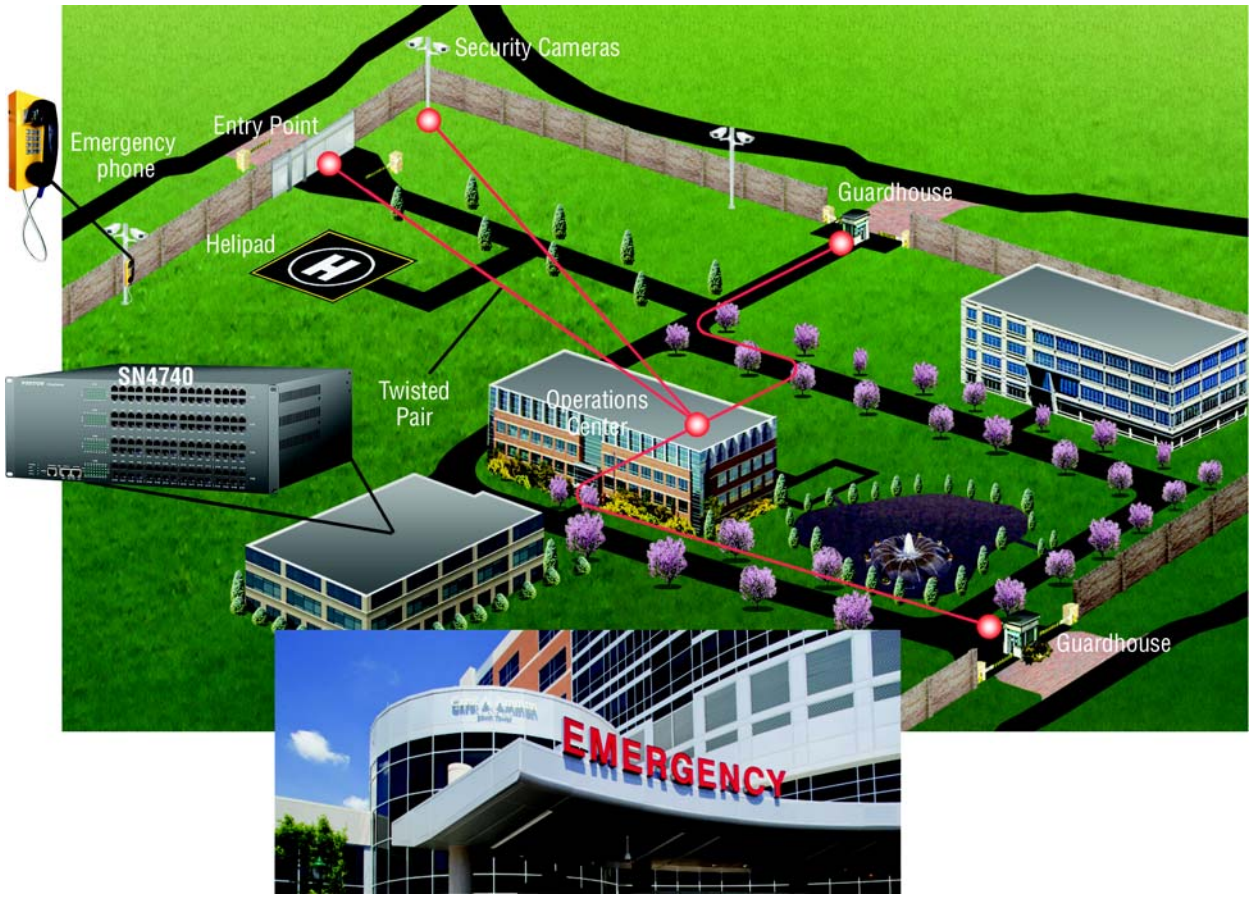


Figure 9. Industry: Factory campus. Hospital—emergency telephones, etc.

Figure 10. Mines, tunnels, etc.

Figure 11. Train station platform telephones

Rear Panel Power Inlets or Terminal Blocks, LEDs, and Grounding Stud

The SmartNode 4740 Series has the following power supply options:

- Dual 110–230 VAC internal power supplies (see "AC Power Version")
- Dual R48 VDC power, wide range DC input 20–59 VDC (see "DC Power Version" on page 27)

AC Power Version

The SmartNode 4740 Series rear panel AC power C14 inlets, LEDs, and grounding stud (see figure 12 on page 26) are described in table 2 on page 26.

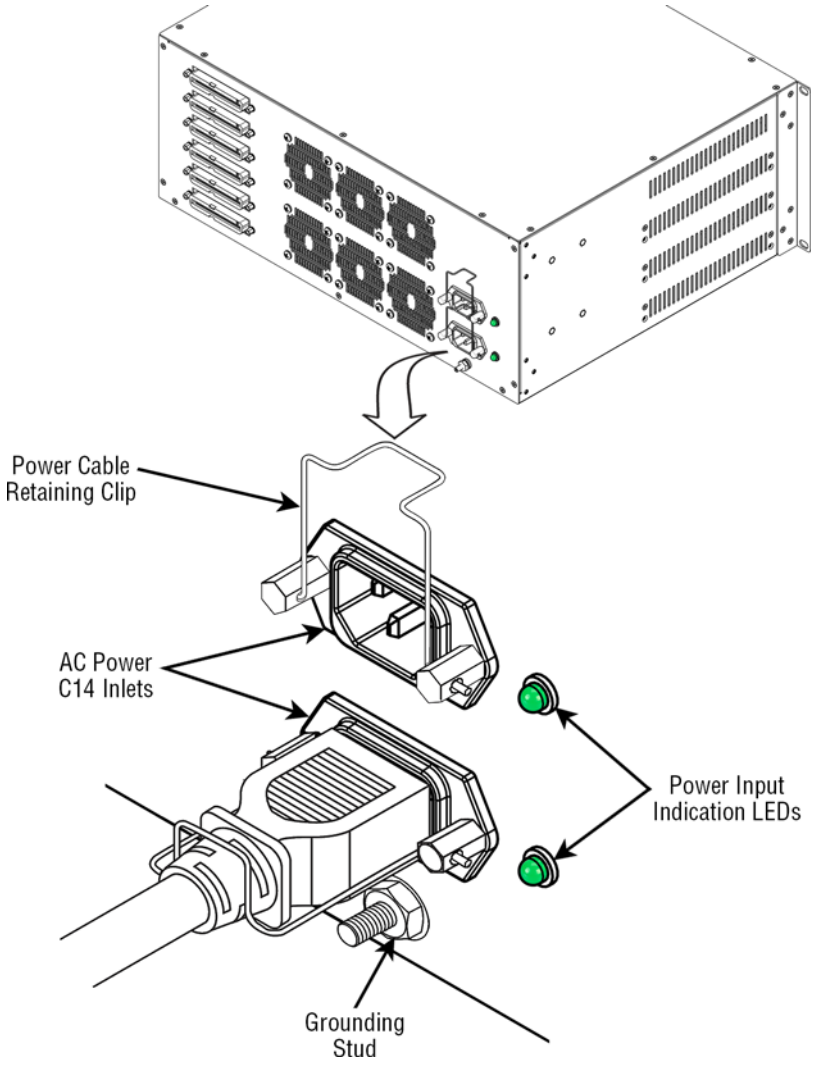


Figure 12. Rear panel AC power C14 inlets, LEDs, and grounding stud

Table 2. Rear panel AC power C14 inlets, LEDs, and grounding stud descriptions

Ports	Description
Power Cable Retaining Clips	Helps prevent power cables from being disconnected by accidentally pulling on them.
AC Power C14 Inlets	Electricity supply inlets, 110–230 VAC. Second power port is for power redundancy purposes.
Power Input Indication LEDs	One green LED per power source: • On when power is present • Off when no power is applied or if a power supply is defective
Chassis Grounding Stud	Used to secure the device connecting it to Earth Ground.

DC Power Version

The SmartNode 4740 Series rear panel DC power terminal blocks, LEDs, and grounding stud (see figure 13) are described in table 3.

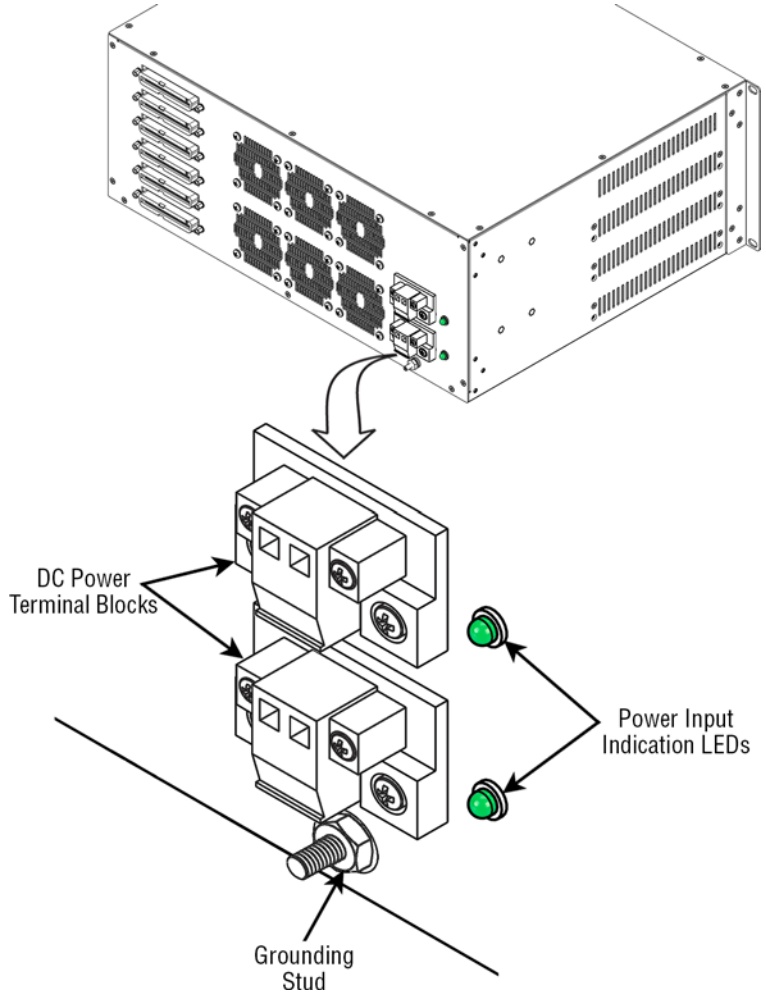


Figure 13. Rear panel DC power terminal blocks, LEDs, and grounding stud

Table 3. Rear panel DC power terminal blocks, LEDs, and grounding stud descriptions

Ports	Description
DC Power Terminal Blocks	Electricity supply terminal blocks, 20–59 VDC. Second power port is for power redundancy purposes.
Power Input Indication LEDs	One green LED per power source: • On when power is present • Off when no power is applied or if a power supply is defective
Chassis Grounding Stud	Used to secure the device connecting it to Earth Ground.

Front Panel/Rear Panel Ports and LEDs

The SmartNode 4740 Series has the following analog port connector versions:

- RJ21 only (see "RJ21 Version")
- RJ11 & RJ21 combination (see "RJ11 & RJ21 Combo Version" on page 33)

Both versions come equipped with 2 Gigabit Ethernet ports, 1 USB port, 1 console port, and a reset button.

RJ21 Version

The SN4740 is equipped with RJ21 analog port connectors (see figure 14 and figure 15 on page 29 for front and rear views of 64 and 48-port models, and figure 16 on page 30 and figure 17 on page 31 for front and rear views of 128, 96, and 72-port models) as described in table 4 on page 32.

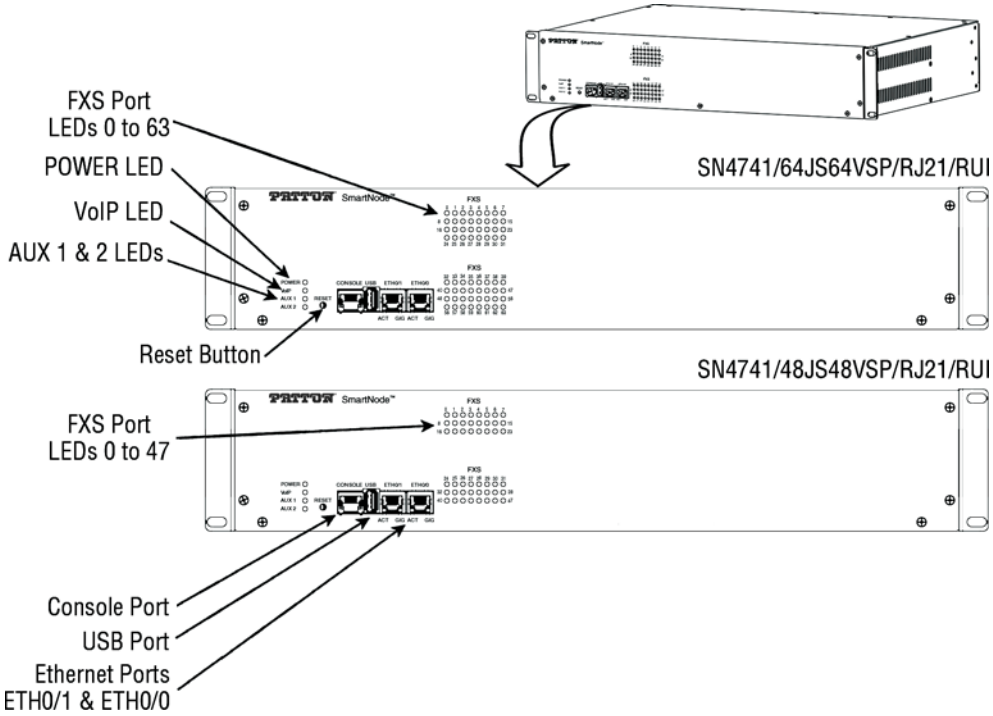


Figure 14. SN4740 64 and 48-port front panels (RJ21 version)

