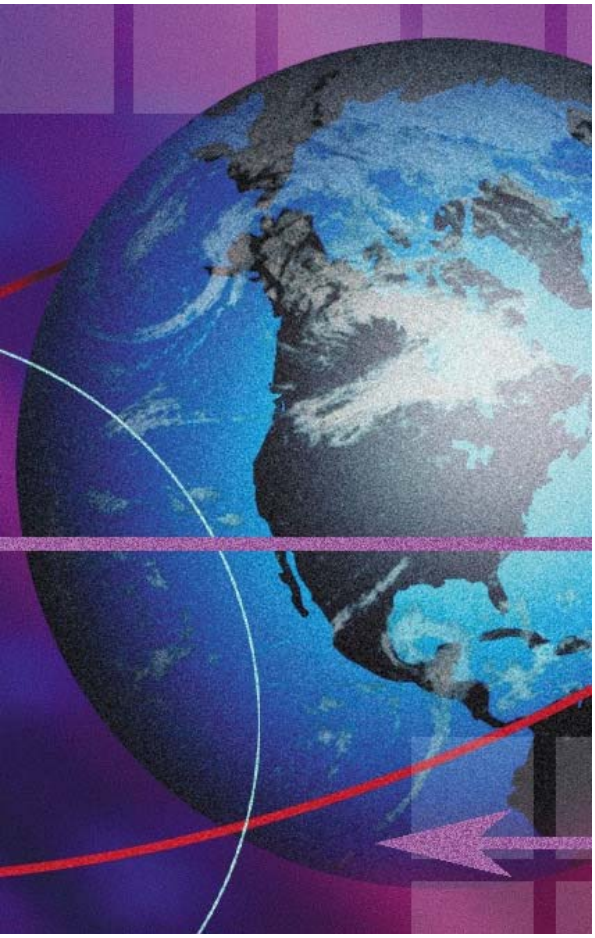

Nextiva Multiport S17XXe Series User Guide

August 2006 Firmware Release 4.60

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Nextiva Multiport S17XXe Series

Covering the S1704e-AS, S1708e, S1708e-AS, S1712e, and S1724e

Firmware Release 4.60

User Guide

Verint Video Solutions **Publication Revision: A**

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Contents

Preface

The *Nextiva Multiport S17XXe Series User Guide* presents the information and procedures on installing, configuring, and using the Nextiva™ S1704e-AS, S1708e, S1708e-AS, S1712e, and S1724e edge devices.

Who Should Read this Guide

This guide is intended for managers, IT system administrators, engineers, and technicians who will use the multiport S17XXe series edge devices. It provides conceptual information on how to configure, install, and operate the devices.

This guide assumes that you are familiar with:

- Installation and manipulation of electronic equipment
- General use of computers
- Local area networks (LANs) and basic IP data communication concepts and practices
- Pan-tilt-zoom (PTZ) platforms (cameras and keyboards)
- Microsoft Windows operating systems

How to Use this Guide

This guide contains all the information needed to install, configure, and use a multiport S17XXe series device.

Contents

The *Nextiva Multiport S17XXe Series User Guide* is divided into the following chapters:

1. **Overview**—Provides a brief description of the features of the S17XXe series devices and illustrations of their casings.
2. **Configuring and Installing the Device**—Presents the configuration and installation procedures for the S17XXe series devices.

The guide also includes the following appendixes:

A. **Factory Default Configuration**—Lists the default parameter values of the S17XXe series devices.

B. **DTE and DCE Connections**—Explains how to differentiate and connect data terminal equipment (DTE) and data communication equipment (DCE).

C. **DHCP Support and APIPA**—Explains how the DHCP server and the Microsoft APIPA addressing scheme work.

D. **CLI Access**—Explains how to access the command line interface (CLI) of the device.

E. **RJ-45 Ethernet Cables**—Presents the pinouts of the straight-through and crossover Ethernet cables.

F. **Audio Pinouts**—Presents the pinouts for audio input/output.

G. **Technical Specifications**—Lists the complete technical specifications of the S17XXe series devices.

A glossary, an index, and compliance information complete the guide.

Conventions

The following typographic conventions are used throughout this guide:

Visual cue	Meaning
Connect	The name of an interface element you have to act on. A key to press. The value of an interface element.
connection_name	Text that must be replaced by a user-supplied value. Text representing variable content.
`S17XXe.vf`	The name of a command, file, or directory. Text that appears on the screen. Examples of user-supplied values.

Related Documentation

In addition to this guide, the following documentation is also available:

- *Nextiva Multiport S17XXe Series Installation Guide*
- *SConfigurator User Guide*
- *Release Notes*

All these documents are contained on the *Utilities* CD shipped with the device. Furthermore, a paper copy of the installation guide is included with your order.

Related Verint Video Solutions Products

You may use the S17XXe series with the nDVR™ and Nextiva enterprise video management solutions. For more details, visit our web site. For pricing information, call your dealer.

About Us

Verint® Systems (NASDAQ: VRNT) is a leading global provider of video security, surveillance and business intelligence solutions. Verint Video Solutions transform digital video into actionable intelligence: timely, mission-critical insights for faster, more effective decisions.

Today, more than 1000 companies in 50 countries use Verint solutions to enhance security, boost operational efficiency, and fuel profitability.

Web Site

For information about the Nextiva line of products, visit www.verint.com/videosolutions.

To download data sheets and user documentation, use the following link: www.verint.com/smartsight/support.

To request the latest versions of firmware and software or to download other product-related documents, you need access to the Verint Video Solutions partner extranet. To register, go to http://vvs.verint.com.

Support

If you encounter any type of problem after reading this guide, contact your local distributor or Verint Video Solutions representative. You can also use the following sections on the Verint Video Solutions partner extranet to find the answers to your questions:

- Open a Support Ticket
- FAQ
- My Account

For assistance with the Nextiva edge devices and the related software, contact the Verint Video Solutions customer service team:

- By phone: 1 888 494-7337 option 1 (North America) or +1 450 686-9000 option 1, Monday to Friday, from 8:30 to 17:30 EST
- By fax: +1 450 686-0198

Warranty

Each product manufactured by Verint Systems is warranted to meet all published specifications and to be free from defects in material and workmanship for a period of three (3) years from date of delivery as evidenced by the Verint Systems packing slip or other transportation receipt. Products showing damage by misuse or abnormal conditions of operation, or which have been modified by Buyer or repaired or altered outside Verint Systems factory without a specific authorization from Verint Systems shall be excluded from this warranty. Verint Systems shall in no event be responsible for incidental or consequential damages including without limitation, personal injury or property damage.

The warranty becomes void if the product is altered in any way.

Verint Systems responsibility under this warranty shall be to repair or replace, at its option, defective work or returned parts with transportation charges to Verint Systems factory paid by Buyer and return paid by Verint Systems. If Verint Systems determines that the Product is not defective within the terms of the warranty, Buyer shall pay all handling and transportation costs. Verint Systems may, at its option, elect to correct any warranty defects by sending its supervisory or technical representative, at its expense, to customer’s plant or location.

Since Verint Systems has no control over conditions of use, no warranty is made or implied as to suitability for customer’s intended use. There are no warranties, expressed or implied, except as stated herein. This limitation on warranties shall not be modified by verbal representations.

Equipment shipped ex works Verint Systems factory shall become the property of Buyer, upon transfer to the common carrier. Buyer shall communicate directly with the carrier by immediately requesting carrier’s inspection upon evidence of damage in shipment.

Buyer must obtain a return materials authorization (RMA) number and shipping instructions from Verint Systems prior to returning any product under warranty. Do not return any Verint Systems product to the factory until RMA and shipping instructions are received.

1

Overview

The multiport S17XXe series edge devices are designed for a variety of video monitoring and surveillance applications in which a high concentration of cameras terminates within the same area. Two compression modes are available to deliver video over 10/100Base-T networks: a proprietary MPEG-4-based mode and the MPEG-4 ISO 14496-2 compliant mode. The S17XXe series can be extended over local and wide area networks (LANs and WANs) or the Internet using ISDN, PSTN, or xDSL routers. It is built on open standards to provide long-term investment protection.

These edge devices are for indoor use only.

About the Multiport S17XXe Series

The S17XXe series contains several devices covering different video input and functionality needs.

Each device is configured to interface, right out of the box, with the most popular camera data port configuration (4800 baud, 8 data bits, no parity, 1 stop bit).

