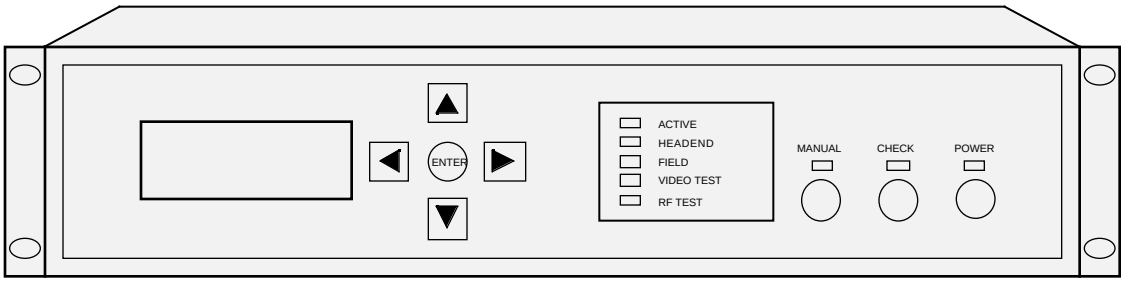
Technical Introduction

Background

FCC Rule 47CFR 76.605 requires a 400 MHz cable system to test seven (7) channels. Also, one (1) additional channel is to be tested for each additional 100 MHz of system bandwidth. One Encoder is required for each channel to be tested. The Examiner package consists of one (1) Processor and seven (7) Encoders. One Examiner Processor can accommodate up to twelve (12) Encoders.

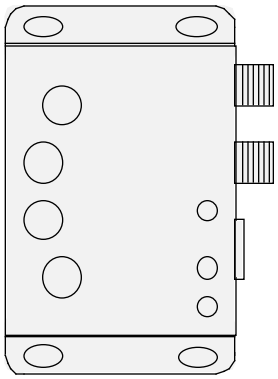
Supplied by ComSonics

- Examiner Processor (19” rack mount unit, 3 1/2” high, 18” deep).
- Examiner Encoder (approximately 5” x 4” x 2”).
- Custom Software Program for Hewlett-Packard 8591C Cable TV Analyzer. A 9-pin PC to analyzer communications cable is included. A 9-pin to 25-pin adapter (not supplied) may be needed.
- Optional: Preassembled Cables (special order, customer specified lengths: from Examiner Processor to Encoder, from Encoder to modulator). See *Headend Installation* for details.



Examiner Processor
101129-001

Examiner Encoder
101121-001



Customer requirements

Test Channels

In order to use the Examiner Encoder System, a number of cable channels must be selected for encoding. The selected channels must meet the following criteria:

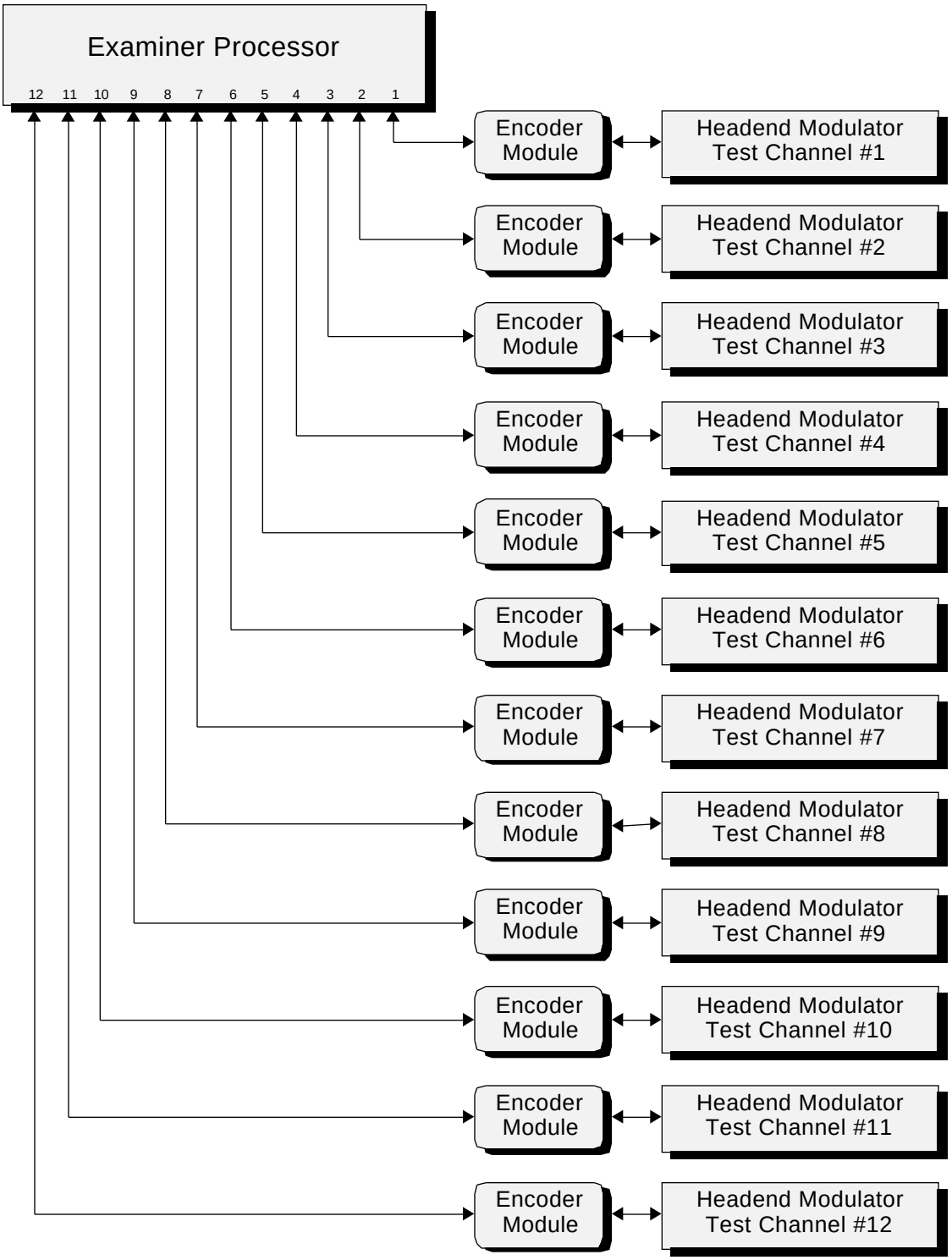
- Non-scrambled.
- Standard NTSC analog.
- Processed by a modulator.
  - The modulator must use baseband video, not composite video.
  - The modulator must have separate external IF loops.
  - The video IF signal must be available separately.
- The channel can not contain must-carry data on the selected vertical interval line.
- The modulator's video input or IF feed should not be switched either by a timer or automatically during Examiner testing.

