EASyCAST
EAS Encoder/Decoder

Hardware Installation Manual

think ahead.

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Trilithic Company Profile

Trilithic is a privately held manufacturer founded in 1986 as an engineering and assembly company that built and designed customer-directed products for telecommunications, military, and industrial customers. From its modest beginnings as a two-man engineering team, Trilithic grew over the years and broadened its offerings of RF and microwave components by adding broadband solutions to its product line. This was accomplished with the acquisition of components manufacturer Cir-Q-Tel and instruments manufacturer Texscan.

Today, Trilithic is an industry leader, providing telecommunications solutions for major broadband, RF and microwave markets around the world. As an ISO 9000:2001 certified company with over 40 years of collective expertise in engineering and custom assembly, Trilithic is dedicated to providing quality products, services and communications solutions that exceed customer expectations.

Trilithic is comprised of four major divisions:

- **Broadband Instruments & Systems**
  Offers test, analysis, and quality management solutions for the major cable television systems worldwide.

- **RF Microwave Components**
  Provides components and custom subsystems for companies specializing in cellular, military, and other wireless applications.

- **Emergency Alert Systems**
  Leading supplier of government-mandated emergency alert systems used by broadcast TV, cable TV, IPTV, DBS, and radio stations.

- **XFTP**
  Offers a specialty line of field technical products for cable operators and technicians as well as a line of products for installing electronics in the home of the future.

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General Information

Introduction

EAS Encoder/Decoders are the heart of the United States' EAS system. They provide a means to take audio signals containing data (usually from radio stations), filter them for geographic region (county code) and event (type of emergency) information, and send the same message out again if it meets the user-programmed parameters. The EASyCAST Encoder/Decoders contain all the hardware needed to receive AM, FM, or NWS radio stations, monitor the stations for EAS data, examine the EAS data for applicability to the region it is used in, create video that contains a translation of the EAS message, and reproduce the EAS message audio. A comprehensive suite of PC-based configuration and control programs communicate with the EASyCAST Encoder/Decoders over RS-232 or Ethernet.

For radio and television broadcasters, the EASyCAST Encoder/Decoder contains analog and AES/EBU audio replacement capability, an NTSC video generator, contact closures, RS-232 serial, and Ethernet capability for controlling audio switching and video generation equipment. In addition, contact closure inputs and an Ethernet-based software operator console allow control over the Encoder/Decoder by automation equipment and operators.

Options are available for the EASyCAST Encoder/Decoders which allow EAS or non-EAS emergency messages to be generated from any touch-tone telephone. Additionally, configuration settings and logs can be retrieved via Ethernet or a telephone MODEM, and automated analysis and reporting may be performed on EAS logs for EAS compliance and inclusion in EAS records. EAS and telephone user messages may be routed based on the location codes contained within the EAS message, or the telephone user ID.

All EASyCAST Encoder/Decoders have been certified by the FCC to operate in accordance with 47 CFR, Part 11 (FCC regulations), and are in compliance with the applicable *EAS Handbook*. All EASyCAST Encoder/Decoders are flash-upgradeable and the most current software/firmware versions are available at *www.trilithic.com*.

FCC Certification

The Trilithic EASyCAST Encoder/Decoder is certified to comply with 47 CFR, Part 11 (FCC regulations) for EAS encoders and decoders, and is registered with the FCC under identification number: P4V-EASYPLUS-1.

Changes or modifications to the EASyCAST Encoder/Decoder not expressly approved by Trilithic Inc. may void the users' authority to operate this equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 47 CFR, 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.

Unpacking and Inspection

When the EASyCAST Encoder/Decoder arrives, immediately inspect the shipping container and contents for visible damage. Keep all packing materials until the equipment's intended performance characteristics have been verified. If any of the equipment is damaged or fails to operate properly due to transportation damage, immediately file a claim with the transportation company or, if insured separately, with the insurance company.

Each EASyCAST Encoder/Decoder will arrive in its own shipping container. The container will, at a minimum, include the following components:

- 1 CD which contains the Windows-based configuration program

- 1 null-MODEM 9-pin serial data cable

- 1 AC power cord

Purchased hardware options are visible on the back panel of the encoder/decoder.

Claims for Damage in Shipment

Claims for shipping damage should be directed to the shipping and/or freight delivery service used. Claims should be made within 7 days to insure prompt handling of the claim.

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Helpful Website

The following website contains general information which may be of interest:

http://www.trilithic.com

Trilithic's website contains product specifications and information, tips, release information, marketing information, Frequently Asked Questions (FAQs), bulletins, and other technical information. This website can be referenced for product updates.

Where to Get Technical Support

Trilithic technical support is available Monday through Friday from 8:00AM to 5:00PM EST. Callers in North America can dial 1-317-895-3600 or 1-800-344-2412 (toll free). International callers should dial 1-317-895-3600 or fax questions to 1-317-895-3613. You can also e-mail technical support at *EASysupport@trilithic.com*.

For quicker support response when calling or sending e-mail, please provide the following information:

- Your name and your company name

- The technical point of contact (name, phone number, e-mail)

- The serial number of the EASyCAST Encoder/Decoder

- A detailed description of the problem you are having, including any error or information messages

Before any Trilithic EAS encoder/decoder can be returned for repair, Trilithic will issue a return material authorization (RMA) number. NO RETURNED EQUIPMENT WILL BE ACCEPTED WHICH DOES NOT HAVE AN RMA NUMBER PROMINENTLY DISPLAYED ON THE OUTSIDE SHIPPING CARTON AND ON THE SHIPPING LABEL. A complete and full description, in writing, regarding the service issues with the equipment must be supplied inside the shipping container with each piece of equipment for which an RMA number has been issued.

NOTE — *Hardware or software modifications and changes may occur at any time during production, shipping, and/or during the equipment's life span. These changes may occur or be implemented by Trilithic, Inc. without prior written notice or warning.*

How this Manual is Organized

This installation manual addresses hardware installation concerns for the EASyCAST Encoder/Decoder.

This manual is divided into the following chapters:

- Chapter 1, "General Information," provides Trilithic contact information and describes how this installation manual is structured.

- Chapter 2, "Important Information," provides key information about the EASyCAST Encoder/Decoder, how to correctly set up each encoder/decoder, references to supplementary manuals, and operational considerations.

- Chapter 3, "Understanding the EASyCAST," introduces the EASyCAST Encoder/Decoder and describes what it does. The chapter discusses the practical application of the encoder/decoder and explains the indicators and connection terminals on the encoder/decoder.

- Chapter 4, "Installing & Wiring the EASyCAST," describes the steps needed to install, connect, and configure the EASyCAST Encoder/Decoder.

- Chapter 5, "Specifications," outlines the technical specifications of the EASyCAST Encoder/Decoder.

- Chapter 6, "Event Configuration Table," includes a sample table used to determine configuration parameters for individual EAS events.

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Conventions Used in this Manual

This manual has several standard conventions for presenting information:

- Connections, menus, menu options, and user-entered text and commands appear in **bold**.

- Section names, web and e-mail addresses appear in *italics*.

> **NOTE**
> ***A <u>NOTE</u> is information that will be of assistance to you related to the current step or procedure.***

> **CAUTION**
> ***A <u>CAUTION</u> alerts you to any condition that could cause a mechanical failure or potential loss of data.***

> **WARNING**
> ***A <u>WARNING</u> alerts you to any condition that could cause personal injury.***

Precautions

> **WARNING**
> ***Do not use the EASyCAST Encoder/Decoder in any manner not recommended by the manufacturer.***

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Important Information

Please read the following information regarding the installation, setup, and configuration for the EASyCAST Encoder/Decoder.

- The EASyCAST Configuration Software provides a much more comprehensive and intuitive setup than is possible with the device's front-panel setup feature, and is the preferred method for configuring the EASyCAST Encoder/Decoder.

- Software configuration manuals for the EASyCAST are available at *www.trilithic.com*. An update to this *EASyCAST Installation Manual* may also be available through the website.

- Additional application-specific instructions are available at *www.trilithic.com*.

- An *EAS-Recommended Practices* section is available in the appendix of this manual which may be helpful in understanding the duties of an EAS operator.