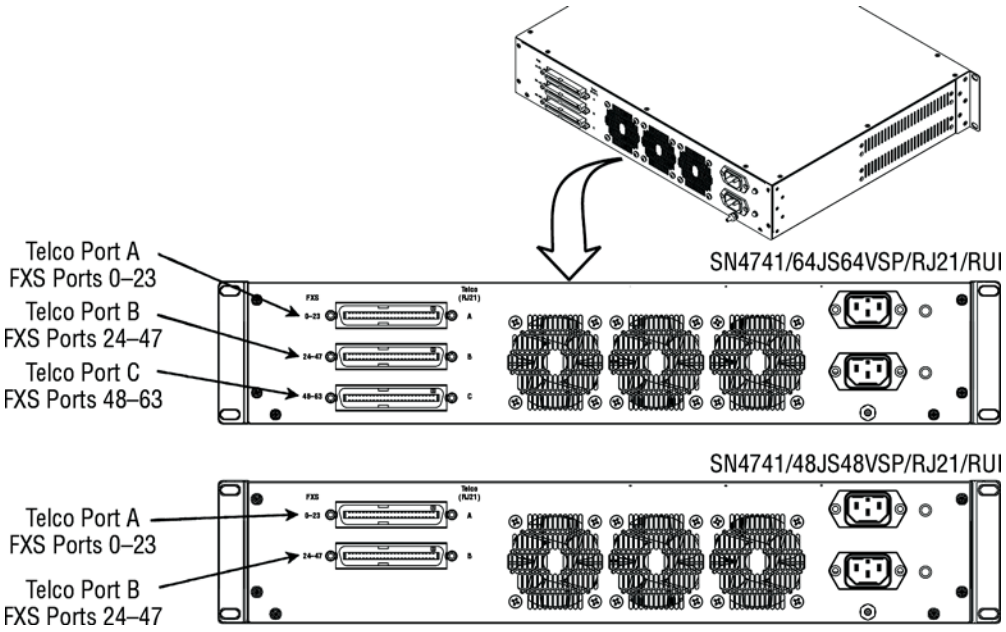


Figure 15. SN4740 64 and 48-port rear panels (RJ21 version)

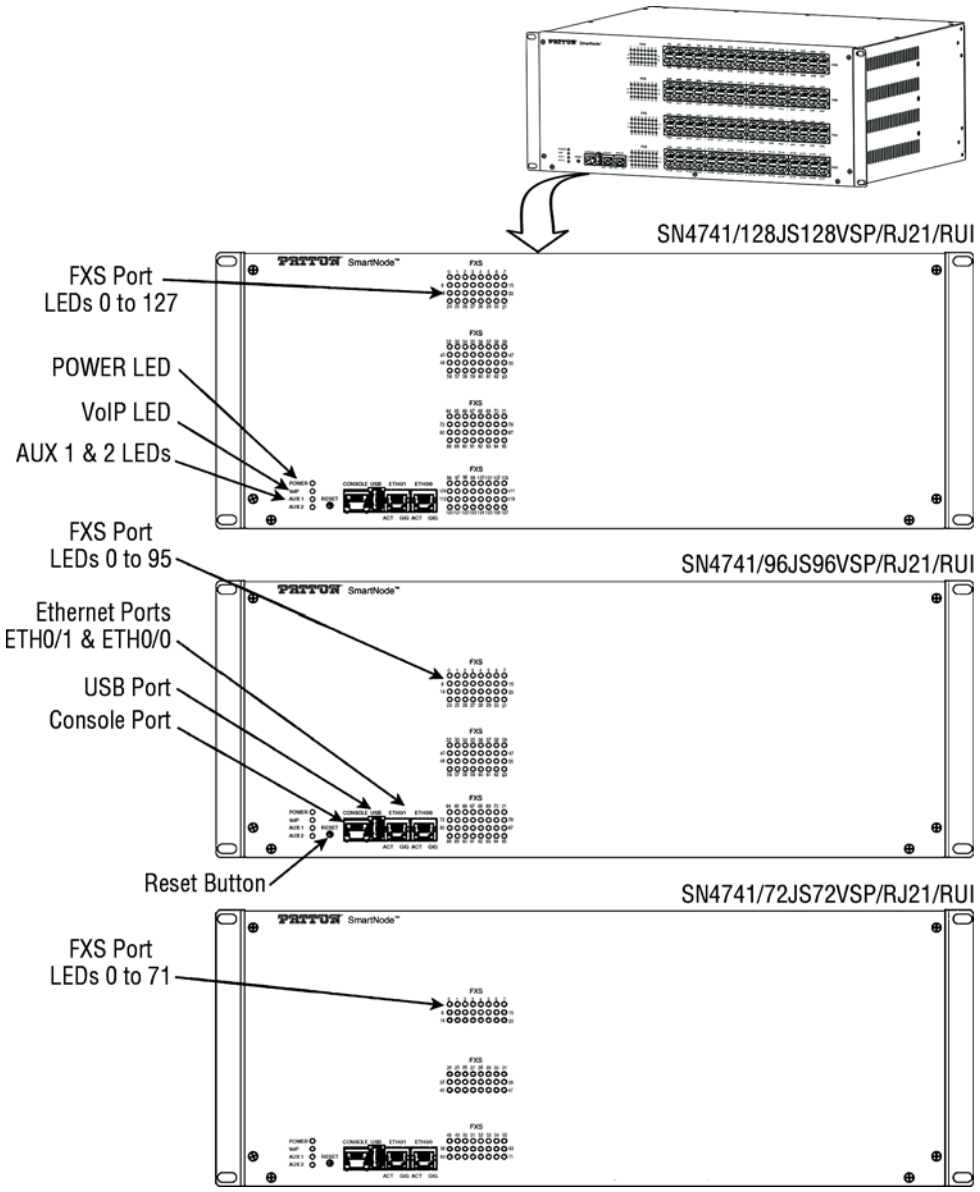


Figure 16. SN4740 128, 96, and 72-port front panels (RJ21 version)

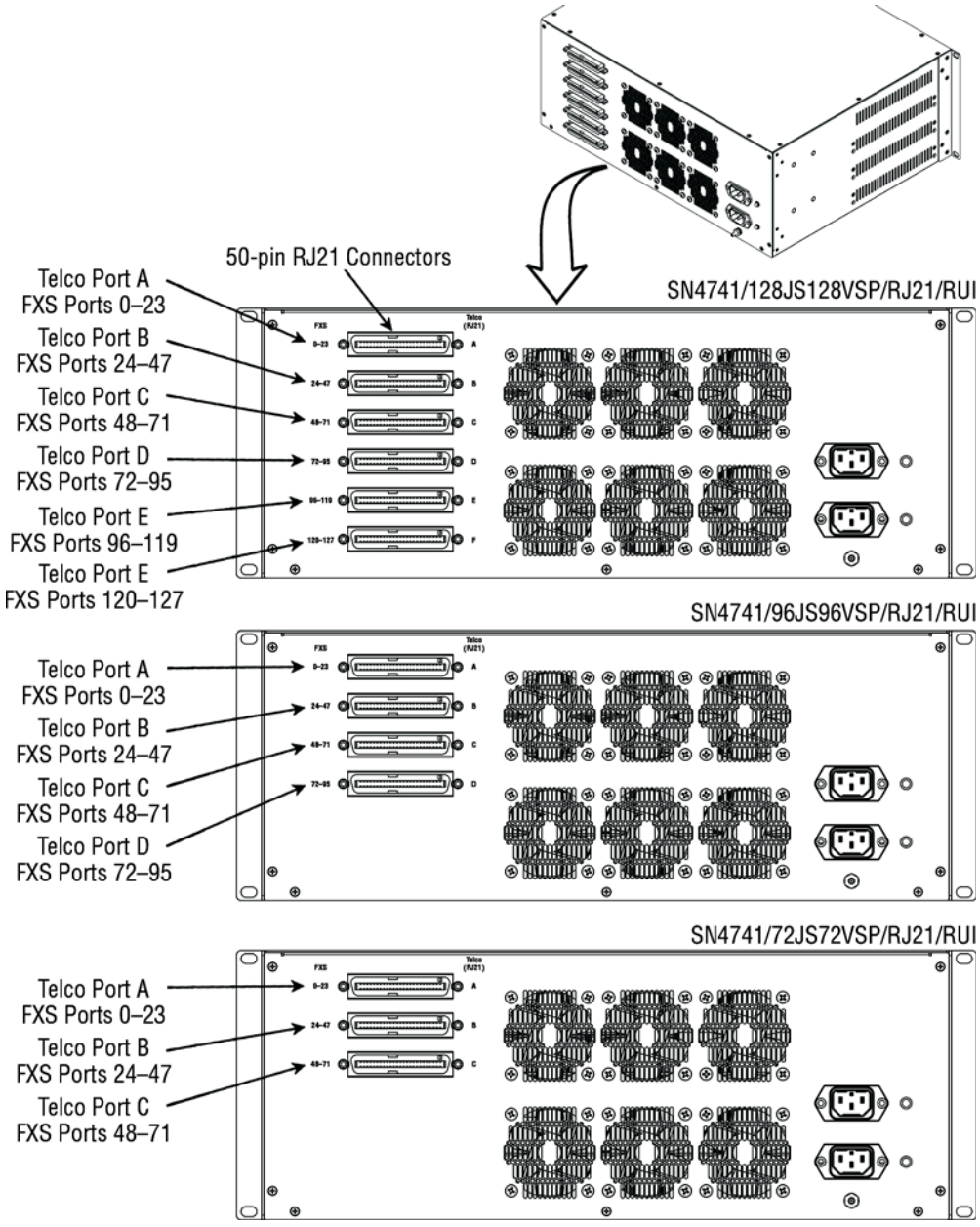


Figure 17. SN4740 128, 96, and 72-port rear panels (RJ21 version)

Table 4. Front and rear panel descriptions (RJ21 version)

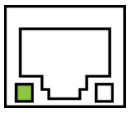
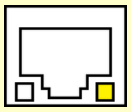
Button/LEDs/Ports	Description
POWER LED	When lit, indicates power is applied. Blinks fast during bootloader phase and blinks slow during the boot process. Constantly lit when the system is up and running.
VoIP LED	When lit, indicates the SmartNode device has at least one successful registration to a SIP server, or a SIP device has successfully registered to the SmartNode device. Off indicates the unit is not configured or registered, or has no active directly routed VoIP connection.
AUX1 LED	On when connected to Patton Cloud
AUX2 LED	Auxiliary LED for future use
USB 2.0 Port	USB 2.0 host port is used to connect a USB 3G/4G Cellular Modem. A list of supported USB Models can be found in the release notes and in the Software Configuration Guide
Console port	Used for service and maintenance, the console port, an RS-232 RJ-45 connector, connects the product to a serial terminal such as a PC or ASCII Terminal (also called a dumb terminal). Configuration settings: • 19200 bps • 8 bits, no parity • 1 stop bit • flow control off
FXS Port Status LEDs	Flashes when there are ongoing or ringing calls. Off when there are no ongoing or ringing calls.
FXS Ports (RJ21)	Telco 50-pin analog ports located on the rear panel.
ETH 0/0 & ETH 0/1	Auto-MDX Gigabit Ethernet port, RJ-45, connects the unit to an Ethernet WAN device (for example, a cable modem, DSL modem, or fiber modem).
ETH 0/0 & ETH 0/1 ports ACT LED (green) 	**On**: Connected to network
	Flashing: Data is received or transmitted
	Off: Not connected to network

Table 4. Front and rear panel descriptions (RJ21 version)

Button/LEDs/Ports	Description
ETH 0/0 & ETH 0/1 ports GIG LED (yellow) 	**On**: Connected to network at 1 Gbps
	Off: Connected to network at 10/100 Mbps or not connected to network
RESET button	The reset button has several functions, as described in appendix F, "Reset Button Functions" on page 98.

RJ11 & RJ21 Combo Version

The SN4740 is equipped with RJ11 and RJ21 analog port connectors (see figure 18 and figure 19 on page 34 for front and rear views of 64 and 48-port models, and figure 20 on page 35 and figure 21 on page 36 for front and rear views of 128, 96, and 72-port models) as described in table 5 on page 37.