Physical Characteristics

All S17XXe series devices are transmitters (*-T*). Here is an overview of their features:

Device	Video inputs	Onboard analytics	Data I/O	Audio I/O
S1704e-AS	4	✓	12 input dry contacts and 2 relay outputs	1 input/1 output
S1708e	8		12 input dry contacts and 2 relay outputs	1 input/1 output or 12 inputs
S1708e-AS	8	✓	12 input dry contacts and 2 relay outputs	1 input/1 output or 12 inputs
S1712e	12		12 input dry contacts and 2 relay outputs	1 input/1 output or 12 inputs
S1724e	24		12 input dry contacts and 2 relay outputs	1 input/1 output

The video analytics capabilities of the S1704e-AS and S1708e-AS can be used inside a Nextiva IntelliView solution. In the IntelliView Analytics Rule Builder, the S1704e-AS supports a maximum of six views, and the S1708e-AS, of four views; both devices support a maximum of five active rules. For more information, refer to the documentation set of the Nextiva enterprise video management platform.

Unless otherwise specified, the word *S17XXe* refers to any of these devices.

All devices have two independent serial ports (for RS-232 and RS-422/485 protocols) and a reset button.

You power the S17XXe transmitters with 12V DC.

Security

Every edge device comes with a unique SSL (Secure Sockets Layer) certificate for securing its IP link. SSL is a commonly used protocol for managing the security of IP message transmission. Therefore, the connections with another device, the SConfigurator tool, or a video management software can be secured.

If enabled, the SSL protocol secures the following data: I/O, serial port, and VSIP (a proprietary protocol) communication. It does not apply to audio and video transmission.

Once a device is in secure mode, you cannot access it anymore with Telnet and you cannot perform firmware updates through the IP network on it. However, you can configure it with SConfigurator.

For more information about this security feature, refer to the *SConfigurator User Guide*.

Video

The S1704e-AS, S1708e, and S1708e-AS devices provide DVD-quality video resolution, whereas the S1712e and S1724e transmitters offer a cost effective, high port count solution.

On the S1704e-AS, S1708e, S1708e-AS, and S1712e devices, the video stream for each input is sent to two encoders; on the S1724e, it is sent to a single encoder.

The video frame rate of the edge device can be:

- NTSC—1 to 7, 10, 15, or 30 frames per second (fps)
- PAL—1 to 6, 8, 12, or 25 fps

All transmitters in the S17XXe series can have the following video resolutions:

Resolution	Number of columns NTSC/PAL	Number of lines NTSC	PAL
CIF	352	240	288
2CIFH	704	240	288
4CIF	704	480	576
All lines	352	480	576
2/3 D1	480	480	576
VGA	640	480	576

The maximum frame rates (in frames per second) for the proprietary MPEG-4-based compression mode are, using the *NTSC (PAL)* format:

Resolution	MPEG-4-based mode				
	S1704e-AS	S1708e	S1708e-AS	S1712e	S1724e
CIF	30 (25)	30 (25)	30 (25)	30 (25)	15 (12.5)
2CIFH	30 (25)	30 (25)	30 (25)	30 (25)	7.5 (6.25)
4CIF	30 (25)	30 (25)	30 (25)	15 (12.5)	3.75 (3.125)
All lines	30 (25)	30 (25)	30 (25)	30 (25)	7.5 (6.25)
2/3 D1	30 (25)	30 (25)	30 (25)	15 (12.5)	7.5 (6.25)
VGA	30 (25)	30 (25)	30 (25)	15 (12.5)	3.75 (3.125)

The maximum frame rates (in frames per second) for the MPEG-4 ISO 14496-2 compliant compression mode are, using the *NTSC (PAL)* format:

Resolution	MPEG-4 ISO 14496-2 compliant mode				
	S1704e-AS	S1708e	S1708e-AS	S1712e	S1724e
CIF	30 (25)	30 (25)	30 (25)	30 (25)	30 (25)
2CIFH	30 (25)	30 (25)	30 (25)	30 (25)	7.5 (6.25)
4CIF	30 (25)	30 (25)	30 (25)	15 (12.5)	3.75 (3.125)
All lines	30 (25)	30 (25)	30 (25)	15 (12.5)	7.5 (6.25)
2/3 D1	30 (25)	30 (25)	30 (25)	15 (12.5)	7.5 (6.25)
VGA	30 (25)	30 (25)	30 (25)	15 (12.5)	7.5 (6.25)

For more information about these video parameters, refer to the *SConfigurator User Guide*.

Shipment

Your S17XXe shipment contains the following items:

- The requested transmitter device
- Rack mount brackets
- The *Utilities* CD containing the release notes and documentation for the device as well as the SConfigurator application
- The *Nextiva Multiport S17XXe Series Installation Guide*

The shipment may also contain the following options:

- A 19-inch power distribution panel rack mount supporting up to 10 devices (*PDP10*)
- A 12V DC power supply for a single device (*PS1260*)
- A high-capacity 12V DC power supply to be used with the *PDP10* (*PS1280*)

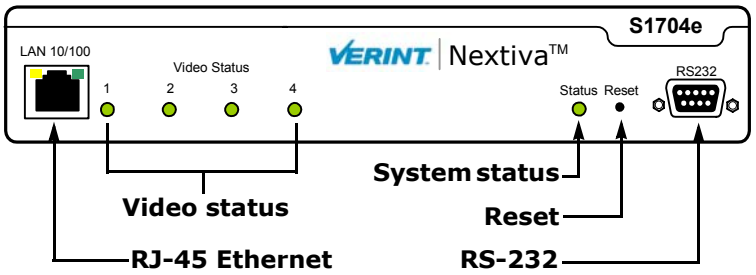
Casing Description

The S17XXe electronics are enclosed in a non-weatherproof steel casing that is not meant for outdoor use. The front and back panels vary depending on the device.

S1704e-AS

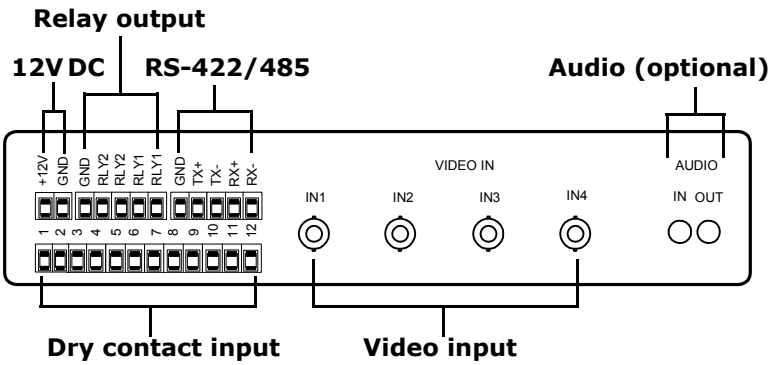
The front panel consists of:

- An RJ-45 jack
- Four video status LEDs
- A system status LED
- A reset button
- A DB-9 connector for the RS-232 serial port



The back panel consists of:

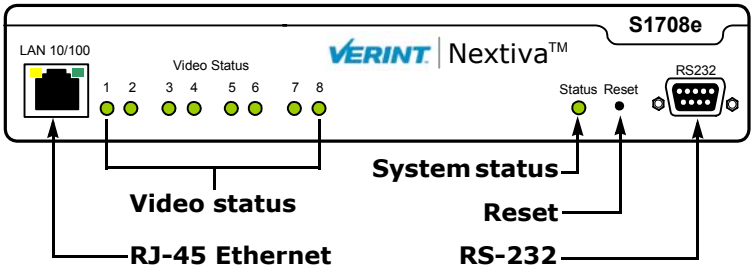
- A 12-pole connector for input power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Four BNC connectors for video input
- An optional set of 1/8 inch (3.5 mm) I/O audio connectors



S1708e and S1708e-AS

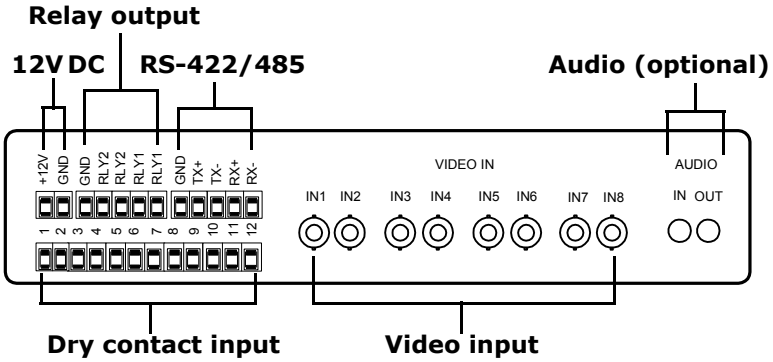
The front panel consists of:

- An RJ-45 jack
- Eight video status LEDs
- A system status LED
- A reset button
- A DB-9 connector for the RS-232 serial port



