

TES3

Multistandard TV Data Encoder Platform



Overview

The TES3 Multistandard TV Data Encoder / Inserter is a highly flexible platform for encoding, inserting, receiving, bridging and multiplexing digital data in the vertical blanking interval (VBI) of any television signal. The TES3 has 4 input data ports that are enabled by software modules to accept RS232 data; 3 ports are direct and one is via an internal 33.6Kbps modem or 10Base-T LAN adaptor. The TES3 can house up to four software modules for encoding and inserting up to 4 input data streams into a single VBI. The TES3 is the first world-capable TV Data Encoder platform that can operate in any television and AC power standard, and can encode and insert data in any TV data format.

The TES3 can be used as an encoder / inserter for encoding and inserting asynchronous serial RS232 or LAN data streams into the VBI, or as a data bridge for extracting the data from the VBI of one video source and inserting it into the VBI of another. Standard encoder software modules are available for broadcasting or bridging data meeting North American (NABTS), European (WST) or Japanese (JTES) standards for teletext data transmission. Standard encoder modules are also available for EIA608 Closed Captioning and for configuring the TES3 as a Test Encoder. See the appropriate module data sheet for details on any specific module. Ross Video can also supply non-standard encoder software modules under special order.

Key Features

The TES3 combines the four components necessary for TV data transmission into one unit:

- **Communications:** Multiple data ports and internal TV data decoders for data input and output.
- **Processing:** The heart of the TES3 is an Intel processor with FLASH disk. The various modes and features of the TES3 platform are enabled by loading Ross Video software modules into the TES3.
- **Encoding:** Any TV data format (NABTS, WST, AMOL, Line 21 Captioning, proprietary) can be encoded by the TES3, with up to eight done simultaneously. All data formatting is done by the unit.
- **Insertion:** The TES3 will insert the encoded data formats on any combination of lines 10-25 (7-22 in 625 line systems) in any video format (NTSC, PAL, SECAM, 525 & 625 Line).

Proven Technology

Ross Video is the world's leading supplier of TV data broadcast products, systems and software for transmitting data over any standard TV signal. Ross Video's products and technology have been adopted worldwide for use by major TV broadcasters, cable TV system operators, news agencies, systems integrators, value added service providers and OEM equipment suppliers. Ross Video supplies a complete line of TV data encoders, data bridges, receivers and system level applications software packages to meet specific user requirements. For current information on Ross Video's technology or products visit our website at www.rossvideo.com.

TV Data Broadcast System Component

The TES3 is primarily used as the key headend component of a TV data broadcast system. Typical TV data broadcast system applications include high-speed data transmission, file transfer, Internet content distribution, news and stock quote delivery, electronic publishing and weather radar or photo image transmission.

To construct a TV data broadcast system, you will need a TES3 TV Data Encoder platform equipped with one to four encoder software modules per TES3 (one for each input data stream) plus an appropriate number of TV Data Receivers (one per end-user receive site). This is all that is needed for simple data transmission. The headend TES3 and remote TV Data Receivers effectively act as a simple point-to-multipoint modem link; what goes in the encoder at the headend comes out of the receivers at the receive end.

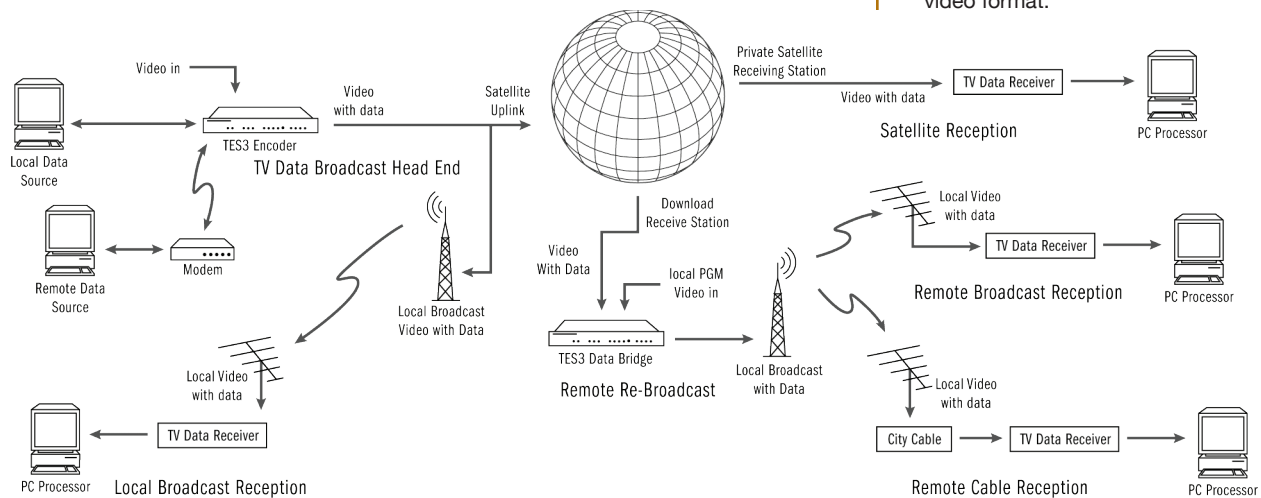
For TV data reception, Ross Video supplies both internal PC-card and external PC-peripheral TV data receivers.

