



Encoding Monitor Operations Manual



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For Arbitron Encoding Monitor Models:
1000-1135-xx Encoding Monitor
1000-1162-xx Encoding Monitor, RoHS Compliant

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1. CONTACTS

If you need assistance or have any questions, please contact or call:

1.1. UNITED STATES

EncodingOperations@arbitron.com

- For any questions regarding this manual, please call 410.312.8123.
- For any **URGENT** Encoding Equipment Issues, please contact our 24/7 Encoding Issues Hotline 866.767.7212

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1.2. INTERNATIONAL

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2. NOTICE

For the 1000-1135-xx Encoding Monitor:

The two cylindrical ferrite cores, Fair Rite part #0431164281 or its functional equivalent, supplied as part of the package, must be installed on the two audio cables in close proximity to the Neutrik XLR connector, close to the connection point at the rear of this Encoding Monitor. (See Figure 1)

To install these devices, simply open the core's hinged case and fit the sectioned cores over the cables; once the case is snapped closed, the cores will be firmly secured (see picture on next page).

The installation of these ferrite cores **is not necessary** for the 1000-1162-xx Encoding Monitor, RoHS Compliant.



Figure 1: Ferrite Cores

3. DISCLAIMER

It is the responsibility of the Installer to scrupulously adhere to the above-cited instructions; Arbitron cannot be held accountable for any infringement.

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4. WARNINGS

To reduce the risk of personal injury, electrical shock, fire, or damage to the MONITOR, DO NOT expose this unit to rain or moisture. Due to the danger of personal injury, electrical shock, or damage to the instrument, ONLY Arbitron authorized service personnel shall gain access to the inside of the MONITOR. DO NOT disconnect the earth ground from the power cord since this is a very important safety feature. The MONITOR should be mounted securely in a rack. The sides must be free of obstructions to provide adequate airflow through the instrument.

The installation of the ferrite cores is of paramount importance for maintenance of compliance to the FCC part 15 and CISPR 22 Radiated Emission Class “B” Normative.

CAUTION: FAILURE TO INSTALL THE ENCODING MONITOR IN ACCORDANCE WITH THE SPECIFICATION IN THIS MANUAL AND/OR FAILURE TO MAINTAIN BROADCAST SIGNALS IN ACCORDANCE WITH GENERAL INDUSTRY STANDARDS AND SPECIFICATIONS MAY RESULT IN THE ENCODING MONITOR NOT OPERATING PROPERLY.

5. INTRODUCTION/OVERVIEW

The Arbitron Studio Grade Encoder (SGE) inserts inaudible symbols into the audio of broadcasts according to Arbitron patented algorithms. The instrument described in this document, the Encoding Monitor (MONITOR), is used to detect encoded audio program material. The station engineer can use this instrument to validate that their station is transmitting encoded program material. Arbitron strongly advises the station engineer to use *air return* audio when connecting to the MONITOR, to detect cases where the SGE has been accidentally ‘patched out’ of the audio stream.

RoHS Compliance (Restriction of Hazardous Substances) is the nickname given to the European Union's directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment. RoHS seeks to reduce the amount of hazardous materials entering electronic products.

The Arbitron “1000-1162-xx Encoding Monitor, RoHS Compliant” is designed to meet the requirements of the European Union's directive 2002/95/EC.

All of the other Arbitron Encoding Monitors listed on the title page of this manual have not been designed to meet the requirements of the European Union's directive 2002/95/EC.

5.1. SUGGESTED PLACEMENT IN AUDIO CHAIN

Arbitron recommends that the MONITOR be installed such that it receives program material that has exited the transmitter or ‘over-the-air’ broadcasts. This will insure that your media consumers are exposed to encoded program material.

The MONITOR operates optimally with a nominal average audio input level of +8 dBu.

6. INSTALLATION

6.1. INSTALLING THE MONITOR

- 6.1.1. Place instrument into a 19" rack in an indoor environment.
- 6.1.2. Install securely using screws in each of the four front panel corners.
- 6.1.3. See Figure 2. Slide switch 'S1' to '600' if 600 ohm input termination is desired or to 'HI' if a 12k ohm input bridging impedance is desired.
- 6.1.4. Connect the power cord to the MONITOR and to the same plug strip that supplies power to the instruments that will be connected to the input of the MONITOR. The MONITOR has no power switch. The 'POWER' indicator LED will be lit green.
- 6.1.5. DO NOT block or otherwise impede airflow through the sides of the instrument.
- 6.1.6. Connect the received program material signals into the connectors marked 'IN' on the MONITOR.