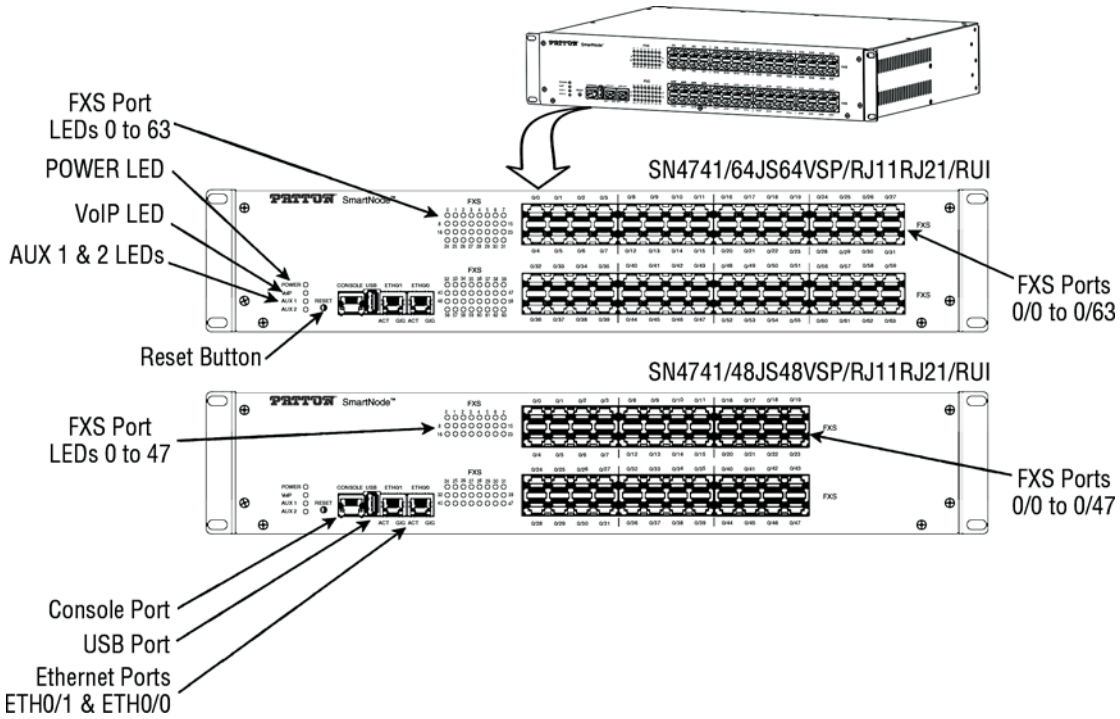


Figure 18. SN4740 64 and 48-port front panels (RJ11 & RJ21 combo version)

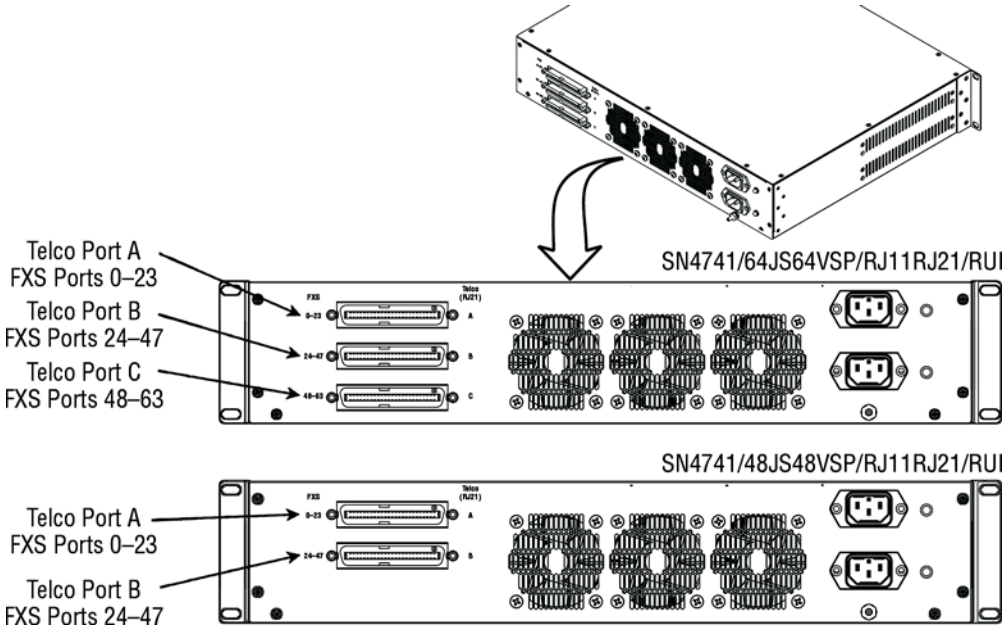


Figure 19. SN4740 64 and 48-port rear panels (RJ11 & RJ21 combo version)

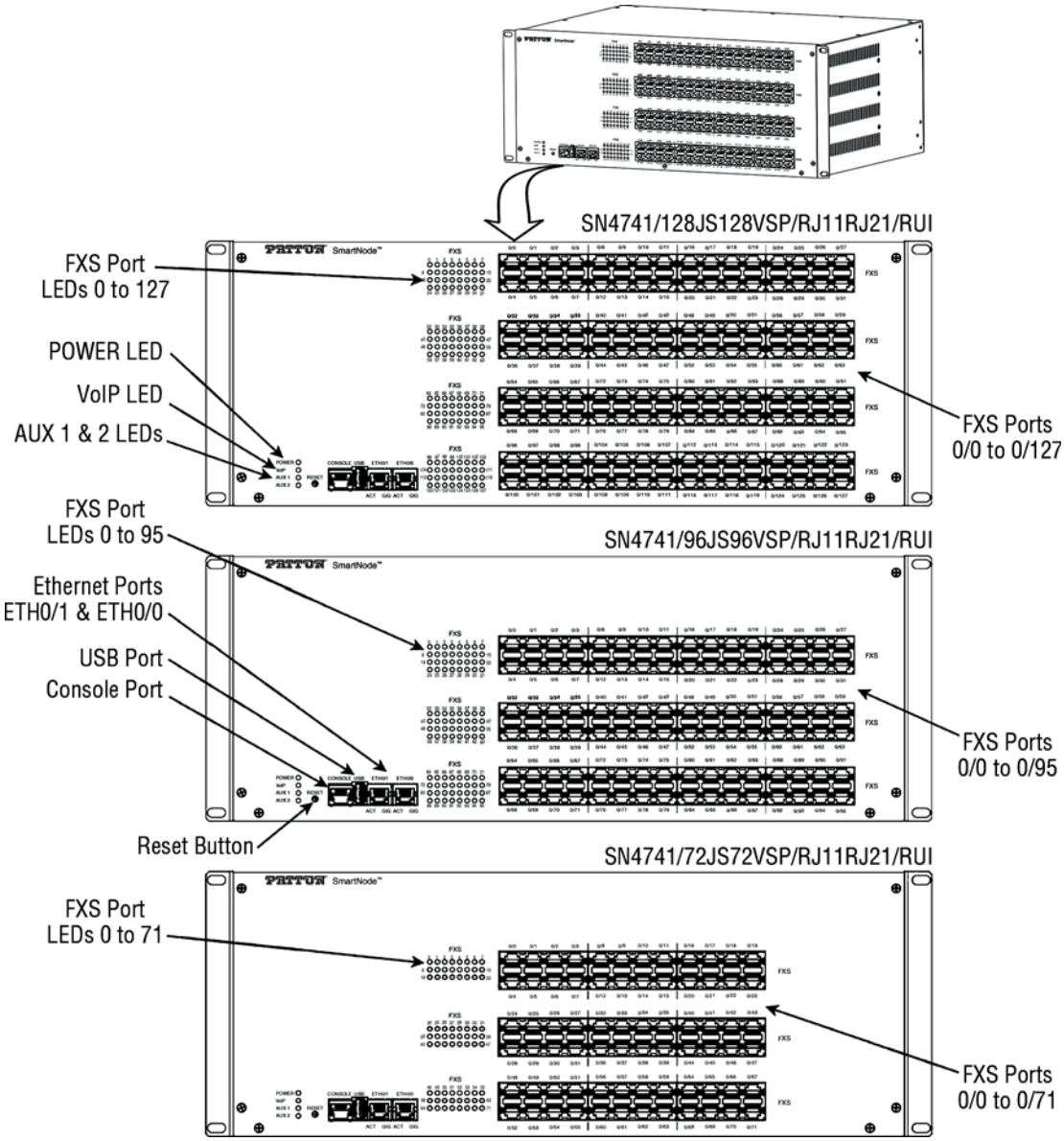


Figure 20. SN4740 128, 96, and 72-port front panels (RJ11 & RJ21 combo version)

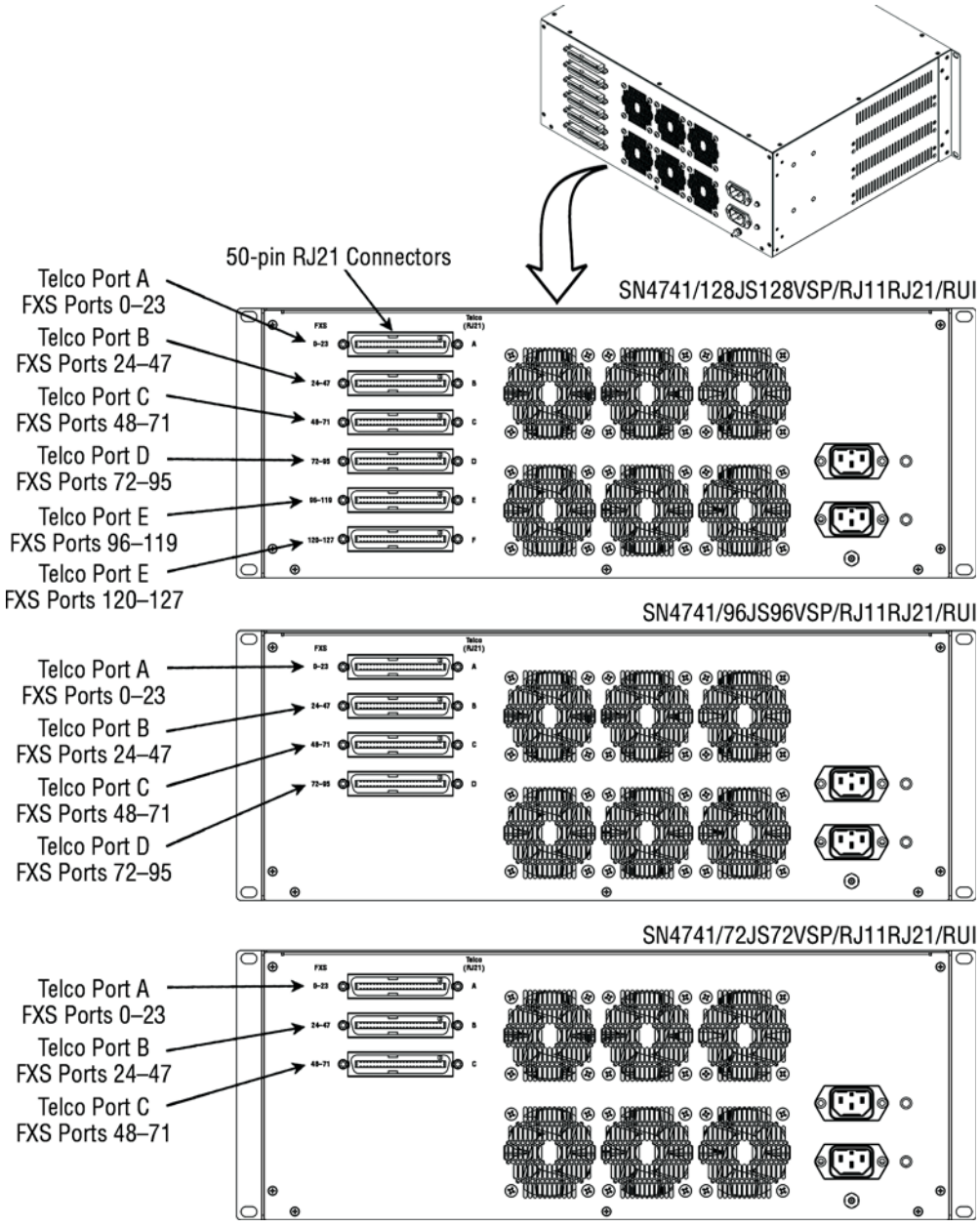


Figure 21. SN4740 128, 96, and 72-port rear panels (RJ11 & RJ21 combo version)

Table 5. Front and rear panel descriptions (RJ11 & RJ21 combo version)

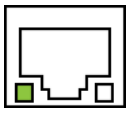
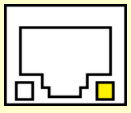
Button/LEDs/Ports	Description
POWER LED	When lit, indicates power is applied. Blinks fast during bootloader phase and blinks slow during the boot process. Constantly lit when the system is up and running.
VoIP LED	When lit, indicates the SmartNode device has at least one successful registration to a SIP server, or a SIP device has successfully registered to the SmartNode device. Off indicates the unit is not configured or registered, or has no active directly routed VoIP connection.
AUX1 LED	On when connected to Patton Cloud
AUX2 LED	Auxiliary LED for future use
USB 2.0 Port	USB 2.0 host port is used to connect a USB 3G/4G Cellular Modem. A list of supported USB Models can be found in the release notes and in the Software Configuration Guide
Console port	Used for service and maintenance, the console port an RS-232 RJ-45 connector, connects the product to a serial terminal such as a PC or ASCII Terminal (also called a dumb terminal). Configuration settings: • 19200 bps • 8 bits, no parity • 1 stop bit • flow control off
FXS Port Status LEDs	Flashes when there are ongoing or ringing calls. Off when there are no ongoing or ringing calls.
FXS Ports	RJ11 analog ports located on the front panel.
ETH 0/0 & ETH 0/1	Auto-MDX Gigabit Ethernet port, RJ-45, connects the unit to an Ethernet WAN device (for example, a cable modem, DSL modem, or fiber modem).
ETH 0/0 & ETH 0/1 ports ACT LED (green) 	**On**: Connected to network **Flashing**: Data is received or transmitted **Off**: Not connected to network
ETH 0/0 & ETH 0/1 ports GIG LED (yellow) 	**On**: Connected to network at 1 Gbps **Off**: Connected to network at 10/100 Mbps or not connected to network

Table 5. Front and rear panel descriptions (RJ11 & RJ21 combo version)

Button/LEDs/Ports	Description
RESET button	The reset button has several functions, as described in appendix F, “Reset Button Functions” on page 98.
FXS Ports (RJ21)	Telco 50-pin analog ports located on the rear panel.

Chapter 3 SmartNode Installation

Chapter contents

Planning the Installation

Before installing the SmartNode device, the following tasks should be completed:

- **Create a network diagram** (see section "Network information" on page 40)
- **Gather IP related information** (see section "IP related information" on page 40 for more information)
- **Install the hardware and software needed to configure the SmartNode**. (See section "Software tools" on page 41)
- **Verify power source reliability** (see section "Power source" on page 41).