- Make sure the encoder/decoder time and time zone are correct. EAS messages are time-stamped and may be ignored if the encoder/decoder's time is incorrect.

- The firmware (internal operating system) of the EASyCAST Encoder/Decoder is upgradeable using a personal computer. Check the EAS downloads section at *www.trilithic.com* frequently to determine if new firmware is available. Check for new firmware prior to using the equipment, as some EASyCAST Encoder/Decoders have been warehoused by distributors or end users and may not have the latest firmware.

- Before configuring the EASyCAST Encoder/Decoder, initialize it to the correct default configuration. This is not necessary if using the configuration software to set up the component.

- Stations that use the internal character generator video input should ensure that the signal inserted complies with RS-170A NTSC specification in order to prevent synchronization problems with the character generator. Some computer or VCR video sources may cause video synchronization problems.

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Understanding the EASyCAST

Introduction

This section includes an overview and description of the EASyCAST Encoder/Decoder including front and rear panel controls, connectors, and displays. Visit *www.trilithic.com* to view or download updates, manuals, and application notes for Trilithic EAS products.

What Does the EASyCAST Encoder/Decoder Do?

The EASyCAST Encoder/Decoder receives emergency alert system information from up to six audio sources (internal and/or external). It decodes the message, creates the appropriate audio and video messages, and operates any routing and distribution equipment required to replay the message for the listeners/viewers. Additionally, messages can be received over IP from EASyIP EAS network receivers or originated by the EAS operator via local or remote control of any of the EASyCAST Encoder/Decoders.

The EAS audio sources include internal AM/FM/NOAA radios and external audio inputs that can be connected to any known EAS audio source. Monitoring assignments can be found in each state's emergency plan, which will designate local primaries (LP1 and LP2) for each stations geographic location(s). EAS audio is decoded by the internal audio processing circuitry. It is then interpreted to determine the type of emergency or test, locations for which the message applies, and other information supplied in the EAS header. The voice message (if present) is recorded for playback to the listeners/viewers.

EAS messages are passed through a series of filters to determine if the message matches predefined, user-configured parameters. If the message passes these filters, it is either automatically forwarded to the routing and distribution equipment, or is presented to the LCD display, SNMP server, and EAS Console application so that it can be manually forwarded by an operator.

The EASyCAST Encoder/Decoder activates TTL outputs, contact closure outputs, Ethernet communications, serial communications, analog audio switches, and digital audio switches in order to control the audio, video, routing, and distribution equipment required to present the EAS message to the listeners/viewers. It also supplies pertinent video and re-encodes/plays the EAS FSK, attention tone, and recorded audio. Logs are recorded in the internal Flash memory and are accessible via serial or Ethernet using the supplied software.

Overview of the EASyCAST Encoder/Decoder

Front Panel View
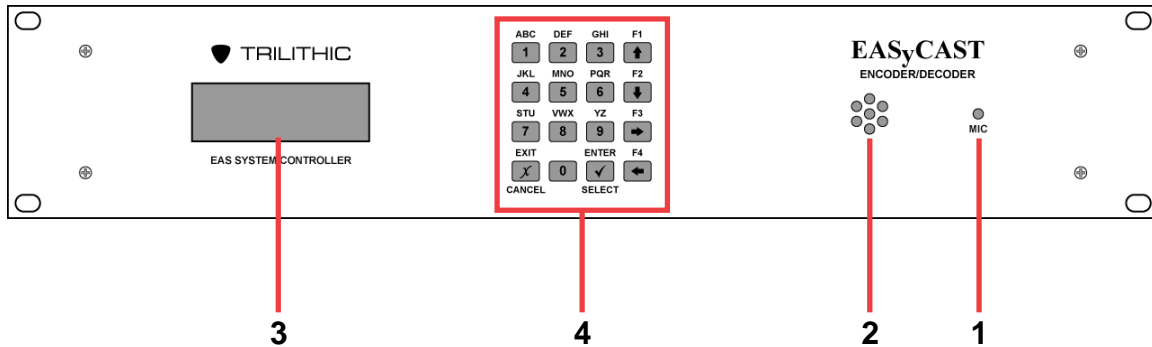
1. **Microphone** - Used for recording user audio or EAS voice message.

2. **Speaker** - Used for monitoring audio inputs and to provide aural feedback during EAS activations.

3. **LCD display** - Provides visual feedback during programming, setup, monitoring, and activations.

4. **16-Button keypad** - Used for local control of the EASyCAST and access to the on-board menu system.

> **NOTE**
>
> *The keypad and LCD display provide an on-board menu system, allowing for a limited amount of configuration, tests, and encoding functions. The __EASyCAST Configuration Software__ provides more comprehensive configuration and control of the encoder/decoder.*

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Rear Panel View
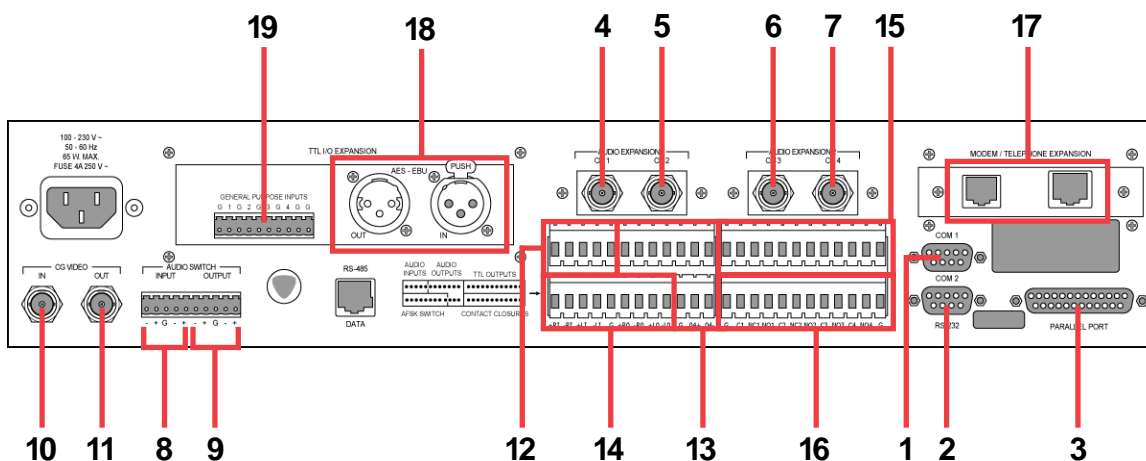
1. **COM1** - (RS-232 Connection) Used for configuration, control, and log retrieval from a PC or laptop.

2. **COM2** - Provides an interface to external equipment such as character generators.

3. **Parallel port** - Used to connect a standard ASCII compatible parallel printer for EAS logs.

> 📌 **NOTE**
>
> ***If a printer is to be used for printing FCC-mandated EAS events, a dot-matrix tractor-feed printer is recommended.***

4. **Audio expansion 1, channel 1** - Optional AM/FM/NOAA radio antenna input.

5. **Audio expansion 1, channel 2** - Optional AM/FM/NOAA radio antenna input.

6. **Audio expansion 2, channel 3** - Standard AM/FM/NOAA radio antenna input.

7. **Audio expansion 2, channel 4** - Standard AM/FM/NOAA radio antenna input.

8. **Audio switch input (optional)** - Connection for normal station audio signal (balanced stereo).

9. **Audio switch output (optional)** - Connection for outgoing station audio with audio replacement during EAS operations.

10. **CG VIDEO IN (optional)** - NTSC video input connection (normal station video) for the character generator.

11. **CG VIDEO OUT (optional)** - NTSC video output connection (EAS modified station video) to the transmitter.

12. **Audio inputs** - Connects to an EAS audio source.

13. **Audio outputs** - Provides several EAS audio outputs for general use. Note that station audio is not included on these outputs.

14. **AFSK switch** - A balanced stereo audio switch that may be connected in-line with the normal station audio to the transmitter and interrupt it during EAS transmission.

15. **TTL outputs** - General purpose TTL (transistor-transistor logic) outputs activated during EAS.