If the program material is always mono and only one audio cable is used (single channel mode), then the MONITOR can be configured for single channel operation. In single channel mode, the channel A analog input must be used. The default decoding mode is dual channel.



Figure 2: Rear-View, Monitor

7. OPERATION

7.1. USING THE MONITOR

The station engineer has been provided several monitoring options:

If desired, they can monitor the front panel LED. When the MONITOR is receiving the correct encoded material, the front panel LED will be a **CONSTANT GREEN**. When incorrectly encoded material is presented to the audio inputs, the front panel LED will **FLASH RED** (see notes below).

If the engineer cannot always visually monitor the MONITOR front panel, the engineer can use the rear panel ALARM connection. This connection provides both a normally open and normally closed relays which will energize when indicating a loss of encoding. This connection can be made externally to either an audible or visual indicator, or both. It is highly recommended that the monitor's ALARM connection should be used in conjunction with your station's current Air Fault Alarm system (or similar).

Provision has also been made for connection to a remote monitor device via RS232. See below for specification of connection to both the ALARM and RS232 connections.

Note: The MONITOR has been configured with a nominal alarm delay of approximately 3 minutes. In other words, the MONITOR will not assert an alarm condition until it fails to detect the specified code for approximately 3 minutes. At that time, the alarm relay will close (or open), the LED will turn RED, and a statement will be issued via the RS232 connection. When an encoded signal is applied to the input, the MONITOR will release the alarm condition immediately. Please see below for information on the specifics of the alarm assertion.

7.2. CONNECTOR DESCRIPTIONS

7.2.1. Analog Input Connector Description

Input connectors on the MONITOR are female; thus, the mating XLR cable connector is required to be male. Balanced XLR pin-out for the Arbitron MONITOR is as follows:

- Pin 1- Shell or ground
- Pin 2- High
- Pin 3- Low

7.2.2. Alarm Connection Description

On the **rear** panel of the MONITOR is a DB9 male connector labeled, “ALARM CONNECTION”. This connector provides a normally open and normally closed contact switch to monitor the presence of encoded program material and to monitor the status of the MONITOR itself. To allow remote monitoring of the MONITOR status, the following connections are detailed:

CODE STATUS

	Status = CODES	Status = NO CODES
Pin 2	Open to pin 3	Shorted to pin 3
Pin 4	Shorted to pin 3	Open to pin 3

OPERATIONAL STATUS

	Status = MONITOR Normal	Status = MONITOR Failure
Pin 7	Open to pin 8	Shorted to pin 8
Pin 9	Shorted to pin 8	Open to pin 8

The pins are connected to an internal relay of the MONITOR whose relay contacts are rated at 0.3A max, 24VDC. If the front panel LED is **SOLID RED** and the Monitor failure alarm is asserted, then a system failure has occurred.

7.2.3. STATUS (RS-232) Description

On the **rear** panel of the MONITOR is a DB9 female connector labeled, “STATUS RS-232”. This is an RS-232 serial port that is output only. To allow remote monitoring of this MONITOR, the following connections are detailed:

- a. Pin 3 – Transmit Data (TD)
- b. Pin 5 – Chassis ground (Common)

To communicate with the MONITOR, the following hardware is required.

- PC (Desktop or Laptop) running Windows 95 or later software, and that has a 9 pin ‘D’ serial port. (Other computers/software configurations may work, but have not been tested.)
- RS-232 DB-9 Cable with a Null-Modem adapter

Plug one end of the RS-232 DB-9 cable with a Null-Modem adapter into the ‘STATUS PORT’ in the rear of the Encoding Monitor and the other end into the COM Port of the PC to allow remote monitoring.

On the front panel of the MONITOR is a DB9 female connector labeled “Service Port”. **THE SERVICE PORT CONNECTOR IS FOR AUTHORIZED USERS ONLY. Do not use this port unless authorized to do so by Arbitron.**

A RS-232 DB-9 Cable and a special adaptor/connector (per Arbitron drawing number 1002-0610) are required to use the features of the service port.