When you finish preparing for SmartNode installation, go to section "Installing the SmartNode 4740" on page 41 to install the device.

Site log

Patton recommends that you maintain a site log to record all actions relevant to the system, if you do not already keep such a log. Site log entries should include information such as listed in Table 6.

Table 6. Sample site log entries

Entry	Description
Installation	Make a copy of the installation checklist and insert it into the site log
Upgrades and maintenance	Use the site log to record ongoing maintenance and expansion history
Configuration changes	Record all changes and the reasons for them
Maintenance	Schedules, requirements, and procedures performed
Comments	Notes, and problems
Software	Changes and updates to SmartWare software

Network information

Network connection considerations that you should take into account for planning are described for several types of network interfaces in the following sections.

Network Diagram

Draw a network overview diagram that displays all neighboring IP nodes, connected elements and telephony components.

IP related information

Before you can set up the basic IP connectivity for your SmartNode 4740 Series you should have the following information:

- IP addresses used for Ethernet LAN and WAN ports
- Subnet mask used for Ethernet LAN and WAN ports

- IP addresses and/or URL of SIP servers or Internet telephony services (if used)
- Login and password for PPPoE Access
- Login and Password for SIP based telephony services
- IP addresses of central TFTP server used for configuration upload and download (optional)

Software tools

The simplest way configuring the SN4740 Series is through **Patton Cloud**.

Alternatively you may use the Web interface in combination with a Web wizard to get your unit up and running. For more details, see the **Wizard Portal**.

The Command Line Interface is also supported for configuration, and can be accessed through Telnet /SSH. Also see the **Knowledgebase** for config snippets when configuring your device through CLI.

Power source

If you suspect that your AC power is not reliable, for example if room lights flicker often or there is machinery with large motors nearby, have a qualified professional test the power. Patton recommends that you include an uninterruptible power supply (UPS) in the installation to ensure that VoIP service is not impaired if the power fails.

Location and mounting requirements

The SmartNode SN4740 is intended to be placed on a desktop (or similar sturdy, flat surface) or in a 19-inch equipment rack that offers easy access to cables. Allow sufficient space at the rear of the chassis for cable connections. Additionally, you should consider the need to access the unit for future upgrades and maintenance.

Installing the SmartNode 4740

Install the SmartNode device as follows:

- Placing the device at the desired installation location (see section "Placing the SmartNode device")
- Installing the interface (see section "Connecting the 10/100/1000Base-T Gigabit Ethernet LAN and WAN cables" on page 42)
- Installing the ground wire onto the grounding stud (see section "Installing a ground wire on the SmartNode device's grounding stud" on page 42
- Installing the telephony cables (see section "Installing cables on the SmartNode device's FXS interface ports" on page 43)
- Installing the power cables (see section "Connecting the AC power cables, DC power source input, or AC to DC power adapter" on page 43)

When you finish installing the SmartNode, go to Chapter 4, "Initial Configuration" on page 46.

Placing the SmartNode device

Install the SmartNode device in a 19-inch rack or place it on a desktop or similar sturdy, flat surface. Allow sufficient space at the rear of the chassis for cable connections. Additionally, you should consider the need to access the unit for future upgrades and maintenance.

To prevent overheating and damaging the unit, proper ventilation is required when placing the device; leave at least 2 inches (5 cm) to the left, right, front, and rear of the SmartNode device.

The device should be installed in a dry environment with sufficient space to allow air circulation for cooling. Do not stack multiple SmartNode devices directly on top of one another, and do not place items on top of the device. If you will be installing equipment above the SmartNode device, leave at least 2 inches (5 cm) of clearance between the devices.

Connecting the 10/100/1000Base-T Gigabit Ethernet LAN and WAN cables

Do not work on the system or connect or disconnect cables during periods of lightning activity.

The Interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

The SmartNode 4740 Series has automatic MDX (auto-cross-over) detection and configuration on the Ethernet ports. Any of the two ports can be connected to a host or hub/switch with a straight-through wired cable.

1. Connect to the subscriber port of the broadband access modem (DSL, cable, WLL) to ETH 0/0.
2. Connect port ETH 0/1 to your LAN.

For details on the Ethernet port pin-out and cables, refer to Appendix C, “Cabling” on page 62 and Appendix D, “Port pin-outs” on page 65.

Installing a ground wire on the SmartNode device’s grounding stud

1. Route the ground wire from a building ground connection to the SmartNode device.

According to UL60950/IEC62368, a connection to earth ground—using the grounding stud at the rear of the units (see figure 12 on page 26)—is required to protect against power cross.

2. Connect the grounding wire to the grounding stud of the SmartNode device (see figure 12 on page 26).
3. Verify that the resistance of the ground path is less than 0.5 ohms.

Installing cables on the SmartNode device's FXS interface ports

The SmartNode comes with 48, 64, 72, 96, or 128 analog ports as follows:

- In a combination of RJ11 connectors (located on the front panel) and RJ21 telco connectors (located on the rear panel)

or

- Just RJ21 connectors (located on the rear panel)

The RJ11 interfaces are connected to analog devices via cables (see figure 22) terminated with RJ11 connectors (see section "Analog FXS" on page 59).

For the RJ21 connectors, see the pin-outs in section "RJ21 Models" on page 67.

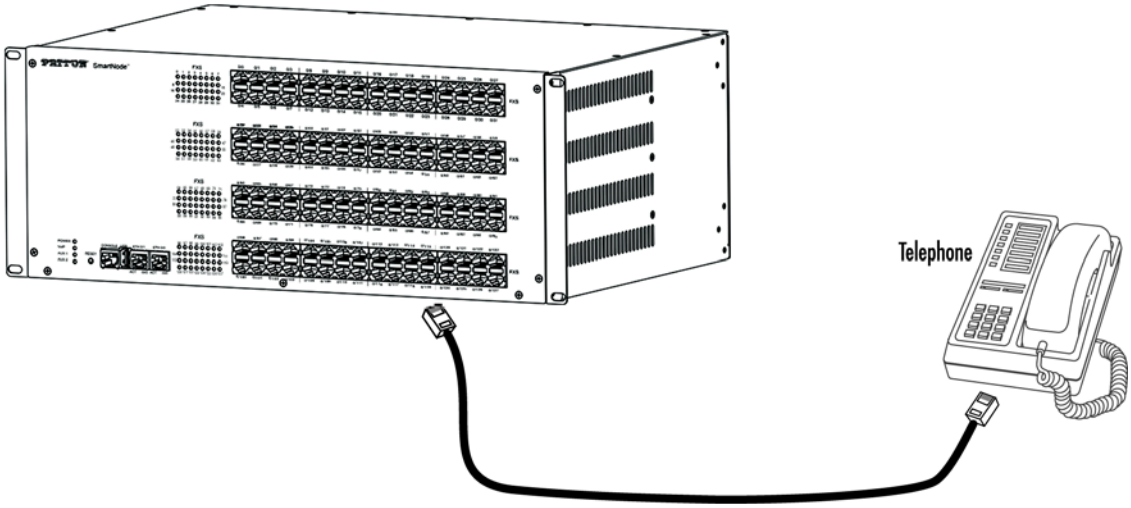


Figure 22. Analog FXS connection

Table 7. RJ-11 socket

Pin	Signal
3	Ring (-)
4	Tip (+)

For details on the Ethernet port pin-out and cables, refer to Appendix C, "Cabling" on page 62 and Appendix D, "Port pin-outs" on page 65.

Connecting the AC power cables, DC power source input, or AC to DC power adapter

To connect power to the SN4740, do one of the following:

- If the SN4740 has dual 110–230 VAC internal power supplies, install AC power cables (see section "Installing AC power cables" on page 44)
- If the SN4740 has dual R48 VDC power terminal blocks, and power will be supplied from a customer-provided DC power source, install the DC power source input (see section "Installing DC power source input" on page 44)

Installing AC power cables

Do the following to connect AC power to the Model SN4740 Series:

Note ***Do not connect the power cord to the AC power outlet at this time.***

1. Insert the female end of the AC power supply cable to one of the C14 inlets (see figure 12 on page 26).

There are no user-serviceable parts in the power supply section of the model SN4740 Series. Contact Patton Electronics Technical Support at support@patton.com for more information

2. Verify that the AC power cable included with your device is compatible with local standards. If it is not, refer to "Contacting Patton for Assistance" on page 52 to find out how to replace it with a compatible power cord.
3. Connect the male end of the power cord to an appropriate power outlet.

Note The SmartNode device does not have a power switch; it powers on when the power source is activated.

4. Verify that a green *POWER* LED on the rear panel is lit. The LED will blink quickly during bootloader phase and blink slowly during the boot process. It will stay lit constantly when the system is up and running.
5. Repeat steps 1 through 4 to install a power cable to the second C14 inlet.

Congratulations, you have finished installing the SmartNode 4740 Series Gateway! Now go to Chapter 4, "Initial Configuration" on page 46.

Installing DC power source input

Do the following:

1. Verify that the power source is powered off and that it is compatible with the SmartNode device:

This device is not intended for use with power supplies that provide high instantaneous current (for example: lead acid batteries).

Note When applying direct DC power, it must be regulated 24–48V VDC ±5%, **150W** for 32 and 64-port devices, and **250W** for 72, 96 and 128-port devices.

2. Determine which lead is positive and which lead is negative on the customer-supplied power adapter.
3. Insert the positive lead into the opening on the terminal block labeled **+** and the negative lead into the opening on the terminal block labeled **-** (see figure 23).

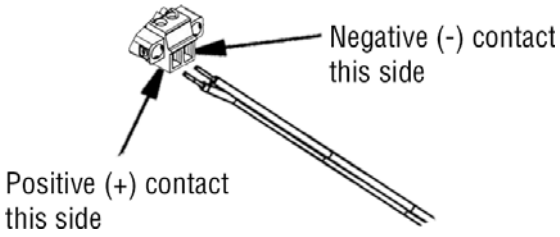


Figure 23. Power source leads installation

4. Tighten the screws on the block to secure the wires.
5. Repeat steps 2 through 4 to install a power cable to the second terminal block.
6. Apply power to the DC power source.

> **Note** The SmartNode device does not have a power switch; it powers on when the power source is activated.

7. Verify that the green *POWER* LEDs on the rear panel are lit. Each LED blinks quickly during bootloader phase and blinks slowly during the boot process. It stays lit constantly when the system is up and running.

Congratulations, you have finished installing the SmartNode device! Now go to Chapter 4, "Initial Configuration" on page 46.

Chapter 4 Initial Configuration

Chapter contents

Introduction

This chapter leads you through the basic steps to set up a new SmartNode and to download a configuration. Setting up a new SmartNode consists of the following main steps:

Note If you haven't already installed the SmartNode, refer to Chapter 3, "SmartNode Installation" on page 39.

- Connecting the SmartNode to your laptop PC
- Configuring the desired IP address
- Connecting the SmartNode to the network
- Loading the configuration (optional)

Connecting the SmartNode to Your Laptop PC

First, verify that the SmartNode is connected to the power supply with the power cables, and that the green power LEDs on the rear panel are lit.

The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

Note When power is applied to the SmartNode device, each green LED will blink quickly during bootloader phase, and blink slowly during the boot process. It will stay lit constantly when the system is up and running.

The SmartNode 4740 Series is equipped with Auto-MDX Ethernet ports, so you can use straight-through cables for host or hub/switch connections (see figure 24 on page 48).

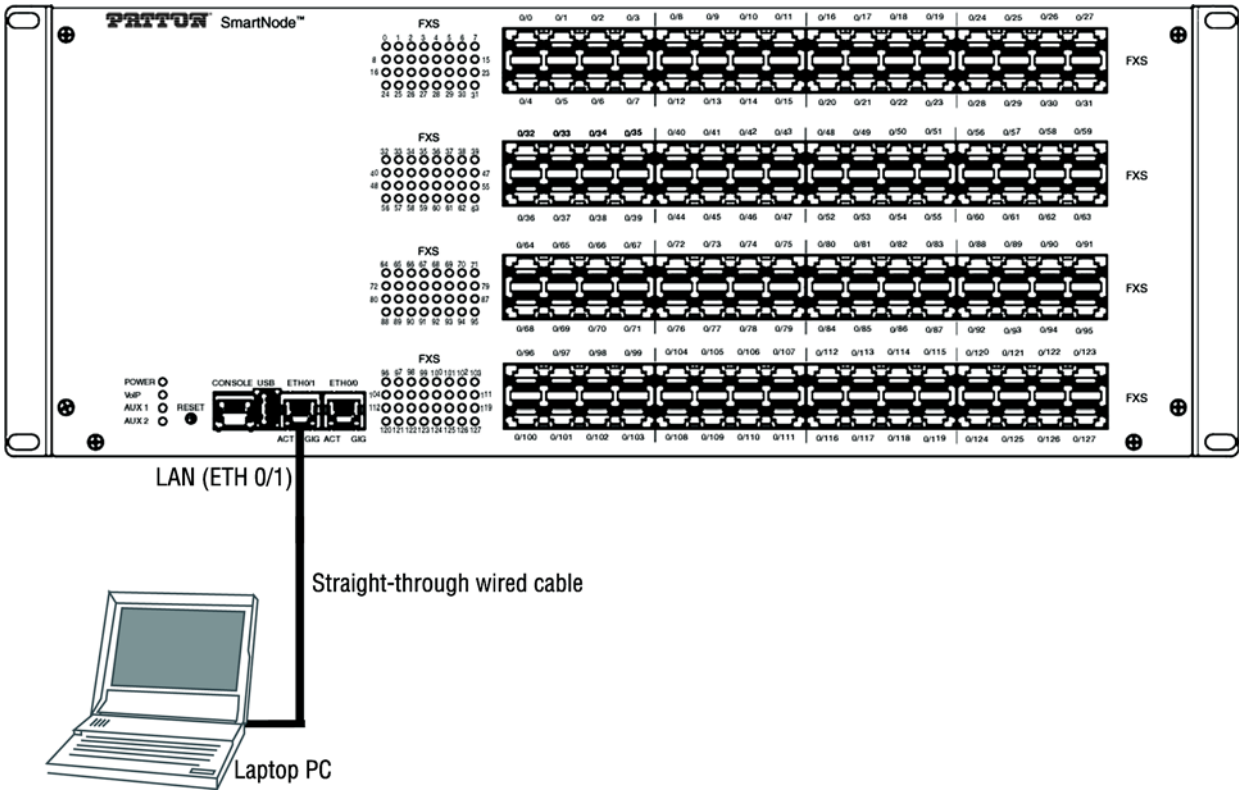


Figure 24. Connecting the SmartNode to your Laptop PC

The SmartNode comes with a built-in DHCP server to simplify configuration. Therefore, to automatically configure the PC for IP connectivity to the SmartNode, the Laptop PC must be configured for DHCP. The SmartNode will provide the PC with an IP address. You can check the connection to the SmartNode by executing the ping command from the PC command window as follows:

```
ping 192.168.1.1
```

or

```
smartnode.local
```

Configure the Desired IP Address

Factory-default IP Settings

The factory default configuration for the Ethernet interface IP addresses and network masks are listed in Table 8. Both Ethernet interfaces are activated upon power-up. LAN interface *ETH 0/1 (LAN)* provides a default DHCP server, the WAN interface uses DHCP client to automatically assign the IP address and network mask.