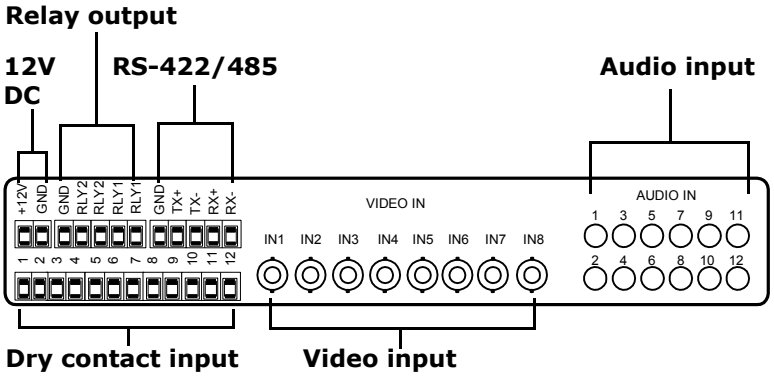
Two versions of the back panels exist, since the device can have 1 or 12 audio inputs. The back panel of the single-audio-input version consists of:

- A 12-pole connector for input power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Eight BNC connectors for video input
- An optional set of 1/8 inch (3.5 mm) I/O audio connectors



The back panel of the 12-audio-input version consists of:

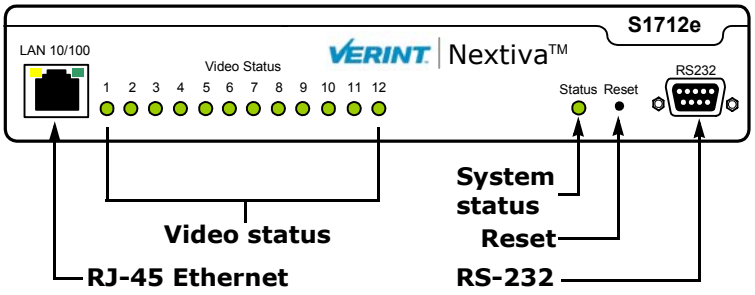
- A 12-pole connector for input power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Eight BNC connectors for video input
- Twelve 1/8 inch (3.5 mm) audio input connectors



S1712e

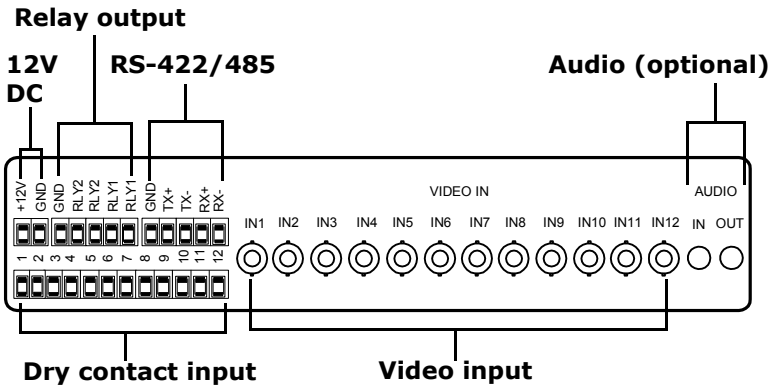
The front panel consists of:

- An RJ-45 jack for Ethernet connection
- Twelve video status LEDs
- A system status LED
- A reset button
- A DB-9 connector for the RS-232 serial port



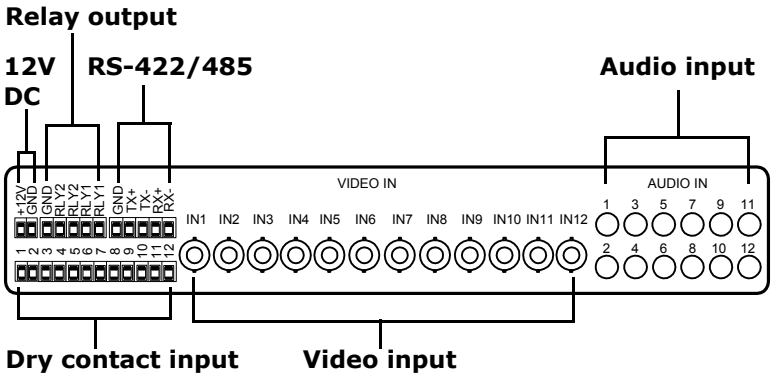
Two versions of the back panels exist, since the device can have 1 or 12 audio inputs. The back panel of the single-audio-input version consists of:

- A 12-pole connector for power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twelve BNC connectors for video input
- An optional set of 1/8 inch (3.5 mm) I/O audio connectors



The back panel of the 12-audio-input version consists of:

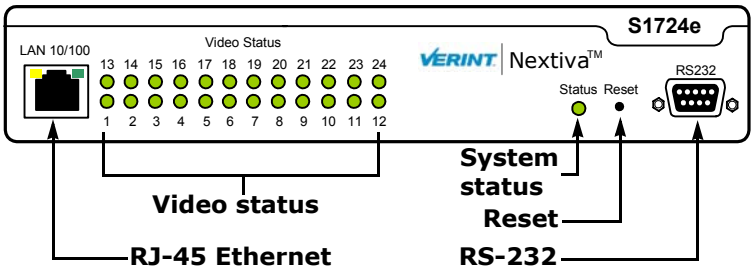
- A 12-pole connector for input power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twelve BNC connectors for video input
- Twelve 1/8 inch (3.5 mm) audio input connectors



S1724e

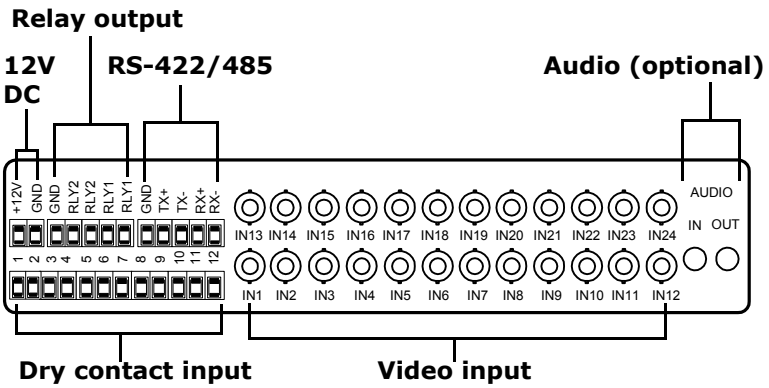
The front panel consists of:

- An RJ-45 jack
- Twenty-four video status LEDs
- A system status LED
- A reset button
- A DB-9 connector for the RS-232 serial port



The back panel consists of:

- A 12-pole connector for input power, relay outputs, and RS-422/485 serial port
- A 12-pole connector for dry contact inputs
- Twenty-four BNC connectors for video input
- An optional set of 1/8 inch (3.5 mm) I/O audio connectors



2

Configuring and Installing the Device

The steps required to prepare your S17XXe device for operation are:

- Basic configuration
- Physical installation in its final location
- Connection to the serial ports
- Alarm and audio configuration

Remember that your device is an indoor product that should not be used in an outdoor environment.

Configuring the Device

To configure the device, you need the proprietary SConfigurator tool. It is included on the *Utilities* CD shipped with your device; you can also find its latest version on the Verint Video Solutions extranet (Technical Support, then Downloads, then Firmware Upgrades). You need to copy its executable file to the hard disk of your computer.

Computer Requirements

The minimum hardware and software requirements for the host computer needed to configure the edge device are:

- An Ethernet network card
- A serial port (not through a USB converter)
- Windows 2000 Service Pack 2 or higher, or Windows XP Service Pack 2

Setting Device Parameters

The first step in installing an S17XXe device is to change its IP address to ensure compatibility with an existing network. The default IP addresses of all devices are based on the APIPA addressing scheme and will be in the range 169.254.*X*.*Y*, where *X* and *Y* are relative to the MAC address of the individual device; for more information about APIPA, see page 27.

To work properly, devices on the same network must have unique IP addresses. The device will not prevent you from entering a duplicate address. However, its system status LED will turn to flashing red; then the device will use an APIPA address.

To set the parameters of a device:

1. In a lab, unpack the device and place it on a table.
2. Establish the Ethernet connection by plugging a cable (straight-through or crossover) into the LAN 10/100 connector on the front of the device.

   The crossover cable is to directly connect the device to a computer; the straight-through cable is to integrate the S17XXe on a network. For their detailed pinouts, see page 33.
3. Power the device.

   If you are using the Nextiva PS1260 power supply:

   a. Plug the dashed power supply wire in the Gnd pole on the back of the device.

   b. Plug the other power wire in the +12V pole on the back of the device.

   c. Connect the electric plug into the outlet.

   If you are using the Nextiva PS1280 power supply:

   - For the procedure, refer to the *PS1280 Power Supply Kit* document on the Verint Video Solutions extranet (Technical Support, then Specifications, then Application Notes).

- Ensure that the right voltage is selected (check the 115V/230V red switch on the back of the power supply).