16. **Contact closures** - Used for distribution/routing equipment that requires a contact closure for activation. Also used to control indicators lamps or alarms for studio personnel.

17. **MODEM/telephone expansion** - Optional telephone/Ethernet interface for remote control over the EASyCAST and activation of digital equipment.

18. **AES/EBU audio switch** - Optional AES/EBU audio input/output that may be connected in-line with the normal station audio to the transmitter and interrupt it during EAS transmission.

19. **Contact closure inputs (optional)** - Used for automation equipment or station personnel to control the EASyCAST during EAS operations.

Rear Panel Details

COM1 (RS-232 connection) - 9-pin RS-232C DTE interface used for configuration, control, and log retrieval from a PC or laptop via a 9-pin NULL-MODEM cable.

Pin 2: Receive data*

Pin 3: Transmit data*

Pin 4: Data terminal ready

Pin 5: Signal ground*

Pin 6: Data set ready

Pin 7: Request to send

Pin 8: Clear to send

Pin 9: Ring indicator

* Required signal

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COM2 - (RS-232 connection) 9-pin RS-232C DTE interface used for control over external character generators/video insertion equipment.

Pin 2:   Receive data

Pin 3:   Transmit data

Pin 4:   Data terminal ready

Pin 5:   Signal ground

Pin 6:   Data set ready

Pin 7:   Request to send

Pin 8:   Clear to send

Pin 9:   Ring indicator

Parallel port - Used for connecting a standard ASCII compatible parallel printer (a dot-matrix tractor-feed printer is recommended) for FCC-mandated logging of EAS events. A printer is not required if logging is handled via download to a PC.

Audio expansion 1; channels 1 and 2 (optional) - Provides two AM/FM/NOAA tuners with independent antenna inputs.

Audio expansion 2; channels 3 and 4 - Provides two AM/FM/NOAA tuners with independent antenna inputs.

Audio switch (optional) - Line-level balanced stereo audio switch used to replace normal programming audio with EAS audio during EAS activations.

> **Audio switch input** - Connect the normal program audio source to the audio switch input.
>
> **Audio switch output** - Connect the audio switch output to the transmitter.
>
> **Audio switch signal lines** (Definition of audio switch signals, from left to right)
>
> > **(-)**   Negative balanced program audio input for left channel
> >
> > **(+)**   Positive balanced program audio input for left channel
> >
> > **(G)**   Ground
> >
> > **(-)**   Negative balanced program audio input for right channel
> >
> > **(+)**   Positive balanced program audio input for right channel
> >
> > **(-)**   Negative balanced program audio/EAS output for left channel
> >
> > **(+)**   Positive balanced program audio/EAS output for left channel
> >
> > **(G)**   Ground
> >
> > **(-)**   Negative balanced program audio/EAS output for right channel
> >
> > **(+)**   Positive balanced program audio/EAS output for right channel

CG VIDEO (optional)

> **CG VIDEO IN** - Connect normal programming video to the CG VIDEO IN.
>
> **CG VIDEO OUT** - Connect the CG VIDEO OUT to the transmitter.

RS-485 (optional) - Trilithic standard 1/8th load RS-485 communications port is intended for controlling external Trilithic Messenger II and SCG-1 character generators.

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Audio inputs - Two balanced line-level audio inputs are provided for additional EAS monitoring sources. These inputs can be connected to EAS audio sources such as TV tuners, satellite receivers, or external radio tuners.

      (I5+)   Balanced audio positive input channel 5

      (I5-)   Balanced audio negative input channel 5

      (I6+)   Balanced audio positive input channel 6

      (I6-)   Balanced audio negative input channel 6

      (G)   Ground or shield

Audio outputs - EAS audio is available on these four line-level balanced audio outputs. Use these outputs to connect to EAS distribution/routing equipment or studio speakers. This is the audio generated by the EASyCAST during EAS activation.

(O1+) Balanced EAS audio output 1, positive output

(O1-) Balanced EAS audio output 1, negative output

(O2+) Balanced EAS audio output 2, positive output

(O2-) Balanced EAS audio output 2, negative output

(O3+) Balanced EAS audio output 3, positive output

(O3-) Balanced EAS audio output 3, negative output

(G)   Ground

(O4+) Balanced EAS audio output 4, positive output

(O4-) Balanced EAS audio output 4, negative output

AFSK switch - For EASyCAST units, the AFSK switch provides the same balanced stereo switching function as the optional audio switch. It provides a means to interrupt the stations analog audio with EAS audio.

Audio switch signal lines (Definition of audio switch signals, from left to right)

(+RI)	Right channel program audio, balanced positive input
(- RI)	Right channel program audio, balanced negative input
(+LI)	Left channel program audio, balanced positive input
(- LI)	Left channel program audio, balanced negative input
(G)	Ground or shield
(+RO)	Right channel program/EAS audio, balanced positive output (to transmitter)
(- RO)	Right channel program/EAS audio, balanced negative output (to transmitter)
(+LO)	Left channel program/EAS audio, balanced positive output (to transmitter)
(- LO)	Left channel program/EAS audio, balanced negative output (to transmitter)
(G)	Ground or shield

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Contact closures - Used for distribution/routing equipment that requires a contact closure for activation, or for operator alarms during EAS operations.

(G)   Ground or shield

Contact closure 1, transmitting EAS - May be used to trigger external switching equipment or to indicate that an EAS message is being transmitted from the EASyCAST. This contact closure activates if either EAS audio or the internal character generator is active.

(C1)   Common contact

(NC1)   Normally-closed contact

(NO1)   Normally-open contact

Contact closure 2, transmitting EAS audio - May be used to trigger external audio switching equipment or to Indicate that the audio portion of an EAS message is being transmitted from the EASyCAST.

(C2)   Common contact

(NC2)   Normally-closed contact

(NO2)   Normally-open contact

Contact closure 3, waiting to transmit - Indicates an EAS message has been received and is awaiting a user or automation trigger to send the message.

(C3)   Common contact

(NO3)   Normally-open contact

Contact closure 4, receiving EAS - Indicates an EAS message is incoming and has passed the retransmission filters.

(C4)   Common contact

(NO4)   Normally-open contact

(G)   Ground or shield

MODEM/telephone expansion (optional Ethernet and telephone interface) - Provides an Ethernet interface for remote configuration, operation, and maintenance of the EASyCAST, as well as providing digital EAS messages across a network to a stations audio and video equipment and allowing distant monitoring stations to be transported over Ethernet to the EASyCAST. In addition to the Ethernet, a telephone interface allows DTMF or data communication for remote control of the EASyCAST, and remote generation of emergency messages.

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TTL I/O expansion (optional AES/EBU digital audio switch and contact closure input)

AES/EBU Audio - Provides a synchronized AES/EBU audio switch for in-line replacement of programming audio during EAS operations. If an input is provided (from a station source), the output sample rate will be equal to the input sample rate. If no input is provided, the output sample rate will be 48KHz.

AES/EBU input 110 Ω XLR female

Pin 1:   Ground/drain

Pin 2:   Balanced +

Pin 3:   Balanced -

AES/EBU output 110 Ω XLR male

Pin 1:   Ground/drain

Pin 2:   Balanced +

Pin 3:   Balanced -

Contact closure inputs - provide a means for controlling the EASyCAST using automation equipment or operator switchboard.

Input 1, abort - When closed, causes any EAS message being received to be disregarded, and any EAS message being transmitted to be stopped. The EASyCAST will attempt to stop all video displays and audio switches, then return to monitoring for EAS messages.

(G)   Contact ground

(1)   5mA pull-up sense input (5 Volt @ 0mA)

Input 2, trigger - When closed, causes any EAS message waiting to be transmitted to begin transmission, regardless of the state of the hold-off input (input 3).

(G)   Contact ground

(2)   5mA pull-up sense input (5 Volt @ 0mA)

Input 3, hold-off: Configurable for active-open or active-closed. When active, this prohibits any EAS message waiting to be transmitted from starting transmission except by the trigger input (Input 2), user activation, or the event delay time-out (configurable).

(G)   Contact ground

(3)   5mA pull-up sense input (5 Volt @ 0mA)

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Input 4, trigger RWT: When momentarily closed, causes a required weekly test to be transmitted.