Table 8. Factory Default IP Address and Network Mask Configuration

	IP Address	Network Mask
WAN Interface Ethernet 0 (ETH 0/0)	DHCP	DHCP
LAN Interface Ethernet 1 (ETH 0/1)	192.168.1.1	255.255.255.0

Table 8. Factory Default IP Address and Network Mask Configuration (Continued)

	IP Address	Network Mask
DHCP Address Range	192.168.1.10–192.168.1.99	255.255.255.0

If these addresses match with those of your network, go to section "Connecting the SmartNode to the Network" on page 50. Otherwise, refer to the following sections to change the addresses and network masks.

Login

To access the SmartNode, start the Telnet application. Type either the host name
smartnode.local
or the default IP address into the address field of the Telnet application:
192.168.1.1
Accessing your SmartNode via a Telnet session displays the login screen. Type the factory default login: *admin* and leave the password empty. Press the Enter key after the password prompt.

```
login:admin
password: <Enter>
192.168.1.1>
```

After you have successfully logged in you are in the operator execution mode, indicated by > as command line prompt. With the commands *enable* and *configure* you enter the configuration mode.

```
192.168.1.1>enable
192.168.1.1#configure
192.168.1.1(cfg)#
```

You are responsible for creating a new administrator account to maintain system security. Patton Electronics accepts no responsibility for losses or damage caused by loss or misuse of passwords. Refer to Chapter 4 "Accessing the CLI", section "Selecting a secure password" in the *Trinity Command Line Reference Guide* for more details.

Changing the WAN IP address (Optional)

Select the context IP mode to configure an IP interface.

```
192.168.1.1 (cfg) #context ip ROUTER
192.168.1.1 (ctx-ip) [ROUTER} #
```

Now you can set your IP address and network mask for the interface *ETH 0/0 (WAN)*. Within this example a network 172.16.1.0/24 address is assumed. The IP address in this example is set to *172.16.1.99* (you should set the IP address given to you by your network provider).

```
192.168.1.1(ctx-ip)[Router]#interface WAN
192.168.1.1(if-ip)[WAN]#no ipaddress DHCP
192.168.1.1(if-ip)[WAN]#ipaddress WAN 172.16.1.99/24
2002-10-28T00:09:40 : LOGINFO : Link down on interface WAN.
2002-10-29T00:09:40 : LOGINFO: Link up on interface WAN.
172.16.1.99(if-ip)[WAN]#
```

Copy this modified configuration to you new start-up configuration. This will store your changes in non-volatile memory. Upon the next start-up the system will initialize itself using the modified configuration.

Note The modified configuration is applied immediately. It is not necessary to reboot the device when changing any configuration parameter.

```
172.16.1.99(if-ip) [WAN]#copy running-config startup-config
172.16.1.99(if-ip) [WAN]
```

The SmartNode can now be connected to your network.

Connecting the SmartNode to the Network

In general, the SmartNode will connect to the network via the *WAN (ETH 0/0)* port. This enables the SmartNode to offer routing services to the PC hosts on *LAN (ETH 0/1)* port (IP Routing License Required at additional cost). The SmartNode 4740 Series is equipped with Auto-MDX Ethernet ports, so you can use straight through or crossover cables for host or hub/switch connections. (See figure 25).

CAUTION

The interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

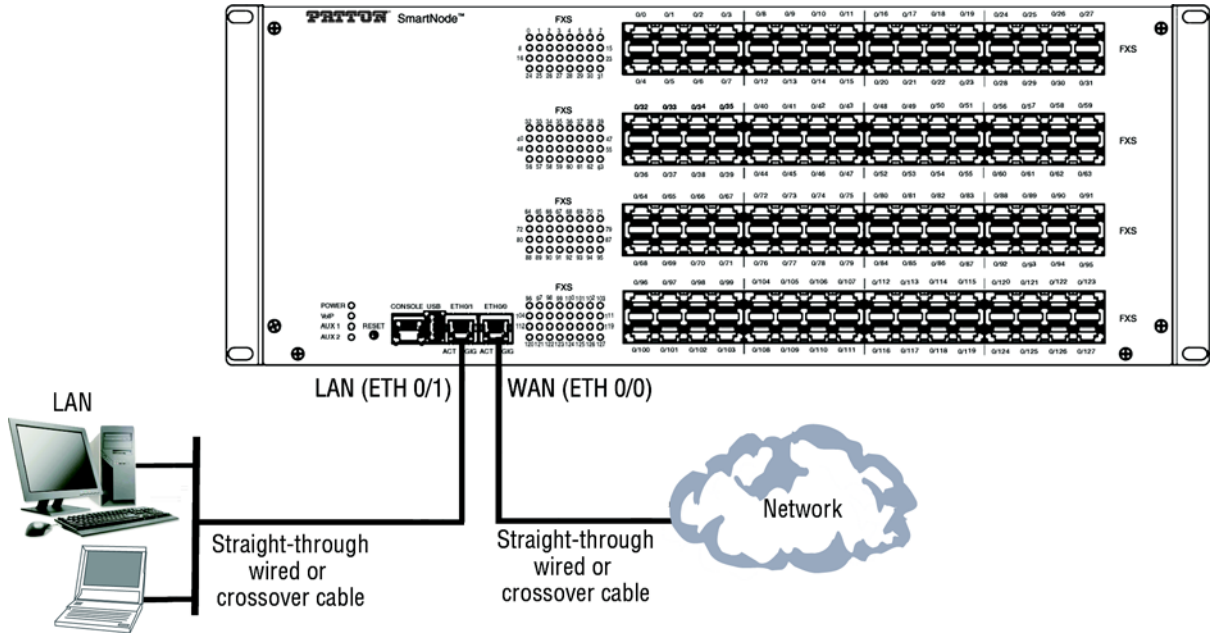


Figure 25. Connecting the SmartNode to the network

You can check the connection with the ping command from the SmartNode to another host on the network.

```
172.16.1.99(if-ip)[WAN]#ping <IP Address of the host>
```

Note If the WAN address is ***not*** set to DHCP, to ping a device outside your local LAN you must first configure the default gateway. (For information on configuring the default gateway, refer to section “Set IP addresses” in the Trinity Software Configuration Guide.)

Note Connecting both Ethernet ports to the same switch will only work if the switch has separate ARP tables for each connection.

Loading the Configuration (optional)

The **WebWizard Community** provides a collection of Wizards that help to reduce the setup time of a Patton device. Simply download the Wizard to your device, execute it locally, and you are ready to do phone calls after the SmartNode has rebooted. Optionally, you may execute the Wizard that matches your application online and import the generated .cfg config into the SmartNode. In addition to that the **knowledgebase** provides configuration file templates that may fit to your application.

Note If your application is unique and not covered by any of Patton's configuration templates, you can manually configure the SmartNode instead of loading a configuration file template. In that case, refer to the *Trinity Command Line Reference Guide* for information on configuring the SmartNode device.

In this example we assume the TFTP server on the host with the IP address 172.16.1.11 and the configuration named *SN.cfg* in the root directory of the TFTP server..

```
172.16.1.99(if-ip)[WAN]#copy tftp://172.16.1.11/sn.cfg startup-config
172.16.1.99(if-ip)[WAN]#
```

After the SmartNode device has been rebooted, the new startup configuration will be activated.

```
172.16.1.99(if-ip)[WAN]#reload
Press 'yes' to restart, 'no' to cancel : yes
The system is going down NOW
```

Additional Information

For detailed information about configuring and operating guidance, set up procedures, and troubleshooting, refer to the Trinity Software Configuration Guide available online at **www.patton.com/manuals**.

Chapter 5 Contacting Patton for Assistance

Chapter contents

Introduction

This chapter contains the following information:

- "Contact information"—describes how to contact Patton technical support for assistance.
- "Warranty Service and Returned Merchandise Authorizations (RMAs)"—contains information about the warranty and obtaining a return merchandise authorization (RMA).

Contact information

Patton Electronics offers a wide array of free technical services. If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.

Contacting Patton Technical Services for Free Support

REGION	North America	Western Europe	Central & Eastern Europe
Location	**Maryland, USA**	**Bern, Switzerland**	**Budapest, Hungary**
Time Zone	EST/EDT UTC/GMT - 4/5 hours	CET/CEDT UTC/GMT + 1/2 hours	CET/CEDT UTC/GMT + 1/2 hours
Business Hours	Monday-Friday 8:00am to 5:00pm	Monday-Friday 09:00 to 12:00 13:30 to 17:30	Monday-Friday 8:30 to 17:00
Email	support@patton.com	support@patton.com	support@patton.com
Phone	+ 1 301 975 1007	+41 31 985 25 55	+36 439 3835
Fax	+1 301 869 9293	+41 31 985 2526	

Warranty Service and Returned Merchandise Authorizations (RMAs)

Patton Electronics is an ISO-9001 certified manufacturer and our products are carefully tested before shipment. All of our products are backed by a comprehensive warranty program.

Note If you purchased your equipment from a Patton Electronics reseller, ask your reseller how you should proceed with warranty service. It is often more convenient for you to work with your local reseller to obtain a replacement. Patton services our products no matter how you acquired them.

Warranty coverage

Our products are under warranty to be free from defects, and we will, at our option, repair or replace the product should it fail within one year from the first date of shipment. Our warranty is limited to defects in workmanship or materials, and does not cover customer damage, lightning or power surge damage, abuse, or unauthorized modification.

Out-of-warranty service

Patton services what we sell, no matter how you acquired it, including malfunctioning products that are no longer under warranty. Our products have a flat fee for repairs. Units damaged by lightning or other catastrophes may require replacement.

Returns for credit

Customer satisfaction is important to us, therefore any product may be returned with authorization within 30 days from the shipment date for a full credit of the purchase price. If you have ordered the wrong equipment or you are dissatisfied in any way, please contact us to request an RMA number to accept your return. Patton is not responsible for equipment returned without a Return Authorization.

Return for credit policy

- Less than 30 days: No Charge. Your credit will be issued upon receipt and inspection of the equipment.
- 30 to 60 days: We will add a 20% restocking charge (crediting your account with 80% of the purchase price).
- Over 60 days: Products will be accepted for repairs only.

RMA numbers

RMA numbers are required for all product returns. You can obtain an RMA by doing one of the following:

- Completing a request on the RMA Request page in the *Support* section at **www.patton.com**
- By calling **+1 (301) 975-1007** and speaking to a Technical Support Engineer
- By sending an e-mail to **returns@patton.com**

All returned units must have the RMA number clearly visible on the outside of the shipping container. Please use the original packing material that the device came in or pack the unit securely to avoid damage during shipping.

Shipping instructions

The RMA number should be clearly visible on the address label. Our shipping address is as follows:

Patton Electronics Company
RMA#: xxxx
7622 Rickenbacker Dr.
Gaithersburg, MD 20879-4773 USA

Patton will ship the equipment back to you in the same manner you ship it to us. Patton will pay the return shipping costs.

Appendix A Compliance Information

Chapter contents

Compliance

EMC compliance
EN55032 and EN55024

Safety compliance
EN62368-1

CE compliance
- FCC Part 15 Class A
- RoHS Compliant
- ITU-T K.21 basic protection (/SP models)

EC Declaration of Conformity

We certify that the apparatus identified above conforms to the requirements of Council Directive 2014/30/EU on the approximation of the laws of the member states relating to electromagnetic compatibility; Council Directive 2014/35/EU on the approximation of the laws of the member states relating to electrical equipment designed for use within certain voltage limits; Council Directive 2011/65/EU as modified by Council Directive 2015/863/EU on the approximation of the laws of the member states relating to RoHS and REACH compliance; Council Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products.

Authorized European Representative

Martin Green
European Compliance Services Limited
Milestone house
Longcot Road
Shrivenham
SN6 8AL, UK

Appendix B Specifications

Chapter contents

Note Refer to the software feature matrix for the most up-to-date specifications*.