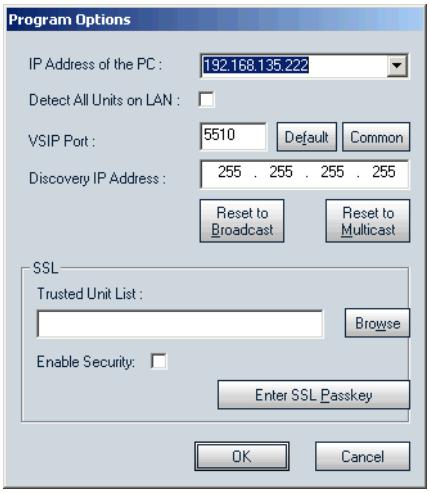
For any other power supply, refer to the manufacturer documentation for the proper wiring scheme.

4. Start SConfigurator.

   The SConfigurator window appears.

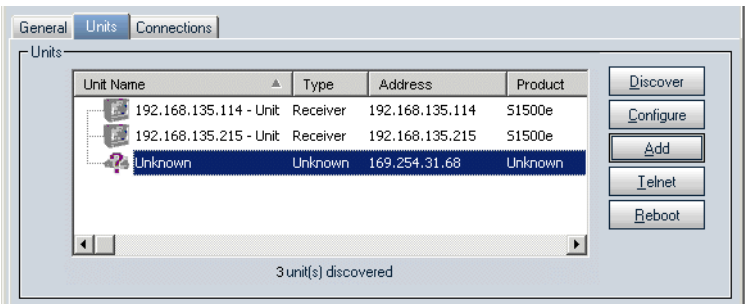
5. In the General tab, click **Program Options**.

   The Program Options window appears.



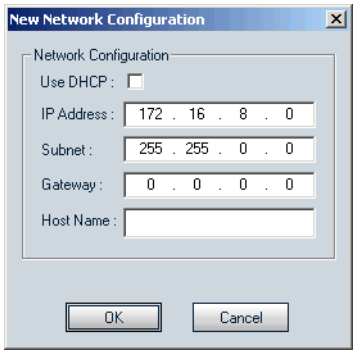
6. Check **Detect All Units on LAN**.
7. Ensure that the **VSIP Port** is 5510; otherwise, click **Default**.
8. Ensure that the **Discovery IP Address** is 255.255.255.255; otherwise, click **Reset to Broadcast**.
9. Click **OK**.
10. Select the **Units** tab, then click **Discover**.

    A device of type "Unknown" with a 169.254.*X*.*Y* IP address appears in the list; it corresponds to your new device.



11. Select the unknown device, then click **Configure**. In the Reconfigure unit? confirmation window, click **Yes**.

    The New Network Configuration window appears.



12. To use DHCP (Dynamic Host Configuration Protocol), check **Use DHCP**. Otherwise, enter the IP address, subnet mask, and gateway of the device, as provided by your network administrator.

    For more information about DHCP, see page 27.

13. Click **OK**.

    The device reboots with its new network configuration. It may take up to 30 seconds.

14. In the Units tab, click **Discover**.

    The new S17XXe device appears.

15. Select the device, then click **Configure**.

16. Configure the serial port parameters to match those of the target equipment (for instance, camera or PTZ keyboard).

    For more information, refer to the *SConfigurator User Guide*.

The S17XXe initial configuration is now complete. You perform further configuration with either SConfigurator or a video management software from Verint Video Solutions.

Using the Encoders

On the S1704e-AS, S1708e, S1708e-AS, and S1712e, the composite video signal of an input is sent to two separate encoders. You can have the following scenarios with regards to the encoder use:

Scenario	Encoder 1	Encoder 2
point-to-point	point-to-point	unused
video management software	view at rate A	record at rate B

Installing the Device

When your device is successfully configured, it is ready to be installed in its final location.

To install the device:

1. Plug the video cables of the cameras to the BNC connectors on the device.
2. Plug the network cable into the LAN 10/100 Ethernet connector on the device.
3. Power the device.
4. If required, connect the serial port of the transmitter to the cameras (for instructions, see next).

Performing Serial Connections

The Nextiva edge devices support only the RS-232, RS-422, and RS-485 asynchronous protocols. For any other protocol, you may need a converter.

The S17XXe device holds connectors for two serial ports: RS-232 and RS-422/485.

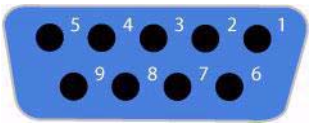
RS-232

Most target RS-232 devices with which the edge devices communicate are categorized DTE (data terminal equipment); for more information about DTE and DCE (data communication equipment), see Appendix B on page 23.

Use the following wiring scheme to plug a serial cable to the DB-9 connector on the front of the device:

DB-9 pin number	Cable signal name
2	RxD
3	TxD
5	Signal ground
7	RTS
8	CTS

The numbering of the pins on the DB-9 connector is:



RS-422/485

Most target devices (keyboards, PTZ cameras) use the RS-422/485 protocol for communication. Many scenarios are available to connect multiple cameras to a single, multi-input device.

To use the RS-422/485 functionality, you need to:

1. Connect a twisted pair cable to the top multipole connector on the back of the device. The connector gives access to the Tx+, Tx-, Rx+, Rx-, and ground signals.
2. Select the right operating mode (RS-422 4 wires, RS-485 2 wires, or RS-485 4 wires) using SConfigurator or a video management software.

To properly make the connection to a four-wire RS-422 or RS-485 serial device, use the following scheme (where the Tx connectors are for input and the Rx connectors are for output):

Peripheral connector	S17XXe connector
Tx+	Tx+
Tx-	Tx-
Rx+	Rx+
Rx-	Rx-
ground	ground

For a two-wire RS-485 connection with a Nextiva device:

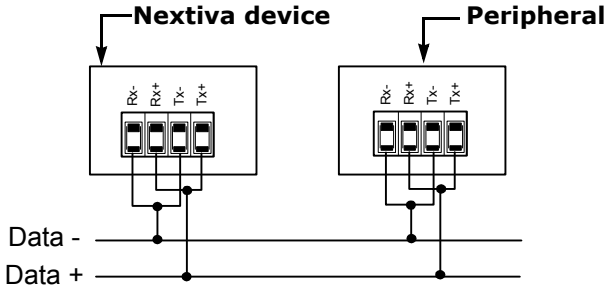
1. Create the Data- signal by shorting the Rx- and Tx- pins together.
2. Create the Data+ signal by shorting the Rx+ and Tx+ pins together.
3. Use the following wiring scheme:

Peripheral connector	S17XXe connector
Data+	Data+
Data-	Data-
ground	ground

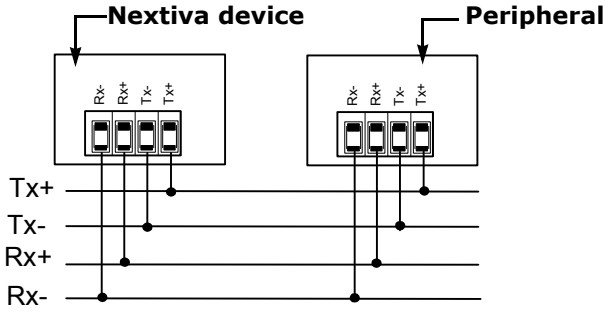
Multidrop Configurations

Two multidrop configurations are available, for two or four wires, only with the RS-485 protocol.

The two-wire configuration is:

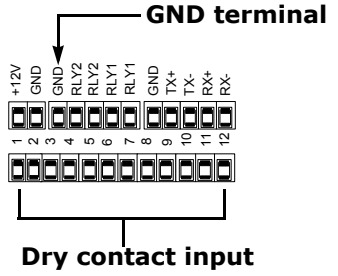


The four-wire configuration is:



Configuring the I/Os

The input/output features on the multipole connectors on the back of the device can be used for alarms and audio control. All transmitters in the S17XXe series includes 12 dry contact input and 2 relay output terminals. Since a GND terminal is required to do a dry contact input wiring, use the one in the relay output section.



You perform audio and alarm configuration in a video management software. Audio is bidirectional on the transmitters with one audio input, and unidirectional on the devices with 12 audio inputs. Appendix F on page 35 presents the pinouts for the 1/8-inch (3.5 mm) jacks used for audio.

On the devices with 12 audio inputs, you may have to manually set the bias for each input to make the plugged microphone work. Check in the microphone specifications for the required voltage.

Warning: It is strongly recommended to check the current bias for each audio input on which you connect a microphone. An incorrect bias value or bias state may damage your equipment.

To set the bias parameters on an audio input on a device with 12 audio inputs:

1. Open the command line interface (CLI) of the device.

   For the procedure, see Appendix D on page 29.

2. Open the **Advanced** menu, then the **Audio** menu, then the **Input *x*** menu.

3. If your microphone requires a bias:
   a. In the **Bias** parameter, enter the required voltage.
   b. Set the bias state to **Enabled**.
4. If your microphone does not require a bias, set the bias state to **Disabled**.
5. Save the settings, then exit the CLI.