Headend Installation

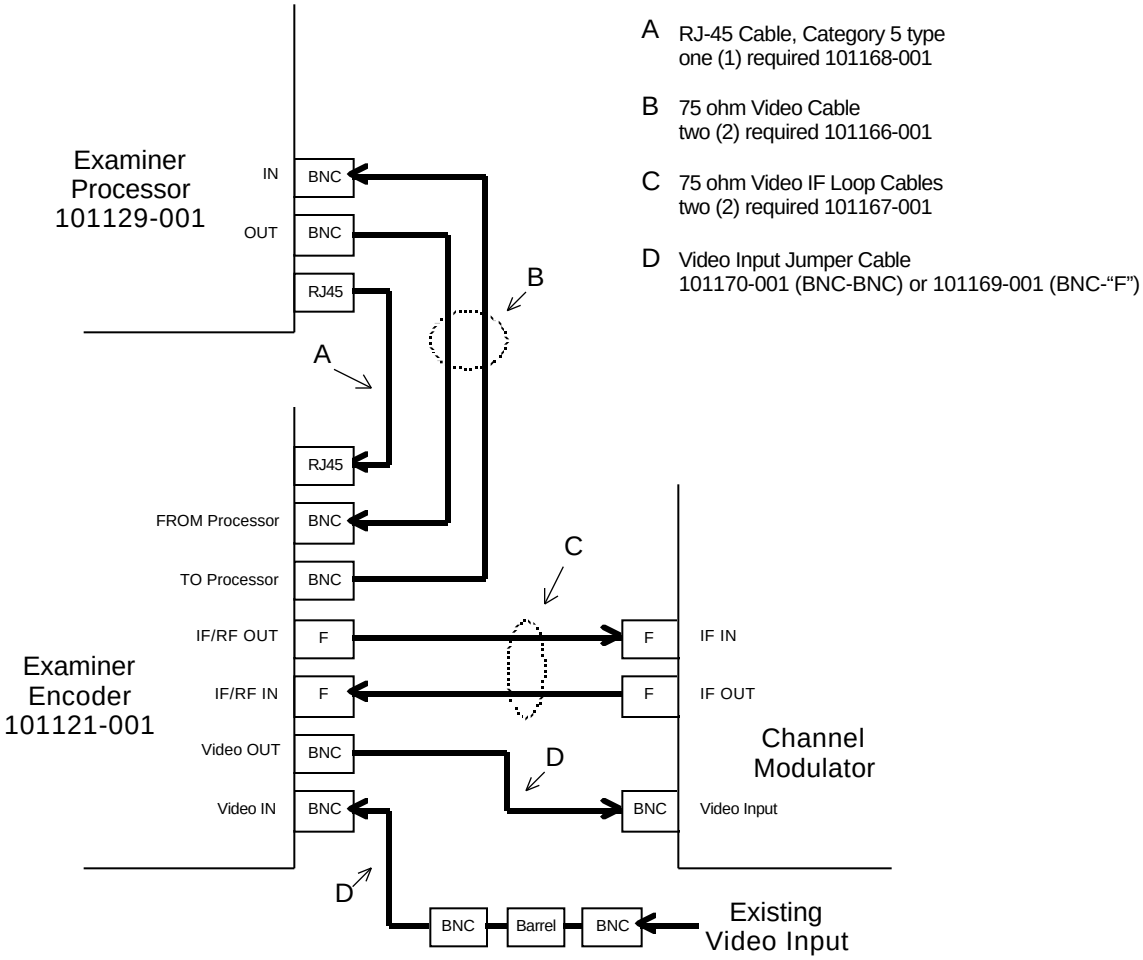
- The Examiner Processor mounts in a standard 19" equipment rack. It is 3 1/2" high and 18" deep.
- The Encoder is approximately 5" x 4" x 2" in size and has mounting flanges. It is mounted as close as practical to its associated modulator.
  - Measure the distance from where the Examiner Processor will be installed to each of the Encoder mounting locations. Each test channel requires the following cables connected to the Encoder.
    - Two (2) video cables from the Examiner Processor, BNC connectors on each end (optional: 101166-001, qty 2)
    - One (1) Category 5 type cable from the Processor, RJ-45 connectors on each end, wired straight through (optional: 101168-001, qty 1)
    - Two (2) IF jumper cables from the modulator, "F" connectors on each end (optional: 101167-001, qty 2)
    - One (1) video jumper cable to the modulator, a BNC connector on the Encoder end and either a BNC or a "F" connector on the modulator end (optional: 101170-001 [BNC-BNC] or 101169-001 [BNC-"F"] qty 1)
- The customer may make their own cables or purchase custom lengths of the cables listed above. See *Installation Cables* on page 8.