Capacity

Up to 128 simultaneous low bandwidth voice or HD calls with SRTP** or T.38 fax calls

SIP Signaling

- SIPv2 over UDP/TCP or TLS**
- SIP call transfer, redirect
- Overlap dialing, PRACK, P-Header support
- Multi instance, simultaneous support of multiple registrars and direct IP dialing)
- DTMF in-band & out-of-band
- B2BUA—eSBC capable**

Voice Processing

- G.722
- G.711m/A-law
- G.723.1 (6.4 kbps)
- G.729, 729a, 729ab (8 kbps)
- G.726 (16, 24, 32, 40 Kbps)
- AMR-NB (4.75, 5.15, 5.9, 6.7, 7.4, 7.95, 10.2, 12.2 kbps)
- Fax relay T.38, bypass G.711
- iLBC at 13.33 kbps (SIP–SIP only)
- SILK (SIP–SIP only)
- G.168-2004 echo cancellation (128 ms)
- Up to 128 simultaneous low-bandwidth voice or T.38 fax calls
- Up to 128 HD calls with SRTP
- Silence suppression and comfort noise
- Adaptive and configurable dejitter buffer
- Configurable RTP packet length

---

* Specifications subject to change without notice. Product images shown may not be an exact representation of the actual product.

** Licensed feature at additional charge.

Call Switching & Services

- 3 way and N way conferencing
- Regular expression based call routing and number manipulation
- Number blocking
- Short-dialing
- Digit collection, call distribution and hunt groups
- Transparent line extension
- Fallback Routing: Soft fallback to alternative route(s)

FXS Connectivity

- 2-wire Loopstart on RJ-11 or RJ21 (Telco 50-pin)
- MWI—high voltage, line reversal and FSK method
- Localization—All tones programmable (dial, ringing, busy)
- EuroPOTS (ETSI EG201188)
- Programmable AC impedance, feeding, ring and on-hook voltage
- Peak Ring voltage: 87.7Vpk
- Ring voltage: 62Vrms
- Current Feed ILA: 26mA
- Talk Battery Voltage: -20V
- On-Hook voltage VOC: 51V
- Caller-ID FSK and ITU V.23/Bell 202 generation
- Long Reach FXS—10 km @ 3REN load
- Secondary Surge Protection*

FXO Connectivity (coming soon)

- 2-wire Loopstart on RJ-11 or RJ21 (Telco 50-pin)
- Programmable impedance
- Ring detection, tone detection
- Caller ID detection (FXS, DTMF)
- Connect & Disconnect supervision

* Depending on model.

Connectivity

- Two 10/100/1000Base-T Ethernet ports
- USB port
- Auto-MDIX
- DHCP Client and Server
- PPPoE Client (multi-session)
- IP Multi-Netting, VLAN, Secondary IP
- IPv4 and IPv6—Dual Stack
- ICMP
- Dynamic and static NAT and NAPT
- Intelligent ACL
- DNS, DynDNS
- STP Client

Quality of Service, SLA Assurance

- Patton Cloud based Call Quality Monitoring & Alerting*
- Voice priority, DownStreamQoS™
- High Availability & Redundancy
- Traffic Management, shaping policing
- IEEE 802.1p, IEEE 802.1Q, 4096 VLANs (Tag insertion/deletion), TOS, DiffServ Labeling

Management

- Patton Cloud Orchestrated
- Customizable WebWizard, Web-based GUI HTTP/HTTPS access, CLI Telnet/SSH
- Secure Auto-Provisioning (Zero Touch) with built in root CA
- Separate config domain (LAN side config and WAN side config)
- TR-069 (CWMP-ACS), TFTP, HTTP, HTTPS configuration & firmware up- and download
- Radius, TACACS+
- SNMPv3 agent—MIB II and private MIB
- Built-in diagnostic tools

* Patton Cloud based features and services depend on Cloud Service plans which are purchased separately.

Power

There are 2 power input options available:

- 110–230 VAC via internal power supplies (/RUI models) using IEC C12 connector. 2nd power input optional—for power redundancy
- 20–59 VDC Dual Power input (/R48 models). Negative grounded power (positive grounded or floating DC powered options available on request)

Power consumption (see table 9):

Table 9. Power Consumption

Power Consumption in Watts	48 Ports	64 Ports	72 Ports	96 Ports	128 Ports
All ports off-hook	97	118	146	177	228
All ports ringing, staggered, 3 REN	98	117	147	178	227

Dimensions & Packaging

19-in. rack-mount chassis

2U: 48 and 64 ports

4U: 72, 96, and 128 ports

Environment

- Operating temperature: 32 to 104°F (0 to 40°C)
- Operating humidity: up to 90%, non-condensing)

Appendix C **Cabling**

Chapter contents

Introduction

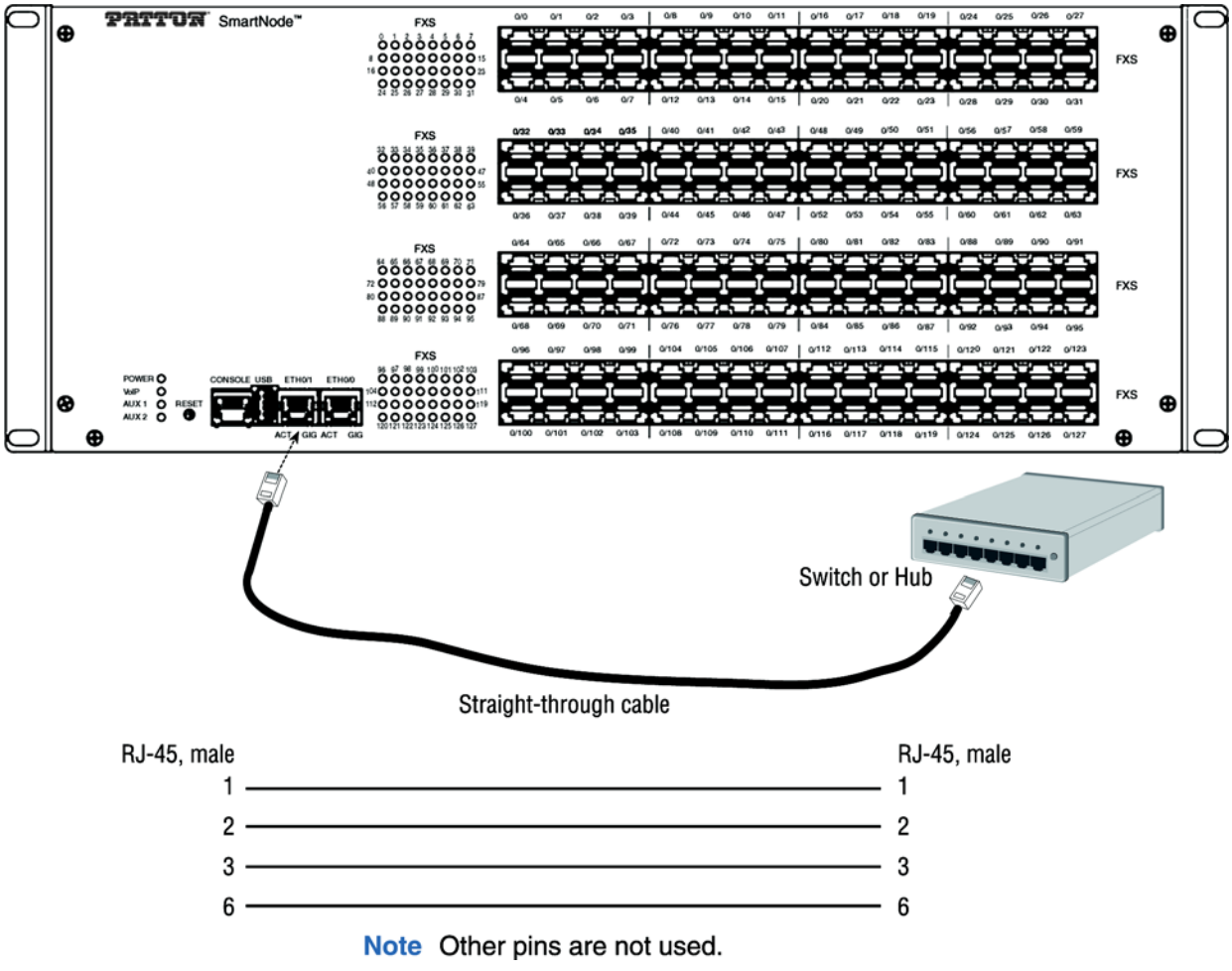
This section provides information on the cables used to connect the SmartNode to the existing network infrastructure and to third party products.

Ethernet

Ethernet devices (10/100/1000 Base-T) are connected to the SmartNode over a cable with RJ-45 plugs. All Ethernet ports on the SN4740 Series are Auto-MDX. Use any straight or crossover cable to a host, hubs, switches, PCs or other devices.

CAUTION

The interconnecting cables shall be acceptable for external use an shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.



Note Other pins are not used.

Figure 26. Typical Ethernet straight-through cable diagram for 10/100Base-T

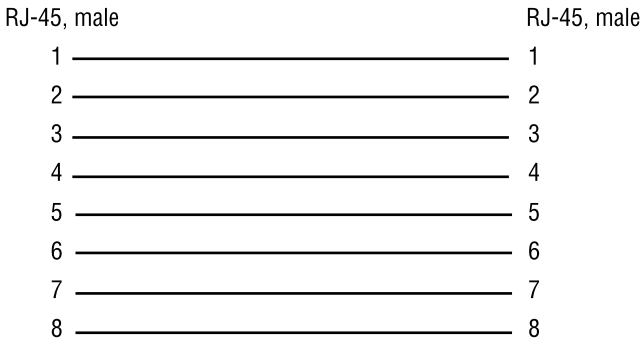


Figure 27. Typical Ethernet straight-through cable diagram for 1000Base-T

Analog FXS

The Interconnecting cables shall be acceptable for external use and shall be rated for the proper application with respect to voltage, current, anticipated temperature, flammability, and mechanical serviceability.

Applicable to SmartNode devices equipped with FXS ports. The FXS ports are connected to analog terminals (phones, fax machines, answering machines, etc.) via cables terminated with RJ-11 connectors (see section "FXS port" on page 62 for details on port pin-outs). For the RJ21 connectors, see the pin-outs in section "RJ21 Models" on page 67.

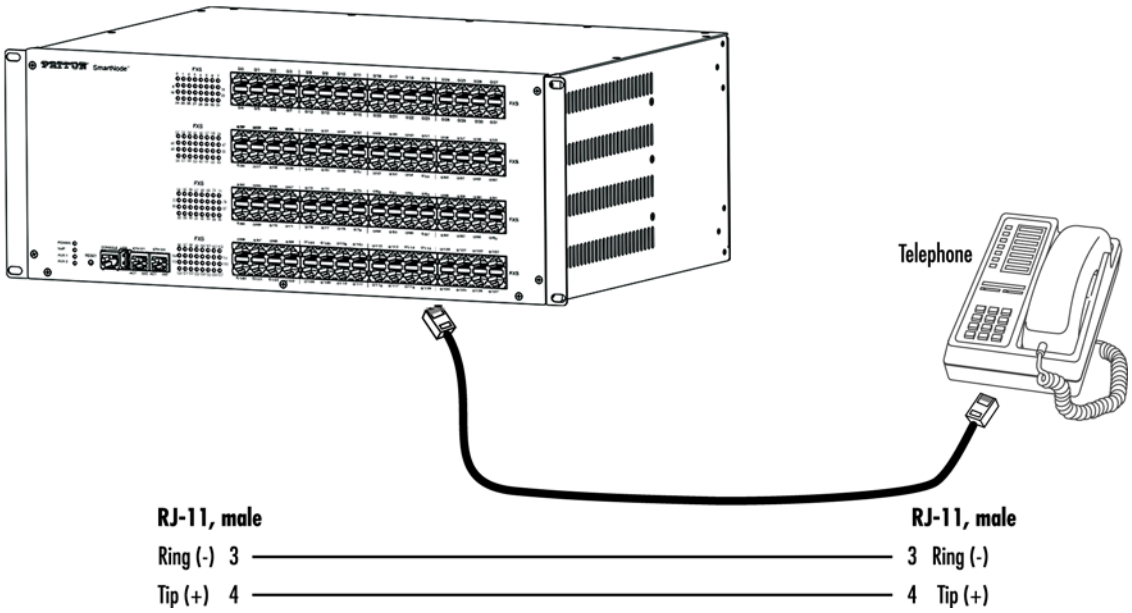


Figure 28. Connecting an FXS device

Appendix D **Port pin-outs**

Chapter contents

Introduction

This section provides pin-out information for the ports of the SmartNode.

Ethernet

Table 10. 10/100Base-T RJ-45 socket

Pin	Signal
1	TX+
2	TX-
3	RX+
6	RX-

Note Pins not listed are not used.

Table 11. 1000Base-T RJ-45 Socket

Pin	Signal
1	TRD0+
2	TRD0-
3	TRD1+
4	TRD1-
5	TRD2+
6	TRD2-
7	TRD3+
8	TRD3-

FXS port

RJ11 Models

The FXS ports use an RJ-11 connector with 6 positions. The middle two positions 3 and 4 are used according to table 12 and figure 29 on page 67.

Table 12. RJ-11 socket

Pin	Signal
3	Ring (-)
4	Tip (+)

Note Pins not listed are not used.