For end-to-end system solutions other than simple data transfer, you will also need the appropriate system-level application software (either Ross Video's or your own). Ross Video offers several system level applications software packages for use with its TV data broadcast equipment.

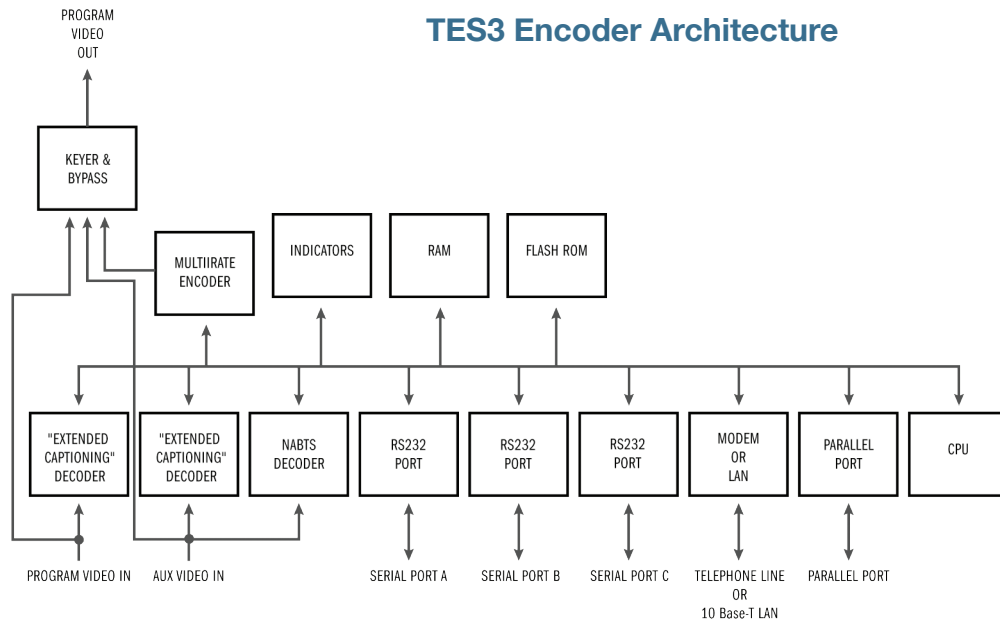
Encoder Software Modules

- High Speed Data Broadcast:** The TES3 highspeed data broadcast software modules are fully compliant with the established standards for TV data transmission. Standard modules include NABTS, WST, and Japanese Teletext. Features include data rates up to 115,200 bps per serial port (higher rates with the LAN interface), flexible data formats, broad addressing capability, and advanced built-in forward error correction (FEC) techniques developed specifically for TV data broadcasting applications.
- Closed Captioning:** The TES3 Captioning Module performs standard EIA608 Line 21 Closed Captioning in any video format, including text services. The Captioning Module can be combined with high-speed data broadcast software modules to enable simultaneous captioning plus high-speed data broadcast via a single TES3 encoder.
- Standards Conversion:** When equipped with a Standards Conversion Module, the TES3 will take TV data from the VBI of one video standard and re-insert in the VBI of a different video standard.
- Data Bridge:** The Data Bridge Module enables the TES3 to selected TV data from the VBI of one video channel and insert it in selected VBI lines of another video channel.
- Test Encoder:** The Test Encoder Module allows the TES3 to be used as a reference encoder / inserter in an assembly-line, test-facility and/or development application. A single TES3 Test Encoder can simultaneously source several different signal formats in any video format.

TV Data Broadcast System



TES3 Encoder Architecture



TES3 Encoder Operation

Communications

- **Data Ports:** The TES3 has 4 input data ports; 3 direct RS232 serial ports and either a 33,600bps data modem or a LAN adaptor to allow data to be accepted from several sources for encoding. Alternatively, they can serve as outputs for data received through the TES3 internal VBI decoders. A general purpose bi-directional 8-bit parallel port can be used with special software for controlling external equipment or sensing external signals.
- **EIA608/EIA516 Data Reception:** Two EIA608 (Closed Captioning) data decoders, connected to the Program and Auxiliary video inputs, and an EIA516 (NABTS) data decoder, connected to the auxiliary video input, allow reception of Captioning and high speed NABTS data. This data can be bridged to another video output, re-directed to a data port or re-inserted in another data format.
- **Dynamic Configuration:** The TES3 is set up locally using a PC connected directly to a data port or remotely via the internal modem. Parameters are stored in non-volatile memory of the unit.
- **Remote Operation:** Once the TES3 is installed, data transmission and system control can be located and operated remotely; broadcasters who act as VBI carriers do not need to run the system for their customers.