Updating the Firmware

You can update the firmware of the S17XXe devices with the SConfigurator utility or a video management software; for the detailed procedure, refer to the documentation of the software. The latest firmware files are available on the Verint Video Solutions extranet (Technical Support, then Downloads, then Firmware Upgrades).

Warning: Firmware downgrade is not supported on any device. If you perform a downgrade, any problem encountered will not be covered by your product warranty.

The only method to update the firmware is through an IP network connection. If this update procedure fails:

1. Restart the same procedure immediately.
2. If the problem persists, move the device so that it is in the same IP subnet as the host computer, then restart the procedure.

You should take into consideration the following facts regarding firmware update using the IP network:

- It can be deactivated in the command line interface (CLI).
- Ensure that the IP link is stable before starting the procedure; therefore it is not recommended to perform it over the Internet.

Performing a Hardware Reset

You can perform two types of hardware reset on the S17XXe device:

- A hard reset that will assign the factory default settings to the device (listed in Appendix A on page 21). All user-defined values will be lost. Following such a reset, you will need to reprogram the device (for instance, its IP address and VSIP port) for proper operation within its network.
- A soft reset during which the device will retain its configuration.

To perform a hard reset:

1. Press and hold the Reset button, until the system status LED flashes red very rapidly (it can take up to 10 seconds).
2. Hold the button for an additional five seconds, until the LED turns off.

The device is ready for use with the factory default settings.

To perform a soft reset:

- Press and hold the Reset button one second.

The device reboots, while retaining its configuration.

Red/Blue Display

If an S17XXe transmitter currently streaming video to a management software loses its connection to a camera, the corresponding display tile in the software will present a half red, half blue/black pattern. The video LED corresponding to this video input will flash red (0.2-second interval).

Quality of Service

Quality of Service (QoS) is a set of low-level networking protocols giving higher priority to more important data flows while ensuring that the less important ones do not fail. QoS is an essential technology for organizations rolling out a new generation of network applications such as real-time voice communications and high-quality video delivery.

In the Nextiva edge devices, the two available QoS flavors are Type of Service (ToS) and Differentiated Service Code Points (DSCP).

For QoS to be taken into account, the network infrastructure equipment (switches and routers) must support one of these protocols. If any of these devices does not support QoS, the QoS data will simply be processed as traditional non-QoS data. Furthermore, all Nextiva edge devices on a network must support the same QoS protocol (or no protocols at all).

You can set a priority flag to three data types coming out of an edge device: video, audio, and control. A QoS-enabled switch (or router) uses this flag to determine how the current data compares to what is currently going through it.

To set the QoS values, you need to go in the command line interface (CLI) of the device, access the Advanced > Quality of Service menu. For the procedure to access the CLI, see page 29.

Status LEDs

The multiport S17XXe series devices have one system status LED and between 4 and 24 video status LEDs. All these LEDs are bicolor (red-green).

System Status LED

The system status LED provides detailed information on the current state of the transmitter, excluding video.

Condition	Indication
Steady green for 12 sec.	The device is powering up.
Flashing red (1 sec. intervals)	The IP address of the device is already assigned to another device on the network.
Flashing green (3 sec. intervals)	The firmware has started, but the device is not connected to the network.
Flashing green (1 sec. intervals)	The firmware has started, the device is connected to the network, but no audio/serial* data is transmitted.
Flashing green (0.2 sec. intervals)	The firmware has started, the device is connected to the network, and audio/serial* data is transmitted.
Flashing green-red (1 sec. intervals)	The device is undergoing a firmware update.
Flashing red (0.1 sec. intervals)	The device is being identified.

* At least one of them must be transferred to obtain the LED condition.

The following power-up conditions on the system status LED are abnormal:

- LED not lit—Check the power supply and cabling. If power is available and the LED stays off, call Verint Video Solutions customer service for assistance.
- Steady red LED—There is an internal error that prevents the device from starting normally. Power down the device, wait 30 seconds, then power it up. If the condition persists, call Verint Video Solutions customer service.

Video Status LEDs

The video status LEDs have the following behavior:

Condition	Indication
Steady green	A video source is connected to the corresponding input but video is not transmitted.
Flashing green (0.2 sec. interval)	A video source is connected to the corresponding input and video is transmitted.
Flashing red (0.2 sec. interval)	No video source is detected but video is transmitted.
3 red blinks every 2 seconds	No video source is detected and no video is transmitted.

A

Factory Default Configuration

The multiport S17XXe series is programmed at the factory with the following configuration:

Type	Configuration
Serial port	■ Bit rate: 4800 bauds ■ Data bits: 8 ■ Parity: none ■ Stop bit: 1 ■ RS-422/485 operating mode: RS-422 4-wire
Access management	■ User accounts: Disabled ■ Telnet sessions: Enabled ■ IP firmware update: Enabled ■ Global security profile: Disabled ■ SSL passkey: <empty>
Network	■ DHCP configuration: Disabled ■ IP address: 169.254.*.* (last two bytes of the MAC address of the device) ■ Subnet mask: 255.255.0.0 ■ Gateway: 0.0.0.0
Video settings (North America)	■ Target frame rate: 30 fps ■ Target bit rate: 800 kbps ■ Resolution: CIF (352 x 240) ■ Maximum quantizer: 24 ■ Video standard: NTSC
Video settings (Europe)	■ Target frame rate: 25 fps ■ Target bit rate: 800 kbps ■ Resolution: CIF (352 x 288) ■ Maximum quantizer: 24 ■ Video standard: PAL
VSIP	■ VSIP Port: 5510 ■ VSIP Multicast IP Address: 224.16.32.1 ■ VSIP Discovery IP Address: 255.255.255.255
Audio bias for S1708e, S1708e-AS, and S1712e with 12 audio inputs	■ Input Type: Mic (with pre-amp) ■ Gain: 20 dB ■ Gain State: On ■ Bias: 6.0 Volt ■ Bias State : Enabled

B

DTE and DCE Connections

Before connecting a Nextiva edge device to other RS-232 serial equipment, you need to determine if they are DTE (data terminal equipment) or DCE (data communication equipment).

Here are examples of both equipment types:

- DCE—Nextiva edge devices, modems
- DTE—Computers, switches, multiplexers, cameras, keyboards

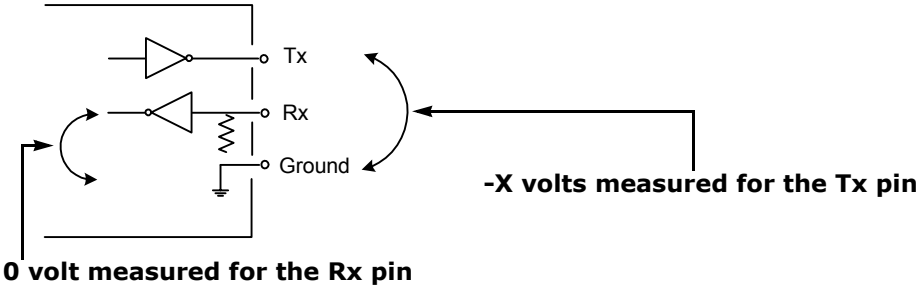
In the following descriptions:

- Voltage is measured when no data is transferred on the Rx and Tx pins.
- *-X volts* represents a negative voltage value.

Data Terminal Equipment

DTE modules have the following electrical-level setup:

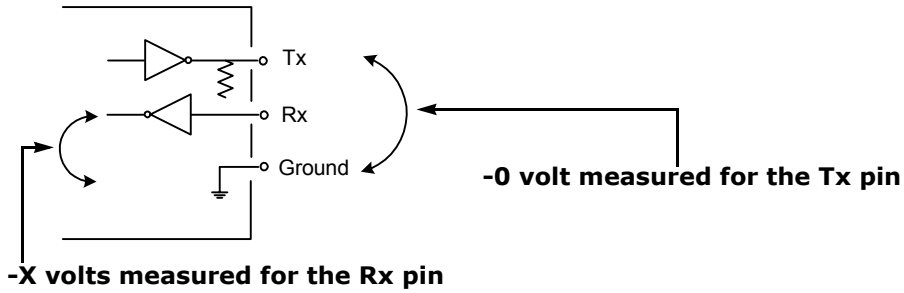
Pin number on the DB9 connector	Signal	Measured voltage
3	Tx	-X volts
2	Rx	0 volt



Data Communication Equipment

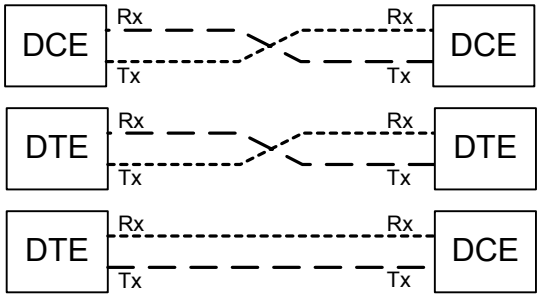
DCE modules have the following electrical-level setup:

Pin number on the DB9 connector	Signal	Measured voltage
3	Tx	0 volt
2	Rx	-X volts



Connecting DTE and DCE

When connecting two modules of the same type, you have to cross the data wires to create proper communication. On the other hand, when connecting a DTE with a DCE, a straight cable is required.