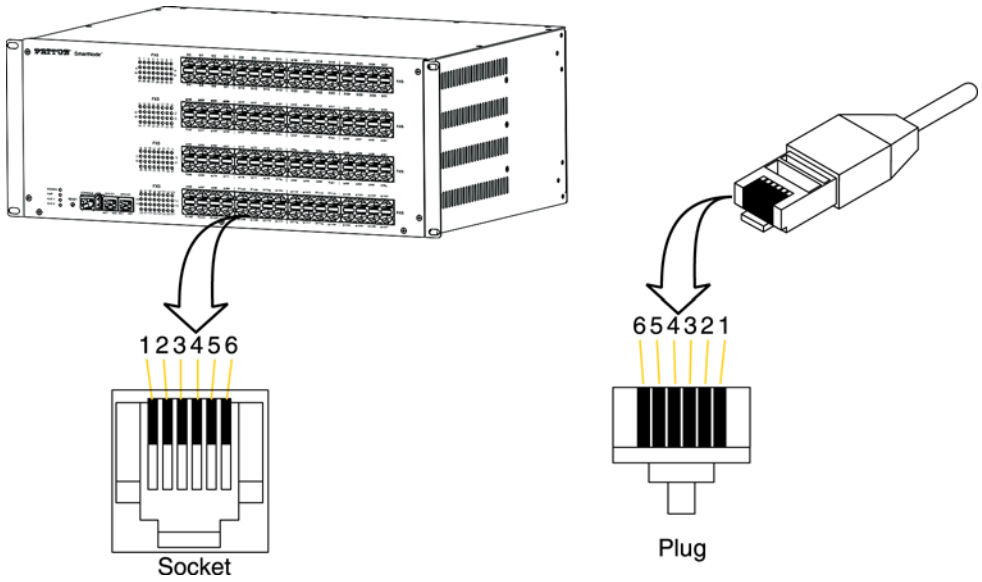


Figure 29. RJ11 pin-out diagram

RJ21 Models

Refer to the following for the appropriate 50-pin RJ21 connector pin-outs:

- For 128-port devices, see section "Telco 50-pin pin-outs for 128-Port Model" on page 68
- For 96-port devices, see section "Telco 50-pin pin-outs for 96-Port Model" on page 76
- For 72-port devices, see section "Telco 50-pin pin-outs for 72-Port Model" on page 83
- For 64-port devices, see section "Telco 50-pin pin-outs for 64-Port Model" on page 87
- For 48-port devices, see section "Telco 50-pin pin-outs for 48-Port Model" on page 92

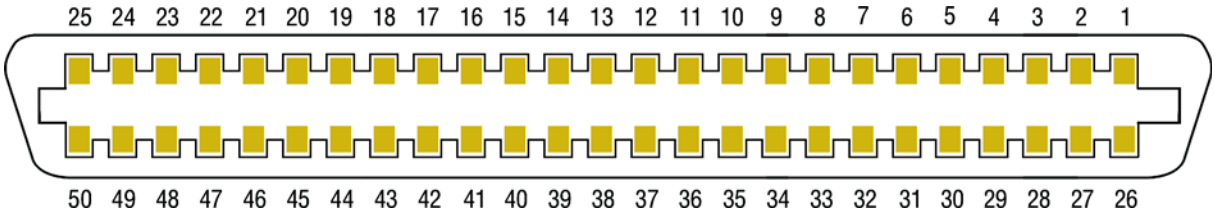


Figure 30. 50-pin RJ21 port connector

Telco 50-pin pin-outs for 128-Port Model

Connector A. FXS ports 0/0–0/23 (see figure 30 and table 13 on page 68).

Table 13. Band Marked Color Code for Telco Connector A (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/0
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/1
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/2
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/3
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/4
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/5
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/6
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/7
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/8
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/9
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/10
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/11
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/12
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/13
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/14
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/15
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/16
Orange	Yellow	Ring 17		17	

Table 13. Band Marked Color Code for Telco Connector A (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Yellow	Green	Tip 18	Pair 18	43	Port 0/17
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/18
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/19
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/20
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/21
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/22
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/23
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector B. FXS ports 0/24–0/47 (see figure 30 on page 67 and table 14).

Table 14. Band Marked Color Code for Telco Connector B (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/24
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/25
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/26
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/27
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/28
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/29
Blue	Red	Ring 6		6	

Table 14. Band Marked Color Code for Telco Connector B (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Orange	Tip 7	Pair 7	32	Port 0/30
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/31
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/32
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/33
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/34
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/35
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/36
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/37
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/38
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/39
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/40
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/41
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/42
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/43
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/44
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/45
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/46
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/47
Brown	Violet	Ring 24		24	

Table 14. Band Marked Color Code for Telco Connector B (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector C. FXS ports 0/48–0/71 (see figure 30 on page 67 and table 15).

Table 15. Band Marked Color Code for Telco Connector C (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/48
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/49
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/50
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/51
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/52
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/53
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/54
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/55
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/56
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/57
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/58
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/59
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/60
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/61
Brown	Black	Ring 14		14	

Table 15. Band Marked Color Code for Telco Connector C (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Black	Slate	Tip 15	Pair 15	40	Port 0/62
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/63
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/64
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/65
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/66
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/67
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/68
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/69
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/70
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/71
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector D. FXS ports 0/72–0/95 (see figure 30 on page 67 and table 16).

Table 16. Band Marked Color Code for Telco Connector D (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/72
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/73
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/74
Green	White	Ring 3		3	

Table 16. Band Marked Color Code for Telco Connector D (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Brown	Tip 4	Pair 4	29	Port 0/75
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/76
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/77
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/78
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/79
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/80
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/81
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/82
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/83
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/84
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/85
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/86
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/87
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/88
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/89
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/90
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/91
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/92
Blue	Violet	Ring 21		21	

Table 16. Band Marked Color Code for Telco Connector D (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Orange	Tip 22	Pair 22	47	Port 0/93
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/94
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/95
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector E. FXS ports 0/96–0/119 (see figure 30 on page 67 and table 17).

Table 17. Band Marked Color Code for Telco Connector E (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/96
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/97
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/98
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/99
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/100
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/101
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/102
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/103
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/104
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/105
Slate	Red	Ring 10		10	

Table 17. Band Marked Color Code for Telco Connector E (128-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Black	Blue	Tip 11	Pair 11	36	Port 0/106
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/107
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/108
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/109
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/110
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/111
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/112
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/113
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/114
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/115
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/116
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/117
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/118
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/119
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector F. FXS ports 0/120–0/127 (see figure 30 on page 67 and table 18).

Table 18. Band Marked Color Code for Telco Connector F (128-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/120
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/121
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/122
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/123
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/124
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/125
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/126
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/127
Green	Red	Ring 8		8	

Telco 50-pin pin-outs for 96-Port Model

Connector A. FXS ports 0/0–0/23 (see figure 30 on page 67 and table 19).

Table 19. Band Marked Color Code for Telco Connector A (96-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/0
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/1
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/2
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/3
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/4
Slate	White	Ring 5		5	

Table 19. Band Marked Color Code for Telco Connector A (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Blue	Tip 6	Pair 6	31	Port 0/5
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/6
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/7
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/8
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/9
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/10
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/11
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/12
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/13
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/14
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/15
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/16
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/17
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/18
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/19
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/20
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/21
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/22
Green	Violet	Ring 23		23	

Table 19. Band Marked Color Code for Telco Connector A (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Brown	Tip 24	Pair 24	49	Port 0/23
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector B. FXS ports 0/24–0/47 (see figure 30 on page 67 and table 20).

Table 20. Band Marked Color Code for Telco Connector B (96-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/24
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/25
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/26
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/27
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/28
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/29
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/30
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/31
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/32
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/33
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/34
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/35
Orange	Black	Ring 12		12	

Table 20. Band Marked Color Code for Telco Connector B (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Black	Green	Tip 13	Pair 13	38	Port 0/36
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/37
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/38
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/39
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/40
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/41
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/42
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/43
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/44
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/45
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/46
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/47
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector C. FXS ports 0/48–0/71 (see figure 30 on page 67 and table 21).

Table 21. Band Marked Color Code for Telco Connector C (96-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/48
Blue	White	Ring 1		1	

Table 21. Band Marked Color Code for Telco Connector C (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Orange	Tip 2	Pair 2	27	Port 0/49
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/50
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/51
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/52
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/53
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/54
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/55
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/56
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/57
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/58
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/59
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/60
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/61
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/62
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/63
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/64
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/65
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/66
Brown	Yellow	Ring 19		19	

Table 21. Band Marked Color Code for Telco Connector C (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Yellow	Slate	Tip 20	Pair 20	45	Port 0/67
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/68
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/69
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/70
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/71
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector D. FXS ports 0/72–0/95 (see figure 30 on page 67 and table 22).

Table 22. Band Marked Color Code for Telco Connector D (96-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/72
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/73
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/74
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/75
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/76
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/77
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/78
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/79
Green	Red	Ring 8		8	

Table 22. Band Marked Color Code for Telco Connector D (96-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Brown	Tip 9	Pair 9	34	Port 0/80
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/81
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/82
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/83
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/84
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/85
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/86
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/87
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/88
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/89
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/90
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/91
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/92
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/93
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/94
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/95
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Telco 50-pin pin-outs for 72-Port Model

Connector A. FXS ports 0/0–0/23 (see figure 30 on page 67 and table 23).

Table 23. Band Marked Color Code for Telco Connector A (72-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/0
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/1
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/2
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/3
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/4
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/5
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/6
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/7
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/8
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/9
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/10
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/11
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/12
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/13
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/14
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/15
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/16
Orange	Yellow	Ring 17		17	

Table 23. Band Marked Color Code for Telco Connector A (72-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Yellow	Green	Tip 18	Pair 18	43	Port 0/17
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/18
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/19
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/20
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/21
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/22
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/23
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector B. FXS ports 0/24–0/47 (see figure 30 on page 67 and table 24).

Table 24. Band Marked Color Code for Telco Connector B (72-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/24
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/25
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/26
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/27
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/28
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/29
Blue	Red	Ring 6		6	

Table 24. Band Marked Color Code for Telco Connector B (72-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Orange	Tip 7	Pair 7	32	Port 0/30
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/31
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/32
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/33
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/34
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/35
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/36
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/37
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/38
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/39
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/40
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/41
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/42
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/43
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/44
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/45
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/46
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/47
Brown	Violet	Ring 24		24	

Table 24. Band Marked Color Code for Telco Connector B (72-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector C. FXS ports 0/48–0/71 (see figure 30 on page 67 and table 25).

Table 25. Band Marked Color Code for Telco Connector C (72-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/48
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/49
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/50
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/51
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/52
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/53
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/54
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/55
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/56
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/57
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/58
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/59
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/60
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/61
Brown	Black	Ring 14		14	

Table 25. Band Marked Color Code for Telco Connector C (72-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Black	Slate	Tip 15	Pair 15	40	Port 0/62
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/63
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/64
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/65
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/66
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/67
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/68
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/69
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/70
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/71
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Telco 50-pin pin-outs for 64-Port Model

Connector A. FXS ports 0/0–0/23 (see figure 30 on page 67 and table 26).

Table 26. Band Marked Color Code for Telco Connector A (64-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/0
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/1
Orange	White	Ring 2		2	

Table 26. Band Marked Color Code for Telco Connector A (64-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Green	Tip 3	Pair 3	28	Port 0/2
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/3
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/4
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/5
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/6
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/7
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/8
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/9
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/10
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/11
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/12
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/13
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/14
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/15
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/16
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/17
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/18
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/19
Slate	Yellow	Ring 20		20	

Table 26. Band Marked Color Code for Telco Connector A (64-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Blue	Tip 21	Pair 21	46	Port 0/20
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/21
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/22
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/23
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25 (Not Used)	50	
Slate	Violet	Not Used		25	

Connector B. FXS ports 0/24–0/47 (see figure 30 on page 67 and table 27).

Table 27. Band Marked Color Code for Telco Connector B (64-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/24
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/25
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/26
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/27
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/28
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/29
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/30
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/31
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/32
Brown	Red	Ring 9		9	

Table 27. Band Marked Color Code for Telco Connector B (64-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Slate	Tip 10	Pair 10	35	Port 0/33
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/34
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/35
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/36
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/37
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/38
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/39
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/40
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/41
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/42
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/43
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/44
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/45
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/46
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/47
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector C. FXS ports 0/48–0/71 (see figure 30 on page 67 and table 28).

Table 28. Band Marked Color Code for Telco Connector C (64-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/48
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/49
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/50
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/51
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/52
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/53
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/54
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/55
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/56
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/57
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/58
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/59
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/60
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/61
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/62
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/63
Blue	Yellow	Ring 16		16	

Telco 50-pin pin-outs for 48-Port Model

Connector A. FXS ports 0/0–0/23 (see figure 30 on page 67 and table 29).

Table 29. Band Marked Color Code for Telco Connector A (48-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/0
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/1
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/2
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/3
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/4
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/5
Blue	Red	Ring 6		6	
Red	Orange	Tip 7	Pair 7	32	Port 0/6
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/7
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/8
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/9
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/10
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/11
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/12
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/13
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/14
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/15
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/16
Orange	Yellow	Ring 17		17	

Table 29. Band Marked Color Code for Telco Connector A (48-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Yellow	Green	Tip 18	Pair 18	43	Port 0/17
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/18
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/19
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/20
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/21
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/22
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/23
Brown	Violet	Ring 24		24	
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Connector B. FXS ports 0/24–0/47 (see figure 30 on page 67 and table 30).