Insertion

- **World-standard:** The TES3 is fully compatible with all television transmission standards (NTSC, PAL, SECAM, 525 line, 625 line) and AC power standards
- **Individually Selectable VBI Lines:** Any block of sixteen lines anywhere in the video (eg. lines 10-25 for the VBI) can be individually (de)selected for insertion in any combination.
- **“Broadcast quality” Video Interface:** The TES3 is designed as a very “clean” video inserter for use in any network / local environment and offers virtually transparent insertion performance.
- **Master Inserter:** Selected VBI lines of a synchronous video signal connected to the auxiliary input can be keyed into the program video output, allowing signals such as VITS or GCR produced by other generators to be inserted by the TES3.
- **Video Bypass:** Automatic video bypass goes into effect on power failure or on detection of certain faults. Manual control is also possible using the front panel switch. The remote control connector can also be used to switch the unit into bypass.

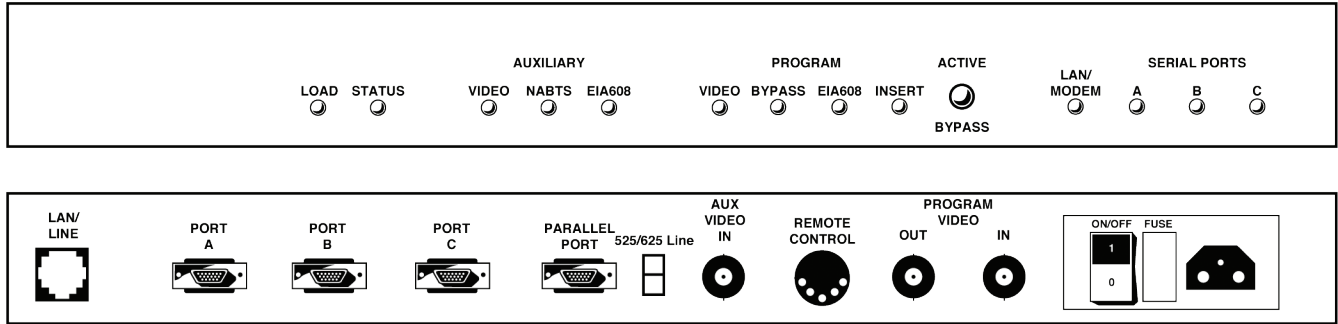
Encoding

- **Multi-rate Data Encoding:** Up to 8 TV data formats can be encoded and inserted simultaneously by a single TES3 unit. Encoding formats are all software controlled and are enabled with Ross Video software modules. Standard formats supported include NABTS (EIA516), WST, Closed Captioning (EIA608), Japanese Teletext (JSET) and AMOL. Software modules for non-standard/proprietary formats are available. Data is received either through one of three direct RS232 serial ports, the modem port or via the video input. The encoder is compatible with existing NABTS and Captioning software packages on the market.

Processing

- **CPU Processor:** An Intel processor provides the TES3 processing power. The ISA bus is available internally on a standard PC-type edge connector as well as on a PC104 header, allowing for future addition of other interfaces.
- **RAM & FLASH Memory:** Standard RAM is 4Mb upgradeable to 16Mb and the FLASH acts as a disk. The TES3 software can be changed or upgraded by downloading software through one of the data ports or remotely via the modem port. The TES3 can be dynamically reconfigured in the field by Ross Video.

TES3 Front and Rear Panels



Specifications

Physical

- 19" w x 1.72" h x 16" d (48.3 x 4.4 x 40.6 cm)
- 14 lbs (4.9 kg)

Connectors

- Program Video In and Out: BNC, 75 ohm
- Aux Video In: BNC, 75 ohm or Hi-Z
- Serial Ports A-C : D9 , connected as DTE
- Parallel Port : D9
- Modem or LAN : RJ45 telephone jack
- Remote Control: 5 pin DIN

Power

- 110V / 60 Hz, 0.4 A, or
- 220V / 50 Hz

Indicators

- Processor status
- Program video present
- Program EIA608 data present
- Program bypass
- Program data insert
- Auxiliary video present
- Auxiliary EIA608 data present
- Auxiliary EIA516 (NABTS) data present
- Modem/LAN in-use
- Serial data activity on ports A, B and C

Switches

- Power on/off
- Bypass / Active
- Video Format: 525 or 625

Environment

- 0-40° C operating (32-104° F)

Processor

- 386SX, 25 MHZ
- RAM: 4or16 MBytes
- FLASH: 1 MByte

Selected video specifications

- Differential gain < 0.2 %
- Differential phase < 0.2°
- Tilt (line and field) < 0.2 %
- SNR > 60 dB rms, weighted
- Return loss > 46 dB to 5.5 MHZ
- Frequency response < 0.2% to 5.5 MHZ
- Pulse / bar ratio errors (0.5T, T, 2T) < 0.2%
- Chroma/luma gain inequality < 0.2%
- Chroma/luma delay inequality < 10 ns
- Data pulse shaping per EIA608, EIA516 or other standards