C

DHCP Support and APIPA

DHCP (Dynamic Host Configuration Protocol) allows devices and computers connected to a network to automatically get a valid IP configuration from a dedicated server.

The APIPA (Automatic Private IP Addressing) scheme, available on the Windows operating systems, enables a device to assign itself a temporary IP address.

At startup, an edge device searches for a valid IP network configuration. The device requires this configuration prior to starting its functions. The network configuration for Nextiva devices consists of:

- An IP address
- A subnet mask
- A gateway

The device first looks in its local memory. If no configuration is found, it tries to contact a DHCP server. If DHCP configuration fails—if the device does not find a server or if it cannot get a configuration from it within one minute—the device assigns itself temporary network settings based on the APIPA addressing scheme. This scheme allows a device to find a unique IP address until it receives a complete network configuration, either manually or from a DHCP server.

A device in APIPA mode does not reside on the same subnet as the other devices on the IP network; therefore, it may not be able to see them or be visible to them. Devices use the following temporary APIPA configuration:

- IP address: 169.254. *. *
- Subnet mask: 255.255.0.0
- Gateway: 169.254. *. *

The *. * portion is based on the MAC address of the device.

A device is in APIPA mode:

- The first time it boots up
- After receiving a duplicate IP address
- After a hardware reset
- When the DHCP server does not have any available IP addresses

DHCP configuration is automatically disabled:

- After a firmware upgrade
- After a factory reset

D

CLI Access

You may need to access the command line interface (CLI) of an edge device to perform troubleshooting tasks, typically with the assistance of a Verint Video Solutions customer service specialist. The CLI is hierarchically organized, with menus, sub-menus, and individual options representing configuration parameters.

You can access the CLI through SConfigurator the following ways:

- With a network connection and the Telnet utility
- With a serial connection

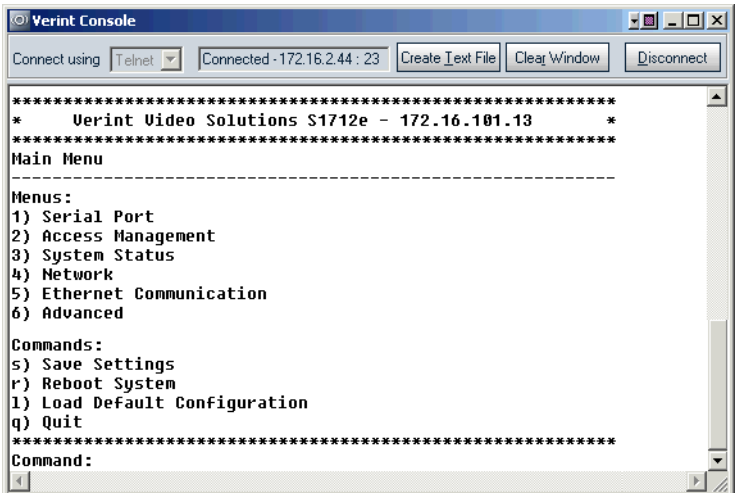
Network Connection

Note: Ensure that your computer and the S17XXe device are in the same IP subnet.

To enter the CLI with Telnet:

1. Open SConfigurator.
2. In the Units tab, discover the devices.
3. Select the desired device, then click **Telnet**.

   The CLI main menu appears in the Verint Console window.



   The CLI has a timeout that is triggered after three minutes of inactivity. When the timeout occurs:

   - You lose access to the command line.
   - The "Thank you for using the Verint Video Solutions CLI" message appears at the command line.
   - The Verint Console window becomes disabled.
   - The Disconnect button switches to Connect.
4. To reactivate the CLI after a timeout, click **Connect**.
5. To work through the CLI menu structure, follow these guidelines:
   - To execute a command or open a menu, type in the corresponding letter or number, then press **Enter**.
   - To return to the previous menu, enter **p**.

6. To end the CLI work session:
   a. Save the settings by entering **s** at the main menu, then pressing **Enter**.
   b. Exit the CLI by entering **q** at the main menu, then pressing **Enter**.

      Depending on the changed settings, the device may perform a soft boot.
   c. Close the Verint Console window.

      Warning: Do not use the Disconnect button to exit the CLI, since it does not save your settings.

Serial Connection

You can use the SConfigurator console to easily access the CLI through a serial connection.

To access the CLI with the SConfigurator console:

1. Connect the S17XXe device to a COM port of the computer using a serial cable.
2. Start SConfigurator.

   The SConfigurator window appears.
3. In the General tab, click **Console**.

   The Verint Console window appears (see page 30).
4. In the **Connect using** list, select the COM port used to communicate with the device.
5. Click **Connect**.

The CLI main menu appears.

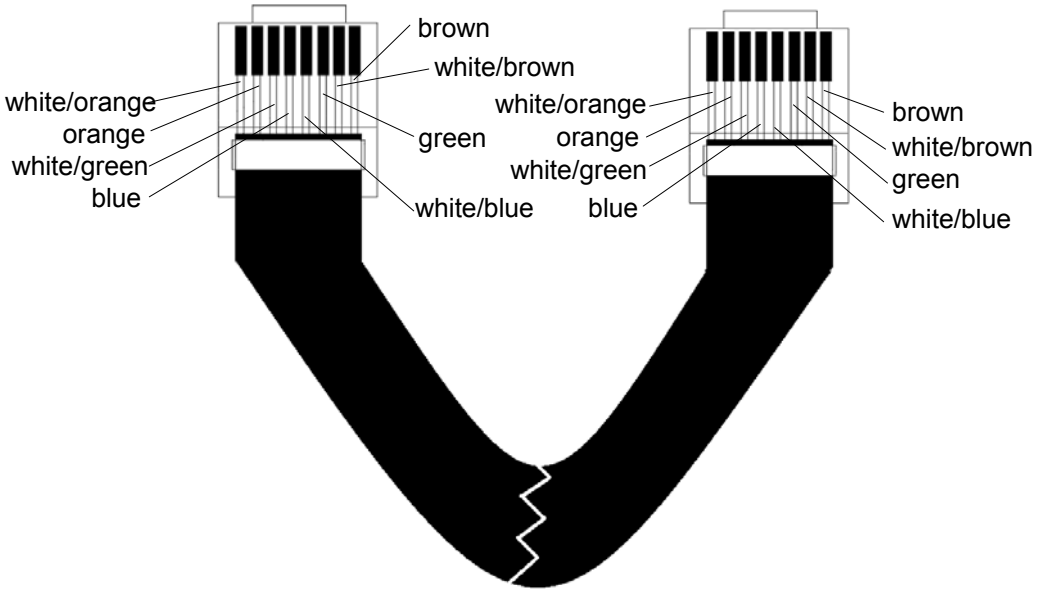
E

RJ-45 Ethernet Cables

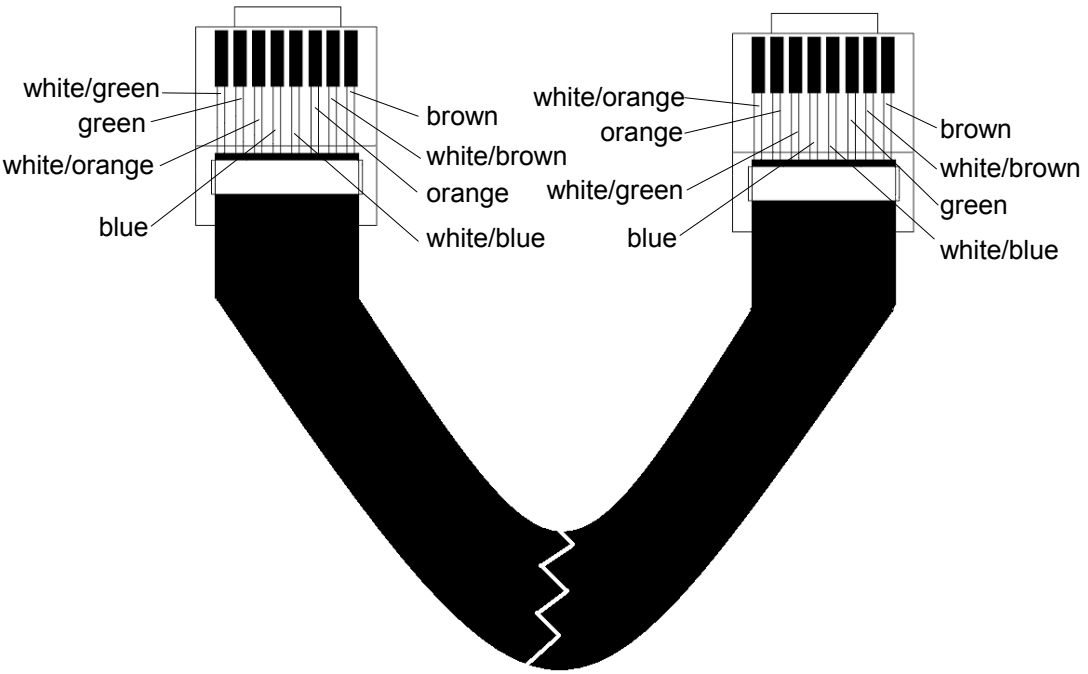
Depending on whether the device is integrated on a network or not, the Ethernet cable varies:

- If on a network, use a straight-through cable.
- To link it directly to a computer, use a crossover cable.