Headend System Overview *(Full twelve channel setup shown)*

For demonstration purposes as few as one encoded test channel can be used.



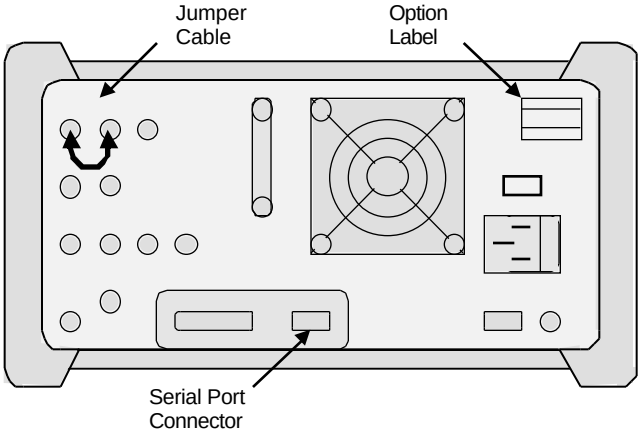
Typical Installation Diagram *(one test channel shown for example)*



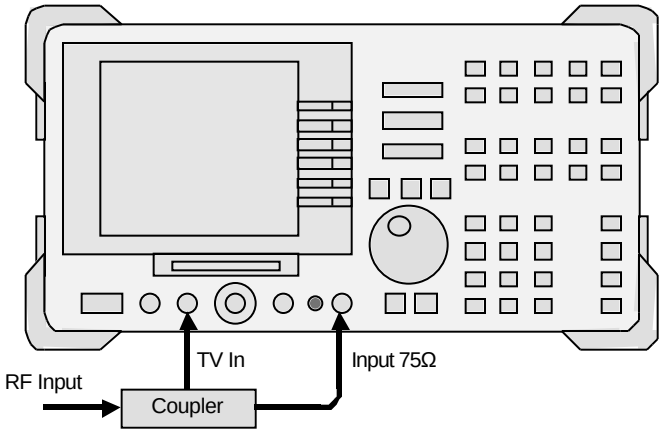
Equipment required for making Measurements

To make measurements utilizing the Examiner Encoding System a spectrum analyzer is needed. The Hewlett-Packard 8591C Cable TV Analyzer, with the installation of the Examiner Companion software, works with the system. The Analyzer must be equipped as follows:

- Option 107 installed. *See pages 6 and 8 to check options and memory.*
- At least 200,000 bytes of total internal memory.
- HP 85721A Cable TV Measurements & System Monitor Personality installed, licensed Version A.01.04 or A.02.09.
- Serial interface port (DB-9 or DB-25) on rear panel. The serial interface is standard but may have been replaced by another option.
- HP 85702A 128K Byte RAM card (optional for saving and retrieving measurements).



HP 8591C Rear Panel



HP 8591C Front Panel

Important:

See the next page for procedures to determine if the HP 8591C Analyzer has the proper options and the required internal memory to be used with the Examiner system.

Please print/copy the form on page 9, fill in the information for the intended 8591C Analyzer, and fax to 540-434-9847. This will help in pre-determining the compatibility of the intended analyzer with the Examiner System.

HP 8591C Options and Memory Checkout Procedures

Check Installed Options

- Press the **CONFIG** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **More 1 of 3** softkey.
- Press the **SHOW OPTIONS** softkey.

The following options must appear in the list:

101: FADC
102: DEMOD/TV
105: GATE Rev B
107: TVTUN
043: RS232 + Parallel

Check Installed Memory

- Press the **RECALL** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **INTERNAL CARD** softkey until INTERNAL is underlined.
- Press the **Catalog Internal** softkey.
- Press the **CATALOG ALL** softkey.

Example of memory display:

```
INTERNAL:    154886    238070
_BYE                   158
_BYESM                 73
_EOSCNG                668
```

The example shows a total internal memory of 238,070 bytes.