Table 30. Band Marked Color Code for Telco Connector B (48-port)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
White	Blue	Tip 1	Pair 1	26	Port 0/24
Blue	White	Ring 1		1	
White	Orange	Tip 2	Pair 2	27	Port 0/25
Orange	White	Ring 2		2	
White	Green	Tip 3	Pair 3	28	Port 0/26
Green	White	Ring 3		3	
White	Brown	Tip 4	Pair 4	29	Port 0/27
Brown	White	Ring 4		4	
White	Slate	Tip 5	Pair 5	30	Port 0/28
Slate	White	Ring 5		5	
Red	Blue	Tip 6	Pair 6	31	Port 0/29
Blue	Red	Ring 6		6	

Table 30. Band Marked Color Code for Telco Connector B (48-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Red	Orange	Tip 7	Pair 7	32	Port 0/30
Orange	Red	Ring 7		7	
Red	Green	Tip 8	Pair 8	33	Port 0/31
Green	Red	Ring 8		8	
Red	Brown	Tip 9	Pair 9	34	Port 0/32
Brown	Red	Ring 9		9	
Red	Slate	Tip 10	Pair 10	35	Port 0/33
Slate	Red	Ring 10		10	
Black	Blue	Tip 11	Pair 11	36	Port 0/34
Blue	Black	Ring 11		11	
Black	Orange	Tip 12	Pair 12	37	Port 0/35
Orange	Black	Ring 12		12	
Black	Green	Tip 13	Pair 13	38	Port 0/36
Green	Black	Ring 13		13	
Black	Brown	Tip 14	Pair 14	39	Port 0/37
Brown	Black	Ring 14		14	
Black	Slate	Tip 15	Pair 15	40	Port 0/38
Slate	Black	Ring 15		15	
Yellow	Blue	Tip 16	Pair 16	41	Port 0/39
Blue	Yellow	Ring 16		16	
Yellow	Orange	Tip 17	Pair 17	42	Port 0/40
Orange	Yellow	Ring 17		17	
Yellow	Green	Tip 18	Pair 18	43	Port 0/41
Green	Yellow	Ring 18		18	
Yellow	Brown	Tip 19	Pair 19	44	Port 0/42
Brown	Yellow	Ring 19		19	
Yellow	Slate	Tip 20	Pair 20	45	Port 0/43
Slate	Yellow	Ring 20		20	
Violet	Blue	Tip 21	Pair 21	46	Port 0/44
Blue	Violet	Ring 21		21	
Violet	Orange	Tip 22	Pair 22	47	Port 0/45
Orange	Violet	Ring 22		22	
Violet	Green	Tip 23	Pair 23	48	Port 0/46
Green	Violet	Ring 23		23	
Violet	Brown	Tip 24	Pair 24	49	Port 0/47
Brown	Violet	Ring 24		24	

Table 30. Band Marked Color Code for Telco Connector B (48-port) (Continued)

Wire/Color Code		Tip and Ring	Pair Number	50 Pin Positions	SmartNode Config-Port
Main Color	Stripe				
Violet	Slate	Not Used	Pair 25	50	
Slate	Violet	Not Used	(Not Used)	25	

Appendix E SmartNode 4740 Series Factory Configuration

Chapter contents

Introduction

The factory configuration settings for SmartNode 4740 Series can be obtained with the following command through the CLI;

```
login: admin
password: <Enter>
192.168.1.1>show config:shipping-config
```

Refer to Chapter 4, "Initial Configuration" on page 46 for more details about IP address settings for initial configuration.

Appendix F **Reset Button Functions**

Chapter contents

Introduction

The *RESET* button (see figure 31 for the SN4141E) is used to do the following:

- Reboot the SmartNode device (see section "Resetting the SmartNode device when it is operating and a POWER LED is lit" on page 100)
- Erase the *startup-config* settings, which is followed by a SmartNode device reboot as indicated by the slow blinking of all LEDs (see section "Resetting the SmartNode device when it is operating and a POWER LED is lit" on page 100)
- Factory reset, which is followed by a device reboot as indicated by the fast blinking of the power LEDs (see section "Resetting the SmartNode device when it is operating and a POWER LED is lit" on page 100)

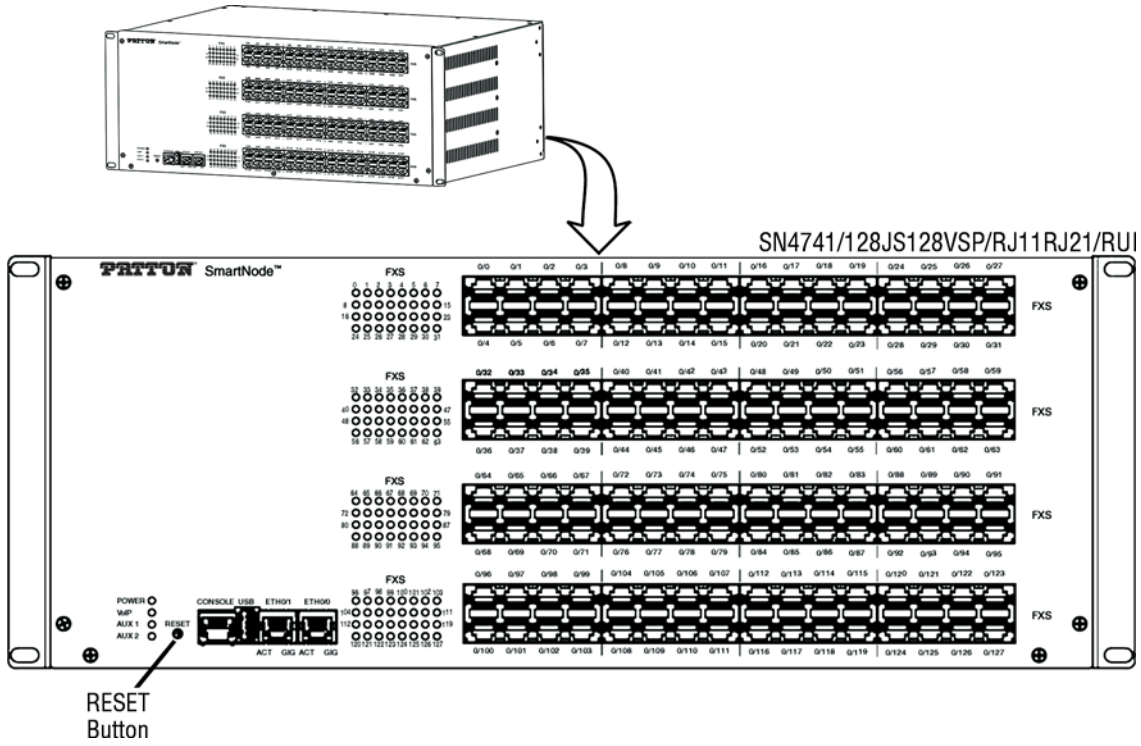


Figure 31. SN740 *RESET* button

Resetting the SmartNode device when it is operating and a *POWER* LED is lit

The *RESET* button has the following behaviors depending on how many seconds (see figure 32) the button is pressed (see table 31 on page 101 for the results from pressing the button).

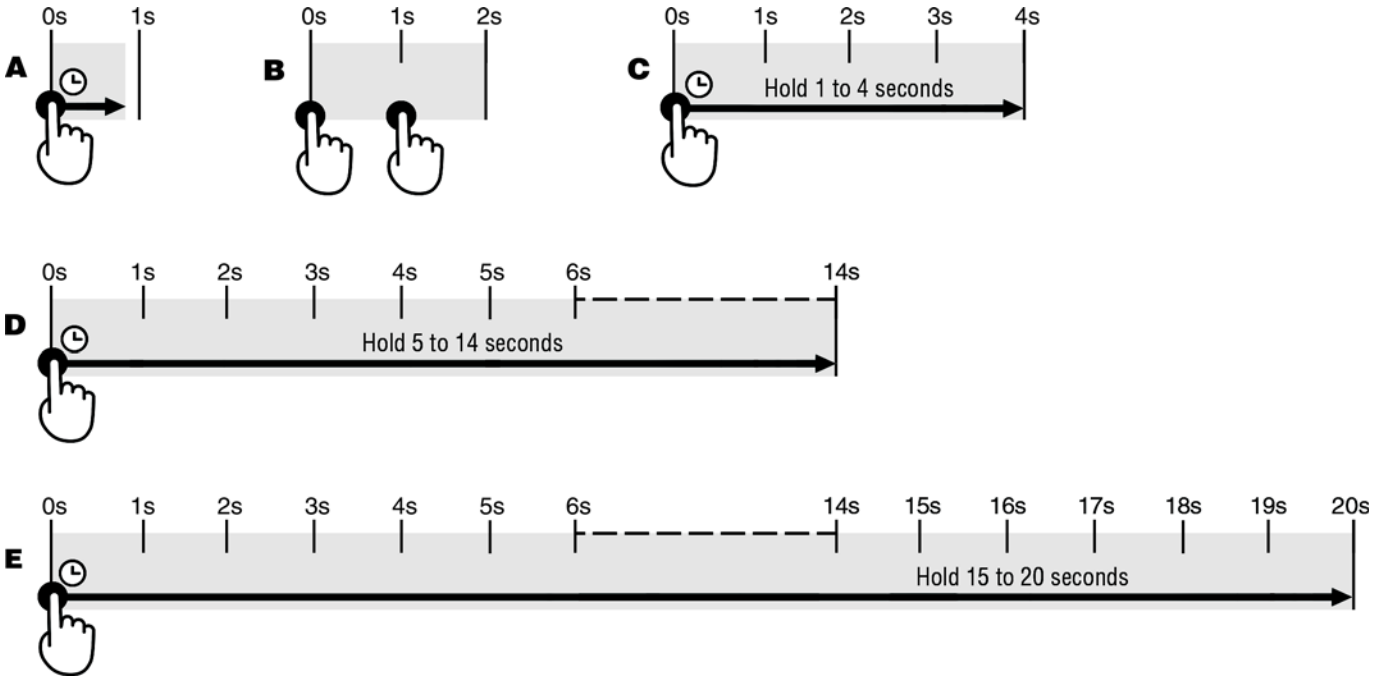


Figure 32. RESET button periods (in seconds) for performing actions

Table 31. Results from pressing the RESET button

Period	Action
A (less than 1 second)	Reboot device
B (press twice with 1-second gap between presses)	Patton Cloud On-boarding procedure. Do the following: 1. Log into Patton Cloud at https://patton.io. 2. Click on *Devices*. 3. Click on *Register Device(s)* to register the SmartNode device.
C (1 to 4 seconds)	No action
D (5 to 14 seconds)	• Erase *startup-config* • Reboot (indicated by the slow blinking of all LEDs
E (15 to 20 seconds)	• Factory reset which erases entire flash memory except for *shipping-config*, shipping wizards, default root CAs and software licenses • Reboot (indicated by fast blinking of all LEDs)

Very exceptional case—minimal config recovery

If, after performing the procedure in section "Resetting the SmartNode device when it is operating and a POWER LED is lit" on page 100, the SmartNode device is still not operational, the following may remedy the problem by erasing the entire contents of flash memory (no exceptions).

However it is recommended that in such a case the device be sent to Patton for analysis and repair. See section "Warranty Service and Returned Merchandise Authorizations (RMAs)" on page 53 for details.

The following procedure is NOT standard and is NOT to be used to perform a factory reset. It should ONLY be used as a last resort for a minimal recovery of the device when it is in an undefined state, and if the instructions in section "Resetting the SmartNode device when it is operating and a POWER LED is lit" on page 100 did not provide a remedy.

Performing the following procedure will result in loss of all data, including the *shipping-config*, software licenses, Wizards, *backup-configs*, etc. The device will have to be manually set up afterward.

Do the following:

1. While pressing and holding the *RESET* button, apply power to the SmartNode device. The *POWER* LED flashes quickly for 2 seconds, during which time the *RESET* button must remain pressed.

2. The *POWER* LED will begin a series of blink pattern starting with 1-blink, pause.

Table 32. Using the *RESET button* to switch to a backup image

LED Blink Pattern	Action
1-blink, pause	Boot normally
2-blinks, pause	Switch to backup image, then Boot normally
3-blinks, pause	Erase entire contents of flash memory (no exceptions), then boot. **Note** Erasing flash memory also deletes previously purchased and loaded software license keys.

3. Repeatedly pressing and releasing the *RESET* button will cycle through the blink patterns.
4. When you get to the 3-blink pattern that will erase the entire flash memory (see table 32), release the *RESET* button. 10 seconds later, flash memory will be erased, then the device will boot.
5. Once booted up, the device will run using the “minimal-config”:

```
#-----------------------------------------------------------------#
#                                                                 #
# Minimal configuration file                                      #
#                                                                 #
#-----------------------------------------------------------------#

cli version 4.00

telnet-server
  shutdown

ssh-server
  no shutdown

web-server http
  shutdown

web-server https
  shutdown

context ip ROUTER

  interface LAN
    ipaddress LAN 192.168.200.10/24
    ipaddress DHCP dhcp

port ethernet 0 0
  bind interface ROUTER LAN
  no shutdown
```

Appendix G End User License Agreement

Chapter contents

End User License Agreement

By opening this package, operating the Designated Equipment or downloading the Program(s) electronically, the End User agrees to the following conditions:

1. Definitions

A) "Effective Date" shall mean the earliest date of purchase or download of a product containing the Patton Electronics Company Program(s) or the Program(s) themselves.

B) "Program(s)" shall mean all software, software documentation, source code, object code, or executable code.

C) "End User" shall mean the person or organization which has valid title to the Designated Equipment.

D) "Designated Equipment" shall mean the hardware on which the Program(s) have been designed and provided to operate by the End User.

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The term of this Agreement is from the Effective Date until title of the Designated Equipment is transferred by End User or unless the license is terminated earlier as defined in section "6. Termination" on page 105.

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D) Should End User transfer title of the Designated Equipment to a third party after entering into this license agreement, End User is obligated to inform the third party in writing that a separate End User License Agreement from Patton Electronics Company is required to operate the Designated Equipment.

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A) The End User may terminate this agreement by returning the Designated Equipment and destroying all copies of the licensed Program(s).

B) Patton Electronics Company may terminate this Agreement should End User violate any of the provisions of section "4. Grant of License" on page 104.

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Patton devices may log, collect and report data related to installed software, licenses, feature utilization, product performance, device management, service quality and other parameters which is used for quality control, product improvement, license management, service level management and technical support. Collected data may be reported to Patton or a service provider delivering its services connected to the device.

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