Here is the bottom view of the RJ-45 connectors on a straight-through cable:



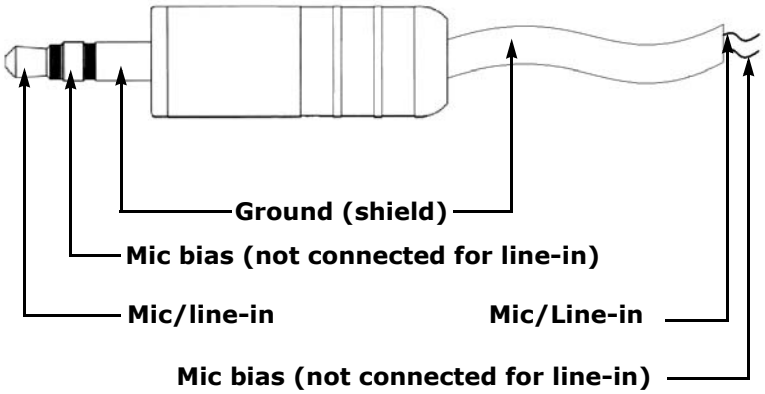
Here is the bottom view of the RJ-45 connectors on a crossover cable:



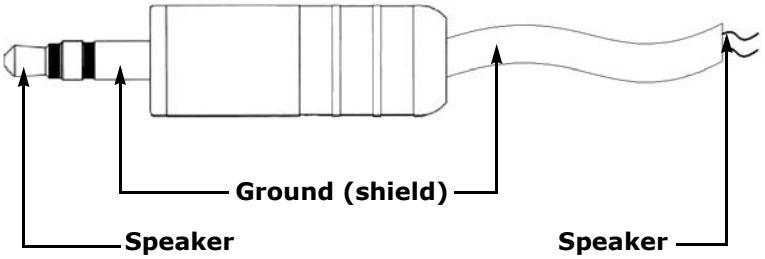
F

Audio Pinouts

Here is the pinout of the 1/8-inch (3.5 mm) stereo jacks for audio input:



For audio output, the jacks are configured the following way:



G

Technical Specifications

Here are the multiport S17XXe series technical specifications:

Video	Compression	MPEG-4-based and MPEG-4 ISO 14496-2 compliant
	Frame rate	Up to 30 frames per second in NTSC (25 frames in PAL), programmable (full motion)
	Input	S1704e-AS: 4 composites, 1 Vpp into 75 ohms S1708e, S1708e-AS: 8 composites, 1 Vpp into 75 ohms S1712e: 12 composites, 1 Vpp into 75 ohms S1724e: 24 composites, 1 Vpp into 75 ohms
	Resolution	Scalable from 352 x 240 to 704 x 480 NTSC pixels (352 x 288 to 704 x 576 PAL pixels)
	Standard	NTSC or PAL
	Connectors	BNC female
	Bandwidth	Configurable between 9 and 6000 kbps
Serial Port	Electrical levels	Port 1: RS-232 (230 kbps max.) Port 2: RS-422/485 2/4 wires (230 kbps max.)
	Connectors	Port 1: DB-9 female Port 2: pluggable screw-terminal strip
	Operating mode	Transparent serial port supporting any asynchronous serial protocol
Alarm and audio	Alarm input	12 dry contacts
	Alarm output	2 relay contacts (48V AC/DC at 100 mA max.)
	Bidirectional audio	Input: -20 to -3 dBV into 30 kohm Output: -45 to -3 dBV into 8 ohms min.
	Unidirectional audio	Input: -20 to -3 dBV into 30 kohm Programmable bias: 0-9V DC 16-bit resolution 8, 16, or 24 kHz sampling rate
	Audio connectors	S1704e-AS, S1708e, S1708e-AS, S1712e, S1724e: One set of 1/8 inch (3.5 mm) input and output stereo jacks or S1708e, S1708e-AS, S1712e: 12 1/8-inch (3.5 mm) input stereo jacks
Network	Interface	Ethernet 10/100Base-T
	Connector	RJ-45 jack
	Protocols	Transport: RTP/IP, UDP/IP, TCP/IP, multicast IP Others: DNS and DHCP client
	Security	SSL-based authentication
Power	Supply voltage	12V DC ±10%
	Consumption	S1704e-AS, S1708e, S1708e-AS: 22W max. (1.8A at 12V DC) S1712e, S1724e: 24W max. (2A at 12V DC)
Physical	Enclosure	Metal case with flange mount (black color)
	Size	17L x 6.1W x 1.7H inches (431.8L x 154.9W x 43.2H mm)
	Weight	5.6 lb (2.6 kg)
	Environment	32°F to 122°F (0°C to 50°C)
	Humidity	95% non condensing at 122°F (50°C)
Certification/ Regulation	USA	FCC part 15 (subpart B, class A)
	Canada	ICES-003/NMB-003 Class A

	Europe	CE marked, EN 55022:1998 Class A, EN 55024:1998 Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 (RoHS)
Management	Configuration	Local via the serial port using any ASCII terminal Remote using SConfigurator, nDVR, Nextiva, or Telnet

Glossary

This glossary is common to the Nextiva line of edge device products.

Access Point A device acting as a communication switch for connecting wireless edge devices to a wired LAN. Access points are mainly used with wireless transmitters to transfer wireless content onto the wired IP network.

APIPA (Automatic Private IP Addressing) A feature of Windows-based operating systems that enables a device to automatically assign itself an IP address when there is no Dynamic Host Configuration Protocol (DHCP) server available to perform that function. Also known as *AutoIP*.

Bridge A device linking a wireless network to a wired Ethernet network. The newest Nextiva bridge is the S3100.

Camera See *S2500e*, *S2600e Series*, or *S2700e Series*.

CCTV (closed circuit television) A television system in which signals are not publicly distributed; cameras are connected to television monitors in a limited area such as a store, an office building, or on a college campus. CCTV is commonly used in surveillance systems.

CIF (common intermediate format) A video format that easily supports both NTSC and PAL signals. Many CIF flavors are available, including CIF, QCIF, 2CIF, and 4CIF. Each flavor corresponds to a specific number of lines and columns per video frame.

CLI (command line interface) A textual user interface in which the user responds to a prompt by typing a command.

Codec (coder/decoder) A device that encodes or decodes a signal.

Configuration Assistant A proprietary graphical program used to configure and update the firmware of the S1100 edge devices.

DCE (data communication equipment) In an RS-232 communication channel, a device that connects to the RS-232 interface. Nextiva edge devices and modems are DCE.

Decoder See *Receiver*.

DHCP (Dynamic Host Configuration Protocol) A communication protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in a network.

DTE (data terminal equipment) In an RS-232 communication channel, the device to which the RS-232 interface connects. Computers, switches, multiplexers, cameras, and keyboards are DTE.

DVR (digital video recorder) A device (usually a computer) that acts like a VCR in that it has the ability to record and play back video images. The DVR takes the feed from a camera and records it into a digital format on a storage device which is most commonly the hard drive.

Edge Device A Nextiva device transmitting or receiving video signals through an IP network. The devices can be wireless or wired; some transmitters are IP cameras.

Encoder See *Transmitter*.

Ethernet A local area network (LAN) architecture using a bus or star topology and supporting data transfer rates of 10, 100, and 1000 Mbps. It is one of the most widely implemented LAN standards. The 802.11 protocols are often referred to as "wireless Ethernet."

Firmware Software stored in read-only memory (ROM) or programmable ROM (PROM), therefore becoming a permanent part of a computing device.

IP (Internet Protocol) The network layer for the TCP/IP protocol suite widely used on Ethernet networks.

IP Camera See *S2500e*, *S2600e Series*, or *S2700e Series*.