The HP 8591C Analyzer must have more than 200,000 bytes of internal memory to properly install the HP 85721A Personality and the Examiner Companion DLP software.

Important:

An upgrade for older HP8591C instruments (serial number prefix prior to 3523A) can be purchased from Agilent Technologies (formerly Hewlett-Packard) that will improve the performance of the Analyzer and make it compatible with the Examiner Companion Software. Contact your local Agilent sales representative and order "Special Option K043."

Computer (PC) requirements for Examiner software

The software installation is a two step process. First, the *Examiner Companion* program is installed onto a PC. Then a communication cable (included) is connected between the PC and the analyzer (serial port). The Examiner software (DLP for downloadable program) is then installed onto the analyzer from the Examiner Companion.

PC Requirements

- IBM or Compatible PC running Windows 95, 98, or NT 4.0.
- CD-ROM drive.
- RS-232 Serial port designated as COM 1, 2, 3, or 4 (9-pin communication cable supplied with software kit). A 9-pin to 25-pin adapter (not supplied) may be required.

The function of the Examiner analyzer software

The Examiner DLP application software creates a custom Examiner softkey menu in the HP Analyzer. It presets the parameters for Examiner measurements thereby requiring the user to press only a few buttons to complete a measurement. Data can be saved to a RAM card for retrieval to a PC using the Examiner Companion program. Downloaded data can be imported into most spreadsheet programs.

Optional accessories

Preassembled cables are available as an option (not included with the Examiner package). Cables are special ordered to customer specified lengths.

Installation Cables - Specify length when ordering	
Cable - Examiner Processor to Encoder video cable, BNC connector on each end, two (2) required.	101166-001
Cable - Examiner Processor to Encoder control cable, Category 5 type cable, RJ-45 connector on each end, one (1) required.	101168-001
Cable - Encoder to Modulator IF jumper cable, “F” connector on each end, two (2) required.	101167-001
Only one (1) of the following cables is required per Encoder installation.	
Cable - Encoder to Modulator video jumper cable, a BNC connector on each end. ***For modulators with a BNC connector for video input.***	101170-001
Cable - Encoder to Modulator video jumper cable, a BNC connector on one end and a “F” connector on the other end. ***For modulators with a “F” connector for video input.***	101169-001
Certain Installations may require an extension cable and adapter.	
Cable - Video input to Encoder extension jumper, a BNC connector on each end	101170-001
Adapter - BNC/BNC barrel to extend current video input cable to Encoder video input	

Customer Information

System Name: _____

System Location: _____

System Contact Person: _____

Phone Number: _____

Headend Contact Person: _____

Phone Number: _____

Number of Test Channels: _____ (12 Maximum)

IMPORTANT: Are the test channel modulators outfitted with SEPARATE video IF loop-through connections (Please get this information from the headend contact)?

Please Note: COMPOSITE IF SIGNALS ARE NOT COMPATIBLE.

An HP8591C Spectrum Analyzer with selected options and adequate internal memory is required for use with the Examiner measurement system. Follow the steps in the tables below on a powered HP8591C and record in the appropriate space the results displayed on the screen. Record 8591C Serial Number: _____

Check Installed Options

- Press the **CONFIG** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **More 1 of 3** softkey.
- Press the **SHOW OPTIONS** softkey.

List the options displayed on the screen:

Opt #	Description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

8591C: #_____

Firmware Rev:_____

Check Installed Memory

- Press the **RECALL** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **INTERNAL CARD** softkey until INTERNAL is underlined.
- Press the **Catalog Internal** softkey.
- Press the **CATALOG ALL** softkey.

Enter the two numbers appearing to the right of **INTERNAL:**

INTERNAL:	_____	_____
_BYE		158
_BYESM		73
_EOSCNG		668

The far right number must be greater than 200,000 for installation of the HP 85721A Personality and the Examiner Companion DLP software.

*Regional Sales Manager*_____ *Date*_____