(G) Contact ground

(4) 5mA pull-up sense input (5 Volt @ 0mA)

(G) Signal ground

(G) Signal ground

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Installing and Wiring the EASyCAST

Overview

Much of the EASyCAST installation requirements depend on the capabilities of the station, the options installed on the EASyCAST, and the types of operator and equipment control desired. Prior to installation, determine what options are needed and disregard references to undesired options. The installation of the EASyCAST Encoder/Decoder may involve the following steps:

- **Connecting EAS monitoring inputs -** These are usually off-air radio stations assigned by the state and listed in the state EAS plan for any given location.

- **Connecting a computer -** The EASyCAST can be connected ot a computer for EAS log maintenance, future configuration changes, and operator control over the EASyCAST.

- **Connecting the base band or AES/EBU audio switch -** Base band or AES/EBU switches are used to intercept the normal station audio prior to the transmitter or MPEG encoder. Alternatively, control lines or data protocols may be used to cause station equipment to switch audio.

- **Connecting the base band NTSC character generator -** The base band NTSC character generator intercepts the normal station video prior to the transmitter or MPEG encoder. Alternatively, EAS text data can be sent to the stations video generation equipment (such as a character generator) via an RS-232 serial line or Ethernet connection.

- **Connecting a line-level microphone -** The microphone is connected to the EASyCAST if the station is an EAS origination point.

- **Connecting control lines and studio indicators -** The control lines and indicators are connected to the EASyCAST if hard-wired (contact-closure) control is desired. This may include connecting commercial-insertion equipment as a control input to the EASyCAST.

- **Installing the software -** The software necessary for configuration, control, and log maintenance; configuring the EASyCAST; and configuring station equipment that interfaces with it must be installed.

Wiring Recommendations

- Shielded audio wire for all TTL, contact closure, and audio connections
- Shielded RS-232 and printer cables
- Shielded (coaxial) video cables
- Shielded RS-485 data cable

EAS Monitoring, Data, and Voice Input Interfaces (Sample)
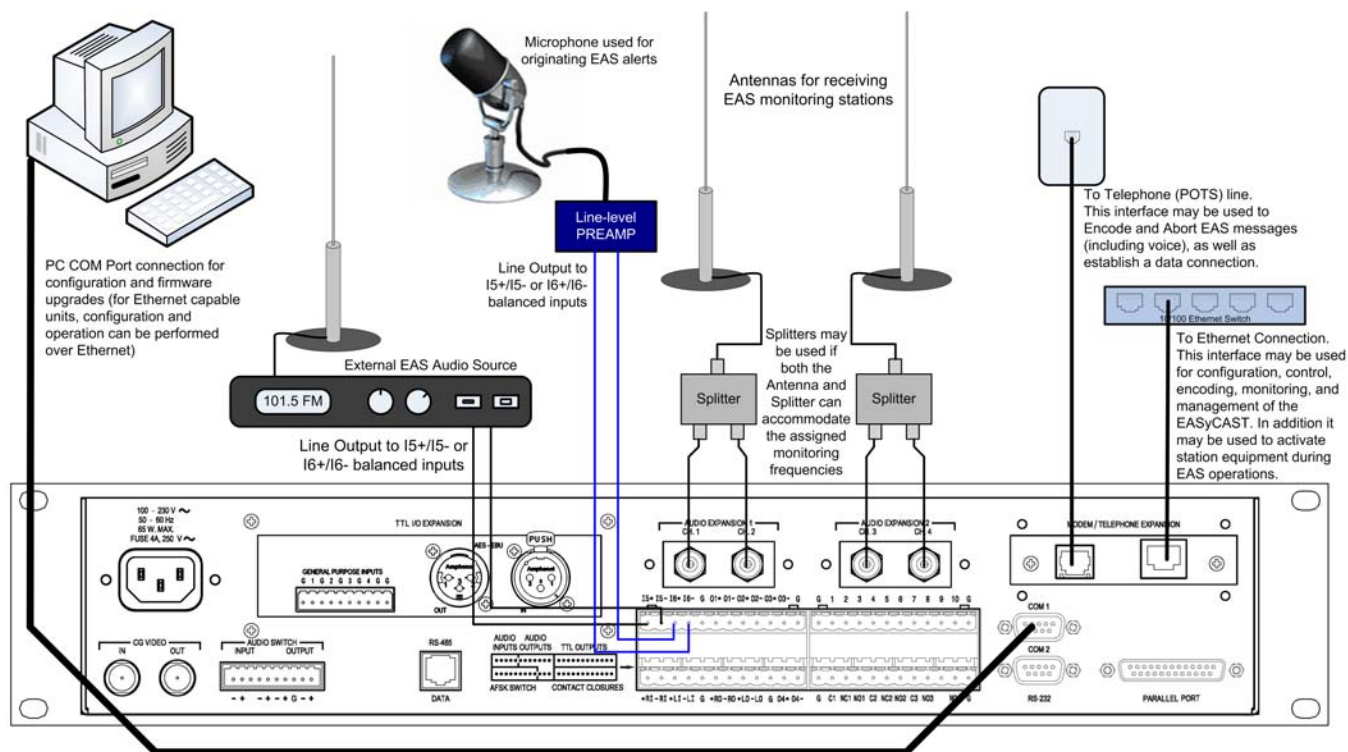
📌 **NOTE**	*Refer to* <u>*Chapter 6: Appendix*</u>*,* <u>*Sample Diagrams*</u>*,* <u>*EAS Monitoring, Data, and Voice Input Interfaces*</u> *for a full-page illustration.*

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EAS Control Wiring (Sample, Studio and Automation Control)
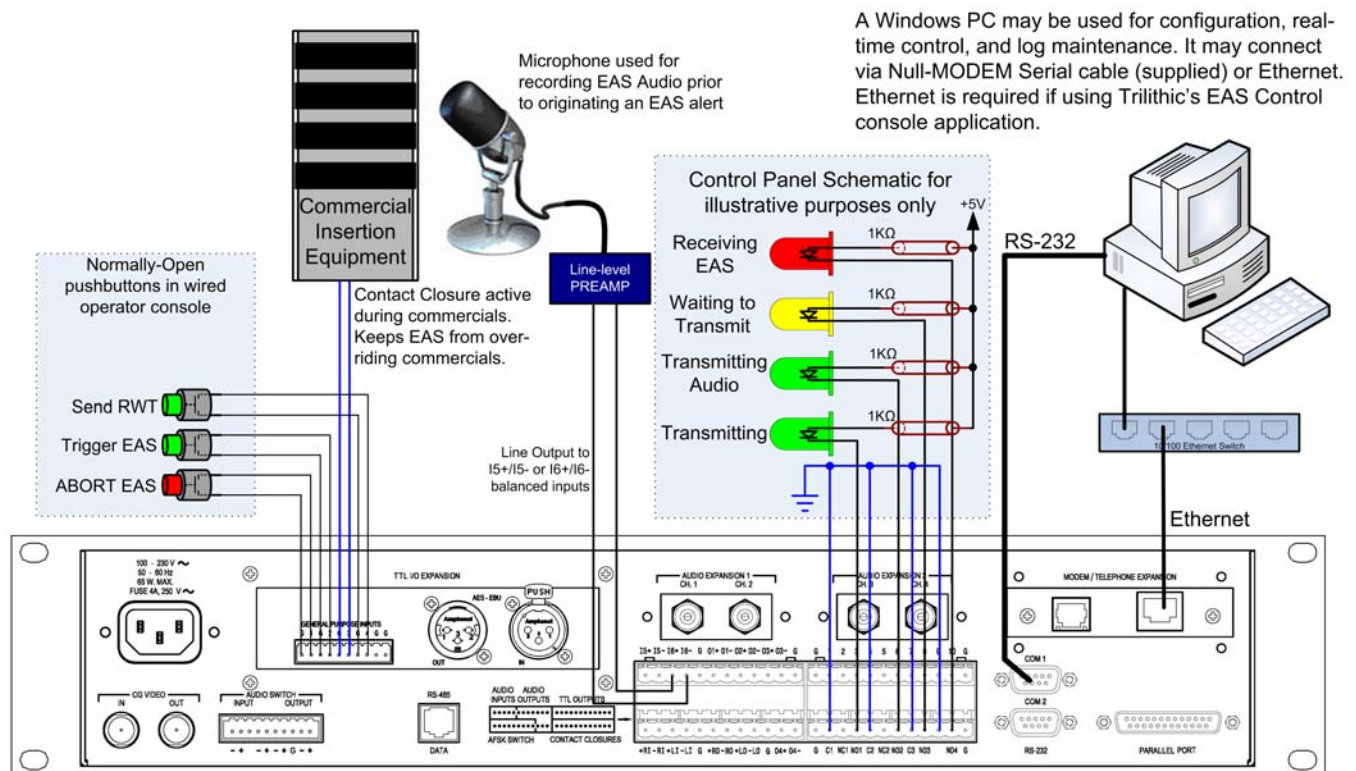
> **Refer to Chapter 6: Appendix, Sample Diagrams, EAS Control Wiring for a full-page illustration.**

Message Transmission and Transmission Control (Sample)

The Ethernet Network connection allows the EASyCAST to send EAS text data, control data, and digitized audio to Video and Audio devices on the network.