LAN (local area network) A computer network that spans a relatively small area. A LAN can connect workstations, personal computers, and surveillance equipment (like edge devices). See also *WAN*.

MPEG-4 A graphics and video lossy compression algorithm standard that is derived from MPEG-1, MPEG-2, and H.263. MPEG-4 extends these earlier algorithms with synthesis of speech and video, fractal compression, computer visualization, and artificial intelligence-based image processing techniques.

Multicast Communication between a sender and multiple receivers on a network; the devices can be located across multiple subnets, but not through the Internet. Multicast is a set of protocols using UDP/IP for transport.

nDVR A video management and storage software sold by Verint Video Solutions. This graphical product is used in conjunction with wired and wireless edge devices.

Nextiva The powerful, enterprise-class video management platform and suite of applications from Verint that helps enhance security and improve performance. Nextiva simplifies the management of large scale, distributed video operations and promotes efficient use of network resources.

NTSC (National Television Standards Committee) The North American standard (525-line interlaced raster-scanned video) for the generation, transmission, and reception of television signals. In addition to North America, the NTSC standard is used in Central America, a number of South American countries, and some Asian countries, including Japan. Compare with *PAL*.

NTP (Network Time Protocol) A protocol designed to synchronize the clocks of devices over a network.

OSD (on-screen display) Status information displayed on the video monitor connected to a receiver edge device.

PAL (Phase Alternation by Line) A television signal standard (625 lines) used in the United Kingdom, much of western Europe, several South American countries, some Middle East and Asian countries, several African countries, Australia, New Zealand, and other Pacific island countries. Compare with *NTSC*.

PTL (push-to-listen) In a two-way system, the communication mode in which the listener must push a button while listening.

PTT (push-to-talk) In a two-way system, the communication mode in which the talker must push a button while talking.

PTZ Camera (pan-tilt-zoom) An electronic camera that can be rotated left, right, up, or down as well as zoomed in to get a magnified view of an object or area. A PTZ camera monitors a larger area than a fixed camera.

QoS (Quality of Service) A set of low-level networking protocols giving higher priority to more important data flows while ensuring that the less important ones do not fail.

Receiver A device converting a digital video signal into an analog form. Also called *decoder*.

Repeater A range extender for wireless links. The Nextiva repeater is made up of two S3100 bridges.

RF (radio frequency) Any frequency within the electromagnetic spectrum associated with radio wave propagation. When a modulated signal is supplied to an antenna, an electromagnetic field is created that is able to propagate through space. Many wireless technologies are based on RF field propagation.

RS-232 A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices.

RS-422 A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices, designed to replace the older RS-232 standard because it supports higher data rates and greater immunity to electrical interference.

RS-485 An Electronics Industry Alliance (EIA) standard for multipoint communications.

S1000 Series The series of secure outdoor wireless video systems (one receiver and one transmitter per system). The series covers the 2.4 GHz band in North America and Europe and the 5 GHz band in North America. Starting with firmware release 3.20, the S1000 series is replaced by the S1100 edge devices.

S1000w The outdoor wireless video transmitter operating on the 2.4 GHz frequency band.

S1100 The newest series of secure outdoor wireless video systems (one receiver and one transmitter per system) covering the 2.4 and 5 GHz bands in North America and Europe.

S1100w The multiband (2.4 and 5 GHz) outdoor wireless video transmitter operating in North America and Europe.

S1500e Series The series of wired edge devices (receivers and transmitters) designed for video monitoring and surveillance over IP networks. The transmitters in the series offer from one to eight video inputs; the series proposes two receivers with one and four video outputs.

S1700e Series The series of wired video transmitters designed for video monitoring and surveillance over IP networks, offering DVD-quality video and power over Ethernet. The transmitter in the series offers one video input and web access.

S1708e Series The series of wired video transmitters designed for a variety of video monitoring and surveillance applications in which a high concentration of cameras terminates within the same area. The transmitters in the series offer 4, 8, 12, or 24 video inputs. Some models offer onboard video analytics capabilities.

S1900e Series The highly compact, single-input video transmitter designed for video monitoring and surveillance over IP networks, offering various video qualities and functionality sets, as well as web access for configuration and live viewing. The series includes the S1900e-AS (with onboard analytics capabilities), the S1950e (a cost optimized solution), and the S1970e (for better video performance).

S1900e-Vicon The board holding the S1900e compact IP technology, to be included into Vicon SurveyorVFT dome cameras.

S2500e The MPEG-4-compliant professional IP camera integrating a video sensor and an Ethernet encoder in the same compact enclosure.

S2600e Series The set of professional IP cameras with a super wide range for excellent quality in high-contrast environments. These MPEG-4-compliant cameras integrate a video sensor and an Ethernet encoder in the same compact enclosure. The series includes color, day/night, and analytics-ready cameras. All models provide web access for configuration and live viewing.

S2700e Series The set of high-resolution, IP mini-dome cameras with triple axis lens rotation for flexible installation, and low lux sensitivity for crisp clear images in a variety of lighting conditions. The S2700e cameras offer DVD-quality video and web access for configuration and live viewing.

S3100 The outdoor, wireless, digital video bridging device. It has many uses, including linking edge devices (wireless or wired) to an Ethernet LAN and acting as a range extender.

SConfigurator A proprietary graphical program used to configure and update the firmware of edge device and outdoor wireless bridge devices.

Serial Port An interface that can be used for serial communication, in which only one bit is transmitted at a time. A serial port is a general-purpose interface that can be used for almost any type of device.

SSL (Secure Sockets Layer) A commonly used protocol for transmitting private documents via the Internet. SSL works by using a public key to encrypt data that is transferred over the SSL connection. The SSL protocol secures the following data: I/O, serial port, and VSIP communication; it does not apply to audio and video transmission.

Transceiver (transmitter/receiver) A device that both transmits and receives analog or digital signals.

Transmitter A device sending video signals captured with a connected camera to a receiver. The transmitter converts the analog signal into a digital form before transmitting it. Also called *encoder*.

VSIP (Video Services over IP) A proprietary communication protocol for sending messages between a computer and a Nextiva edge device, or between two devices.

WAN (wide area network) A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local area networks (LANs).

WEP (Wired Equivalent Privacy) A security protocol for wireless local area networks (WLANs) defined in the 802.11b standard. It is designed to afford wireless networks the same level of protection as a comparable wired network.

Wireless Cell A group of wireless devices that communicate together on the same radio frequency channel and share the same wireless passkey.

Wireless Transmission A technology in which electronic devices send information to receivers using radio waves rather than wiring.

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Compliance

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EN 55022 Statement

This is to certify that the Nextiva Models S1704e-AS, S1708e, S1708e-AS, S1712e, and S1724e Ethernet video servers are shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/ECC, Article 4a. Conformity is declared by the application of EN55022 Class A (CISPR 22).

Declaration of Conformity

Manufacturer:

Verint Systems Inc.
1800 Berlier
Laval, Québec
H7L 4S4
Canada

Declares under sole responsibility that the product:

Product name: Ethernet video server
Model number: S1704e-AS, S1708e, S1708e-AS, S1712e, S1724e

To which this declaration relates is in conformity with the following standards or other documents:

EMC Directive 89/336/EEC:

EN55022:1998 class A

EN55024:1998

EN 61000-4-3:1996	3V/m
EN 61000-4-6:1996	3Vrms
EN 61000-4-2:1995	4kV CD, 8 kV AD
EN 61000-4-4:1995	1kV (power), 500V (signal)
EN 61000-4-11:1994	
EN 61000-4-5:1995	2kV L-E, 1kV L-L
ENV50204:1995	

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

November 24th, 2004
Laval, Canada

Willie Kouncar
Vice President, Product Development
Verint Video Solutions

RoHS Declaration of Compliance

June 14th, 2006

Verint believes in the importance of conducting our business in a manner that will help protect the environment as well as our employees, customers, and the public.

To that end, we are committed to bringing our existing and future product lines into EU RoHS Directive compliance.

Thus, as of July 1 2006, the following products, S1704e-AS, S1708e, S1708e-AS, S1712e, and S1724e, will comply with the DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 (RoHS) regarding the restriction of the use of certain hazardous substances in electrical and electronic equipment.

The S1704e-AS, S1708e, S1708e-AS, S1712e, and S1724e products will not exceed the maximum concentrations of 0.1% by weight in homogenous materials for lead, hex chrome, mercury, PBB, PBDE, and 0.01% for cadmium. In addition, the S1950e and S1970e products will qualify for the "lead in servers solders" exemption as set forth in the Directive.

This declaration is provided based on reasonable inquiry of our suppliers and represents our actual knowledge based on the information provided by our suppliers.

Sincerely,

Willie Kouncar
Vice President, Product Development
Verint Video Solutions


VERINT
POWERING ACTIONABLE INTELLIGENCE™