7.3. EXECUTING HYPER TERMINAL ON THE PC

- Go to Start/Programs/Accessories/Communications/HyperTerminal to start the program.
- It will then ask for a name on the Connection Description window.
- Type “Local” for the name to begin.

7.4. HYPER TERMINAL SETTINGS

- 8 data bits
- 1 stop bit
- no parity
- 9600 baud rate
- xon/xoff flow control
- Choose the serial port, COM1 – COM4, where the Encoding Monitor is connected.

7.5. STATUS MESSAGE FORMATS

7.5.1. Boot-up Messages

System boot-up starts when power is applied to the MONITOR. If the HyperTerminal is active during system power on, as the system is booted up the rear panel 'STATUS' serial port sends out the following messages:

<NOTE@P[Encoding Monitor Boot Loader][Vx.xx]>

<NOTE@P[Main program checksum][Valid]> to indicate self test pass
or

<NOTE@P[Main program checksum][Invalid]> to indicate self test fail.

<NOTE@P[Encoding Monitor Main][Vx.xx]>

7.5.2. Encoding Present Messages

When the Monitor has determined that a valid code is present in the program material, the status port sends out the following messages:

<NOTE@P[000x][station_name]>

where x = 0 - 9.

A new output line is displayed every 20 seconds. (Note: This is not indicative of the detection rate.) The number of each line (e.g., 0001, 0002) is output to show activity on the line, since the first portion of this message may not change.

7.6. NO ENCODING MESSAGES

If a valid code is not detected in the program material, the status port sends out the no code message:

<NOTE@P[000x][Encoding not detected]>

where x = 0 - 9.

A new output line is displayed every 20 seconds. The number of each line (i.e. 0001, 0002) is output to show activity on the line, since the first portion of this message may not change.

If a code is detected in the program material, but the detected code is not one of the identification codes programmed into the unit, the status port sends out the unknown station message:

<NOTE@P[000x][Unknown Station]>

where x = 0 - 9.

A new output line is displayed every 20 seconds. The number of each line (i.e. 0001, 0002) is output to show activity on the line, since the first portion of this message may not change.

8. ELECTRICAL SPECIFICATIONS

8.1. ANALOG INPUT SPECIFICATIONS

8.1.1. Input Impedance User Selectable

600 Ω , balanced terminated (“600”) or
12k Ω , balanced bridging (“HI”)

8.1.2. Analog Input Level

Average Minimum: 0dBu over 20Hz-20kHz
Average Nominal: +8dBu over 20Hz-20kHz
Absolute Maximum: +20dBu over 20Hz-20kHz

8.1.3. Common Mode Rejection Ratio

Better than -70dB @60Hz

8.2. ALARM (RELAY) SPECIFICATIONS

8.2.1. Absolute Maximum Voltage Input

24VDC or 24VAC

8.2.2. Absolute Maximum Current Input

300 mA

8.3. STATUS (RS-232) SPECIFICATIONS

8.3.1. Standard

TIA/EIA-232-F

8.3.2. Minimum Output Voltage into 3kohm load

±5V

8.3.3. Baud Rate

9600

8.3.4. Parity

None

8.3.5. Number of Data Bits

8

8.3.6. Number of Stop Bits

1

8.3.7. Recommended Flow Control

XON/XOFF

8.4. POWER SPECIFICATIONS

8.4.1. Voltage

100 – 240 VAC

8.4.2. Current

1.4 Amps maximum

8.4.3. Frequency

50/60Hz

8.4.4. Connector Type

IEC

9. GENERAL SPECIFICATIONS

9.1. PHYSICAL SPECIFICATIONS

9.1.1. Dimensions

48 x 16.5 x 4.5 cm (L x D x H)

9.1.2. Weight

2.7 kg

9.2. ENVIRONMENTAL SPECIFICATIONS

9.2.1. Temperature Range

Operating: 0-45 C

Storage: 0-70 C

FCC DISCLAIMER

This equipment has been tested with the limits for a Class A digital device, pursuant to Part 15 Subpart B 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.