Black: Normal station audio or video
Red: Contains EAS Audio or Video during EAS
Blue: Control line or EAS data stream.
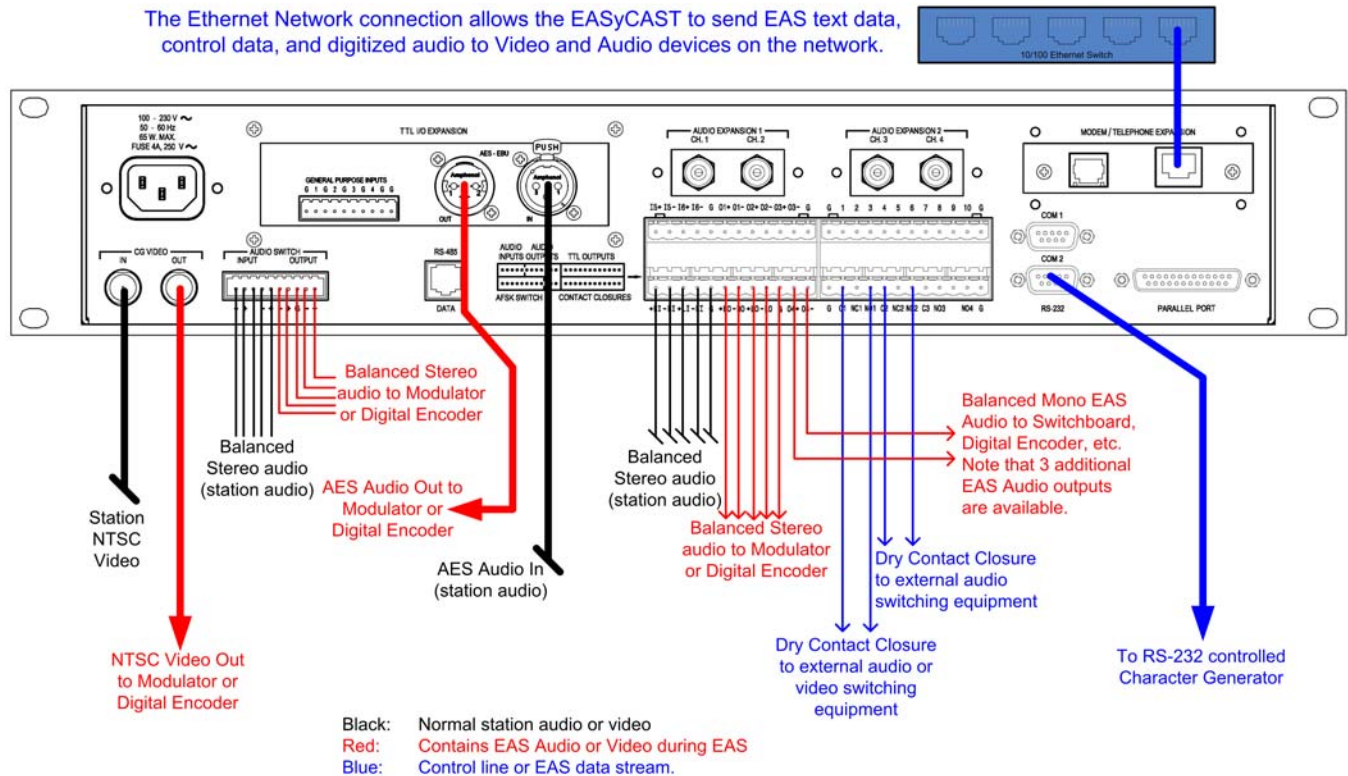
> **NOTE**
>
> *Refer to __Chapter 6: Appendix__, __Sample Diagrams__, __Message Transmission and Transmission Control__ for a full-page illustration.*

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EASyCAST and Visionary Integration (Sample)

> **Refer to _Chapter 6: Appendix_, _Sample Diagrams_, _EASyCAST and Visionary Integration_ for a full-page illustration.**

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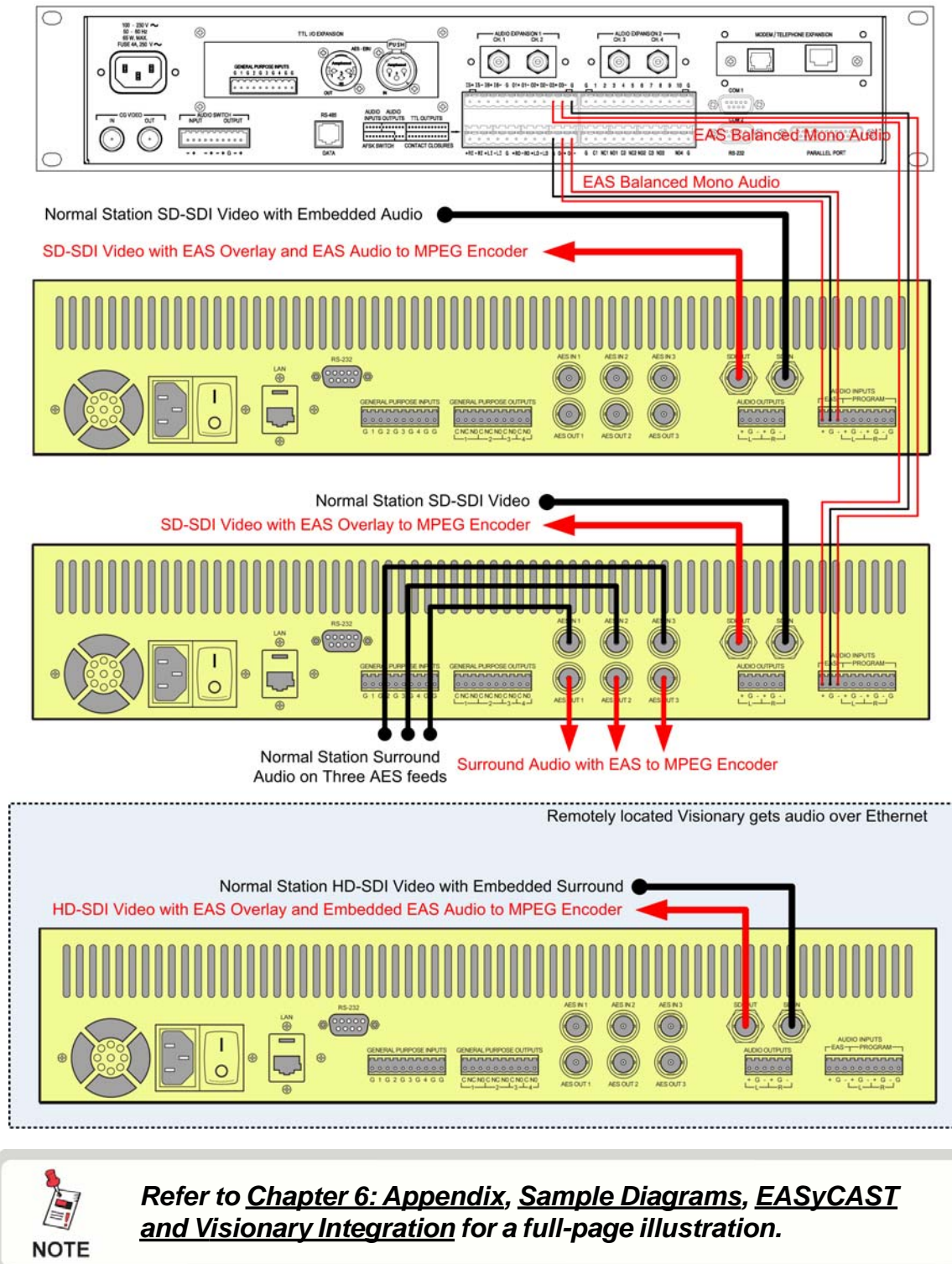
Specifications

Technical Specifications

Chassis

- 2U x 19" x 11" rack-mount enclosure

Back Panel

- (2) RS-232C serial ports available on DB-9 connectors
- RS-485 serial port available on an RJ-12 connector
- Parallel port available on a DB-25 connector
- I/O and audio ports are available on modular terminal blocks
- Video ports are available on 75 Ω BNC connectors
- Antenna inputs are available on 75 Ω F-type connectors
- (2) external audio inputs (600 Ω balanced)
- RJ-45 10/100 BaseT Ethernet connection
- RJ-11 telephone connection

Display

- 20 characters by 4 row alphanumeric LCD matrix

Audio Inputs

- Inputs described in EAS monitoring section
- Internal microphone (available on front panel)
- All inputs have automatic gain control (AGC)

Two Internal, Programmable Radios (Expandable to Four)

- Each receiver is selectable as AM, FM, or NOAA band
- 75 Ω F-type connector antenna inputs
- **Minimum RF inputs:** AM: 25 dBuV, FM: 8 dBuV, WXR: 25 dBuV
- **Maximum RF inputs:** All bands: 60 dBuV

4 x 4 Keypad (16 Keys)

- Conductive rubber, tactile keys

- Numbers 0-9 (and letters A to Z)

- Cancel key (x)

- Enter key (✔)

- Up and down arrow keys (⬆ ⬇); left and right arrow keys (⬅ ➡)

Serial Interface Control

- RS-232C compliant interface to standard PC or laptop PC running Trilithic setup/control software (in Windows®)

Audio Outputs

- (4) monaural, balanced audio outputs

- Internal speaker

- Telephone audio output to the telephone/Ethernet board

- 1 or 2 base band audio switches (see *Chapter 5: Specifications*, *Control and Communication Inputs/Outputs*, *Internal Character Generator*)

- 2-channel (stereo) AES-EBU audio switch on XLR

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Control and Communication Inputs/Outputs

General

- (10) TTL output ports; each output can drive a minimum of 2 TTL loads
- (4) GPI (general purpose input) connections
- (4) contact closures; each relay is capable of switching 2A @ 12 VDC
- (2) RS-232C serial ports (input and output communications)
- (1) RS-485 serial port for communications with peripheral devices (CGs, etc.)
- (1) standard parallel port for printing ASCII text logs (IEE1284 compliant)

Internal Character Generator

- Includes a balanced stereo audio switch to replace program audio with the EAS audio message
- Gen-locks to a video source or creates stand-alone video (RS-170 NTSC)
- Capable of providing a full-page replacement, static text, and crawls

Memory and Controller

- Firmware upgrades are accomplished via a serial port (from a Windows® PC)
- Up to 53 EAS events and 64 FIPS codes can be programmed
- Maintains a log of 1000 EAS alerts or messages
- 2 minutes of non-volatile audio storage for EAS audio messages
- (3) 1-minute audio files for general purpose use

Expansion Ports

- (1) audio expansion port allows 2 additional internal radio receivers

Warranty Information

Trilithic, Inc. warrants that each part of this product will be free from defects in materials and workmanship, under normal use, operating conditions and service for a period of two (2) years from date of delivery. Trilithic, Inc.'s obligation under this Warranty shall be limited, at Trilithic, Inc.'s sole option, to replacing the product, or to replacing or repairing any defective part, F.O.B. Indianapolis, Indiana; provided that the Buyer shall give Trilithic, Inc. written notice.

Batteries are not included or covered by this Warranty.

The remedy set forth herein shall be the only remedy available to the Buyer under this Warranty and in no event shall Trilithic, Inc. be liable for incidental or consequential damages for any alleged breach of this Warranty. This Warranty shall not apply to any part of the product which, without fault of Trilithic, Inc., has been subject to alteration, failure caused by a part not supplied by Trilithic, Inc., accident, fire or other casualty, negligence or misuse, or to any cause whatsoever other than as a result of a defect.

Except for the warranty and exclusions set forth above, and the warranties, if any, available to the Buyer from those who supply Trilithic, Inc., there are no warranties, expressed or implied (including without limitation, any implied warranties of merchantability of fitness), with respect to the condition of the product or its suitability for any use intended for it by the Buyer or by the purchaser from the Buyer.

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Event Configuration Table

This table may be filled in with the desired configuration information for each individual EAS Event (warning type). The configuration should meet all applicable Federal requirements (47 CFR, Part 11), and the requirements of the EAS plan for the applicable state.

Event Code	Event Description	Enabled	Auto Mode Delay	Manual Mode Delay
EAN	Emergency Action Notification		Send Event Immediately	Send Immediately
EAT	Emergency Action Termination		Send Event Immediately	Send Immediately
RMT	Required Monthly Test			
RWT	Required Weekly Test			
ADR	Administrative Message			
AVA	Avalanche Watch			
AVW	Avalanche Warning			
BZW	Blizzard Warning			
CAE	Child Abduction Emergency			
CDW	Civil Danger Warning			
CEM	Civil Emergency Message			
CFA	Coastal Flood Watch			
CFW	Coastal Flood Warning			
DMO	Practice/Demo Warning			
DSW	Dust Storm Warning			
EQW	Earthquake Warning			
EVI	Evacuation Immediate			
FFS	Flash Flood Statement			
FFA	Flash Flood Watch			
FFW	Flash Flood Warning			
FLS	Flood Statement			
FLA	Flood Watch			
FLW	Flood Warning			
FRW	Fire Warning			
HMW	Hazardous Materials Warning			
HLS	Hurricane Statement			
HUA	Hurricane Watch			
HUW	Hurricane Warning			
HWA	High Wind Watch			
HWW	High Wind Warning			
LAE	Local Area Emergency			
LEW	Law Enforcement Warning			

(Continued on the following page)

| Event Code	Event Description	Enabled	Auto Mode Delay	Manual Mode Delay
NIC	National Information Center			
NMN	Network Message Notification			
NPT	National Periodic Test			
NUW	Nuclear Power Plant Warning			
RHW	Radiological Hazard Warning			
SMW	Special Marine Warning			
SPS	Special Weather Statement			
SPW	Shelter in Place Warning			
SVA	Severe Thunderstorm Watch			
SVR	Severe Thunderstorm Warning			
SVS	Severe Weather Statement			
TOE	911 Telephone Outage Emergency			
TOA	Tornado Watch			
TOR	Tornado Warning			
TRA	Tropical Storm Watch			
TRW	Tropical Storm Warning			
TSA	Tsunami Watch			
TSW	Tsunami Warning			
VOW	Volcano Warning			
WSA	Winter Storm Watch			
WSW	Winter Storm Warning			

Manual and **Automatic** modes provide control over the re-sending of EAS events when the station is manned or unmanned. The EASyCAST can be changed from manned (manual) to unmanned (automatic) mode through the front panel menu system or the configuration software.

Automatic mode: Each EAS event can be configured to be disabled (off - do not send event) or to send immediately after receipt (send event immediately).

Manual Mode: Each EAS event can be configured to wait indefinitely for permission to send (never auto-send), to send immediately after receipt (send immediately), or to wait a specified number of minutes before sending (send in xx minutes). When an EAS event is waiting, an operator can manually override the delay by either sending the message, or cancelling it. The configurable time delays are 5, 10, 15, 20, 30, 45, or 60 minutes.
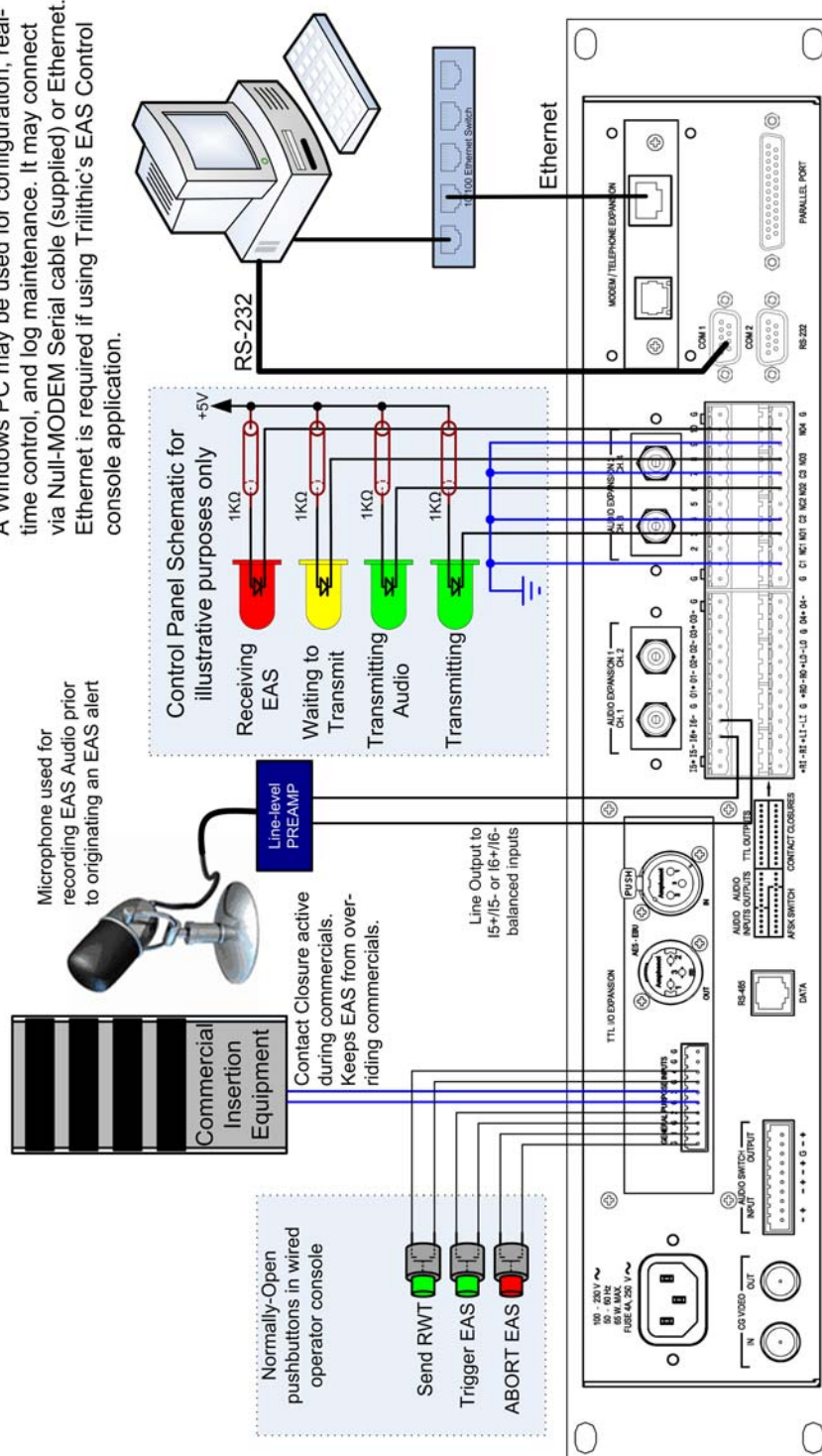
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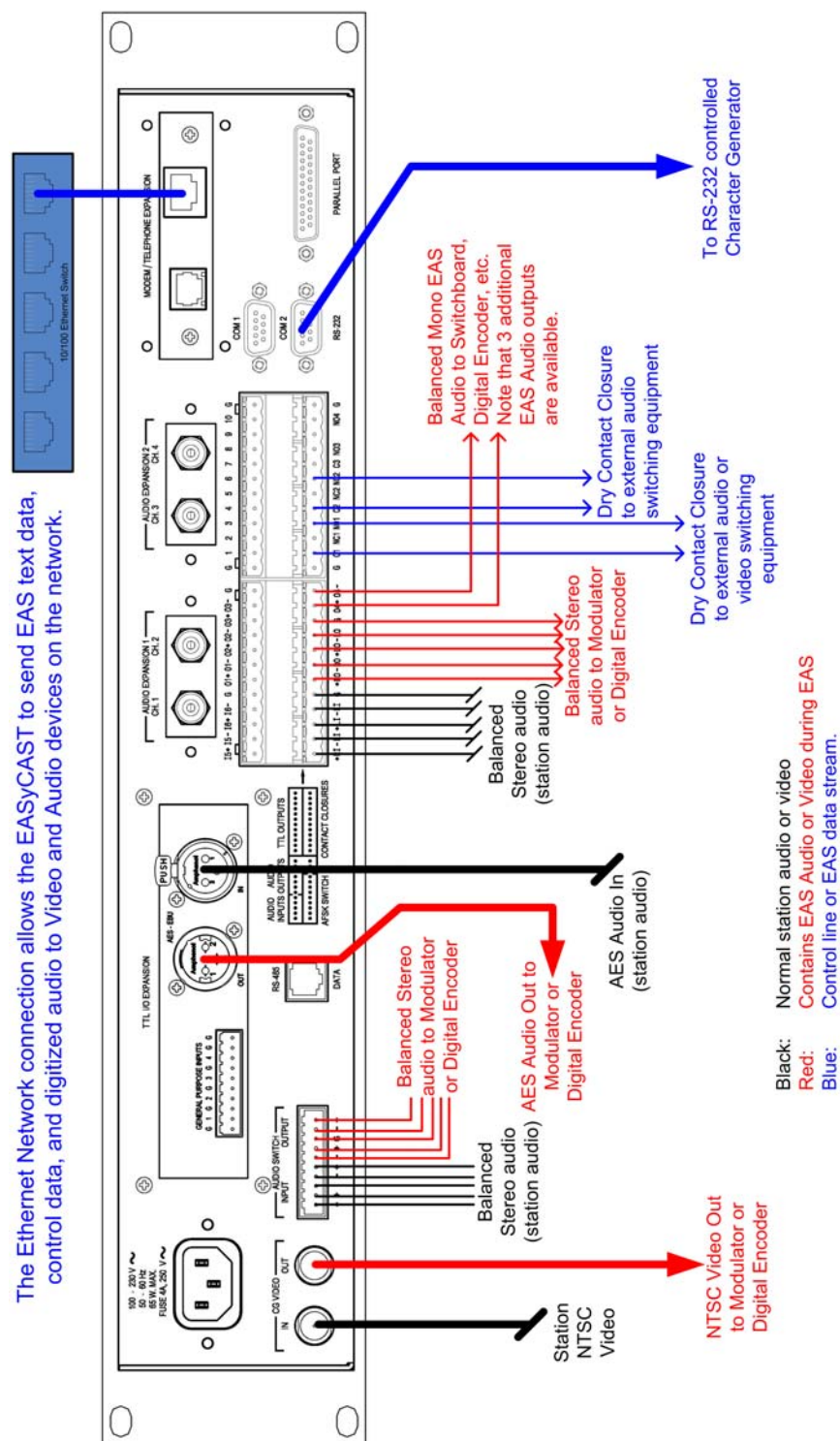## EAS Monitoring, Data, and Voice Input Interfaces
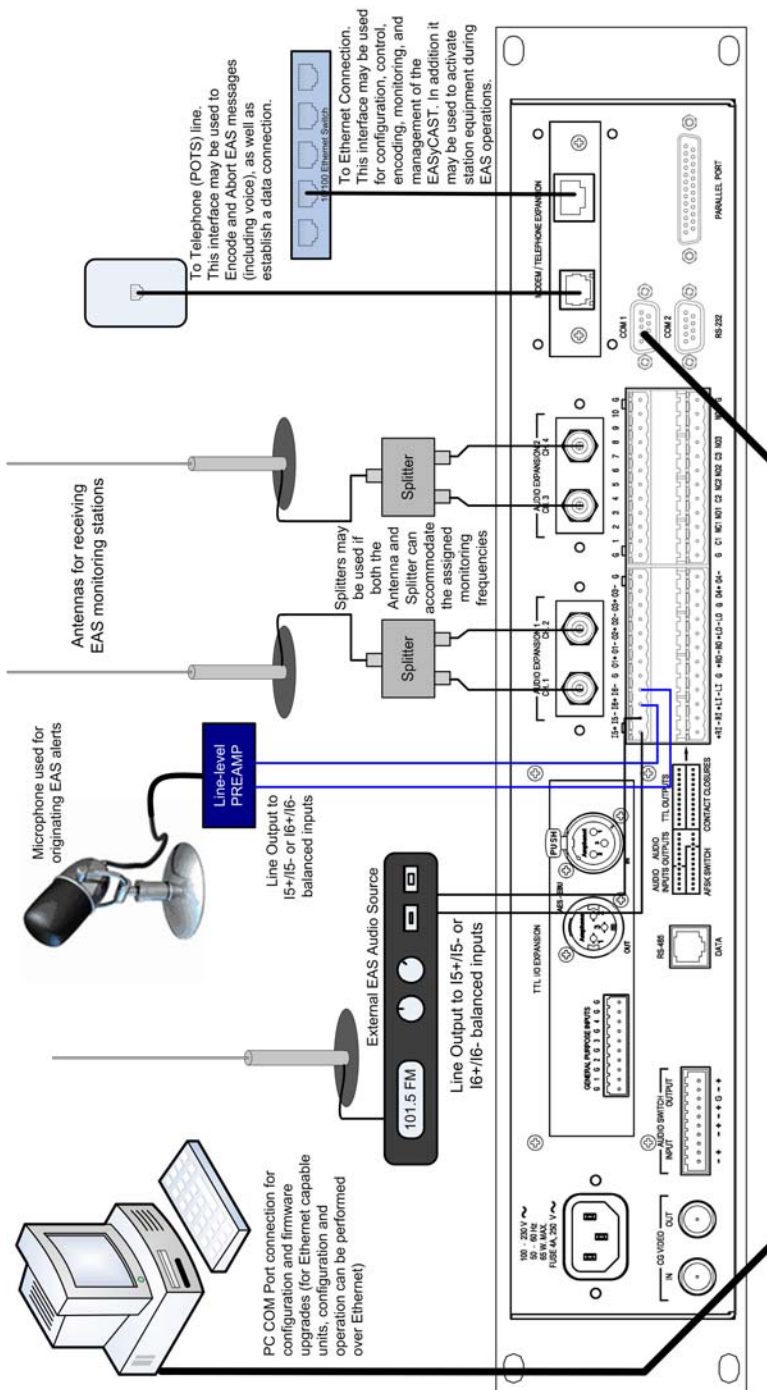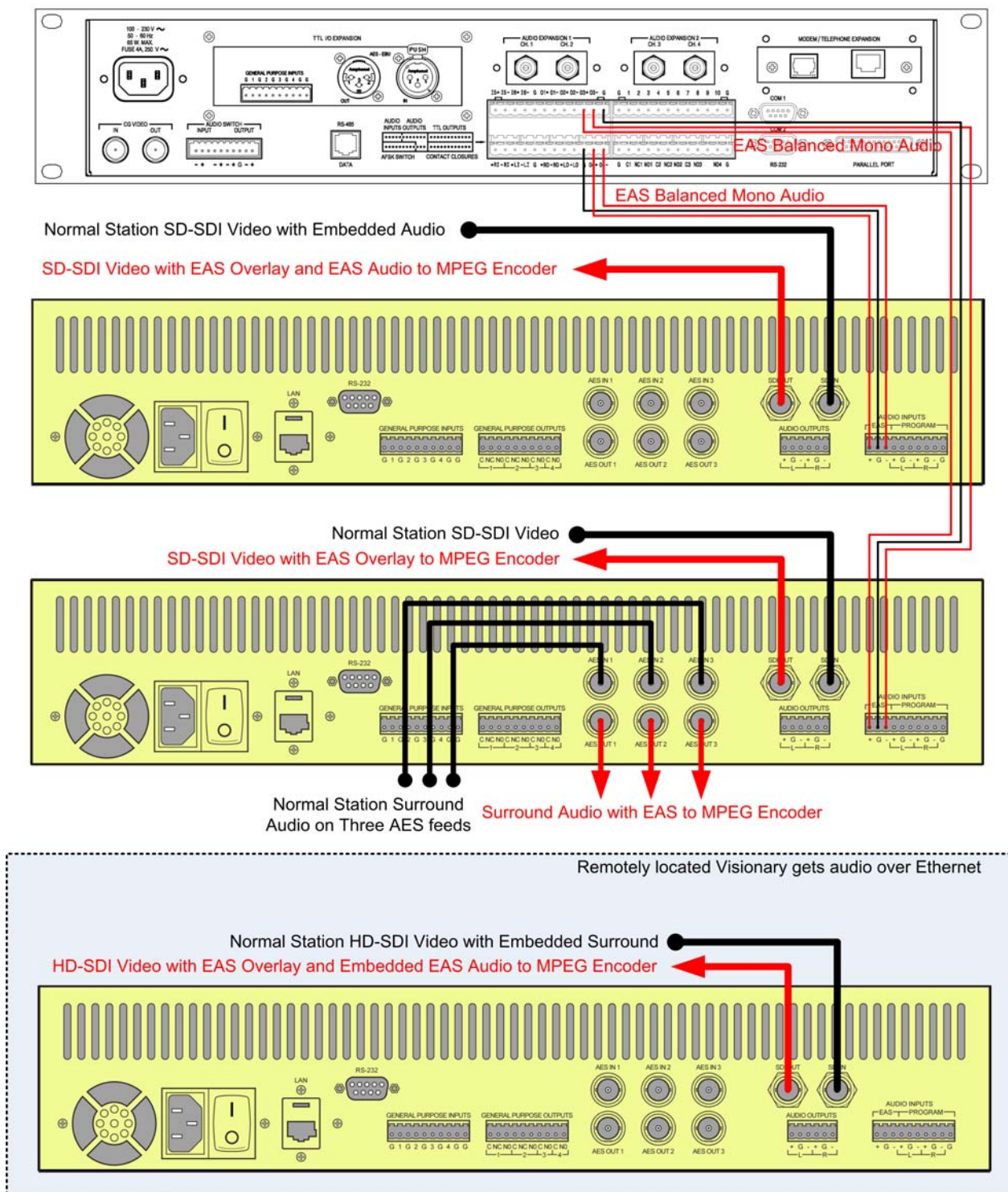
EAS Control Wiring

A Windows PC may be used for configuration, real-time control, and log maintenance. It may connect via Null-MODEM Serial cable (supplied) or Ethernet. Ethernet is required if using Trilithic's EAS Control console application.

Ethernet

RS-232

Control Panel Schematic for illustrative purposes only   +5V

1KΩ   1KΩ   1KΩ   1KΩ

Receiving EAS   Waiting to Transmit   Transmitting Audio   Transmitting

Microphone used for recording EAS Audio prior to originating an EAS alert

Line-level PREAMP

Line Output to I5+/I5- or I6+/I6- balanced inputs

Commercial Insertion Equipment

Contact Closure active during commercials. Keeps EAS from over-riding commercials.

Normally-Open pushbuttons in wired operator console

Send RWT   Trigger EAS   ABORT EAS

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Message Transmission and Transmission Control

EASyCAST and Visionary Integration

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9710 Park Davis Drive
Indianapolis, IN 46235
(317) 895-3600
www.trilithic.com