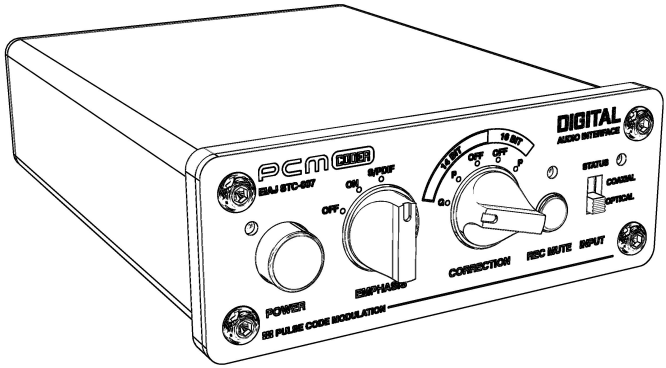
2501

PCM CODER

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly and retain it for future reference.



FEATURES

The PCM Coder is a digital audio device witch converts uncompressed PCM audio to composite pseudo-video signal for digital-to-digital (PCM) tape recording.
To obtain better sound quality, the PCM Coder can also be used as a DIGITAL IN add-on unit for use with a common PCM processor as a D/A (digital-to-analog) converter.

Selectable format: 16-bit or 14-bit
Select the 16-bit format for a wide-dynamic range and low distortion, or the 14-bit format for error correction capability.

Advanced error correction control
Allows to reduce correction level or completely disable error correction.

Pre-Emphasis flag control
Allows to manually enable the pre-emphasis flag if the digital source does not support it or for transmitting pre-emphasized digital audio without flag set in digital source. Also, it is possible to forcibly disable the pre-emphasis flag.

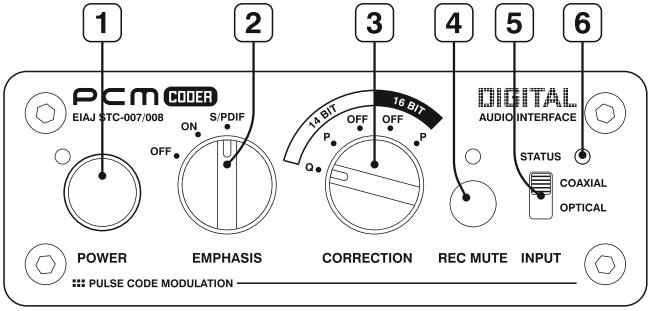
Multisystem video standard: 625 or 525 lines
Allows to select the standard of the generated video signal. Select the 625 lines mode for PAL/SECAM region, or 525 lines mode for NTSC region.

Other functions

- **Record muting function** enters a blank space between recordings.
- **Coaxial and optical digital S/PDIF input jacks** expand digital audio source connectivity.
- **Index and time code generator** to address the program contents precisely on the tape.
- **Dither** masks the negative effects of 16-bit to 14-bit conversion.

FUNCTIONS OF CONTROLS

FRONT PANEL



1. **Power switch** and standby indicator

2. **Emphasis flag switch**
   Select the appropriate pre-emphasis flag:
   S/PDIF – keeps the pre-emphasis flag according to input digital source (recommended).
   ON and OFF – allows to manually enable or disable the pre-emphasis flag.

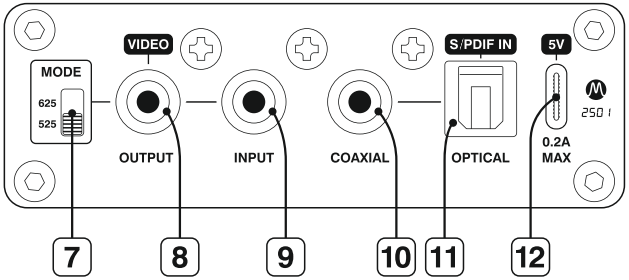
3. **Correction level and resolution selector**
   Select the appropriate format for desired audio resolution and error correction level. Supports two formats: 14-bit and 16-bit. 14-bit format supports two correction levels: P and Q. 16-bit format supports only P.
   A tape to be played back on a processor with a 14-bit format, is recommended to be recorded with the 14-bit format.

4. **REC MUTE (record muting) button** and indicator
   Keep this button pressed to prevent recording of unwanted material and to enter a blank space between recorded selections. After releasing the button, the index number will be increased and the time counter will be reset. REC MUTE indicator lights up while the REC MUTE button is pressed or digital audio input signal is not present.

5. **Input select switch**
   Select the digital source to be recorded between coaxial or optical inputs.

6. **Input status indicator**
   Indicates digital audio data status:
   GREEN: input data is valid;
   RED: input data is invalid or sample rate is not supported.

REAR PANEL



7. **VIDEO OUT MODE (standard) switch**
   Select the 625 lines mode for PAL/SECAM region, or 525 lines mode for NTSC region.

8. **VIDEO OUT (output) jack**
   Connect to the VIDEO IN (input) jack of the VTR.

9. **VIDEO IN (input) jack**
   Used only for pass-through video signal to VIDEO OUT while the device is in standby mode or powered off.

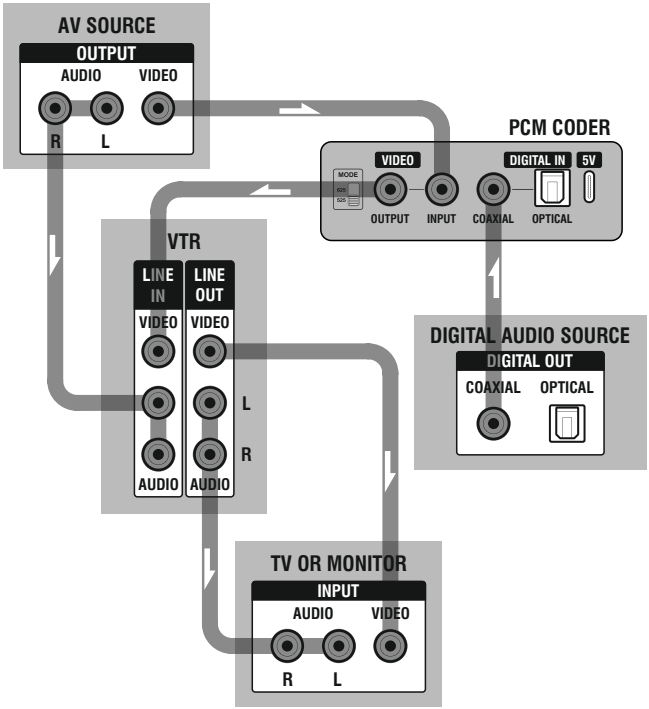
10. **Coaxial DIGITAL IN (input) jack**

11. **Optical DIGITAL IN (input)**

12. **USB Type-C power**
    Used for connecting a USB Type-C power supply that can supply at least 200mA at 5V.

CONNECTING TO A VTR

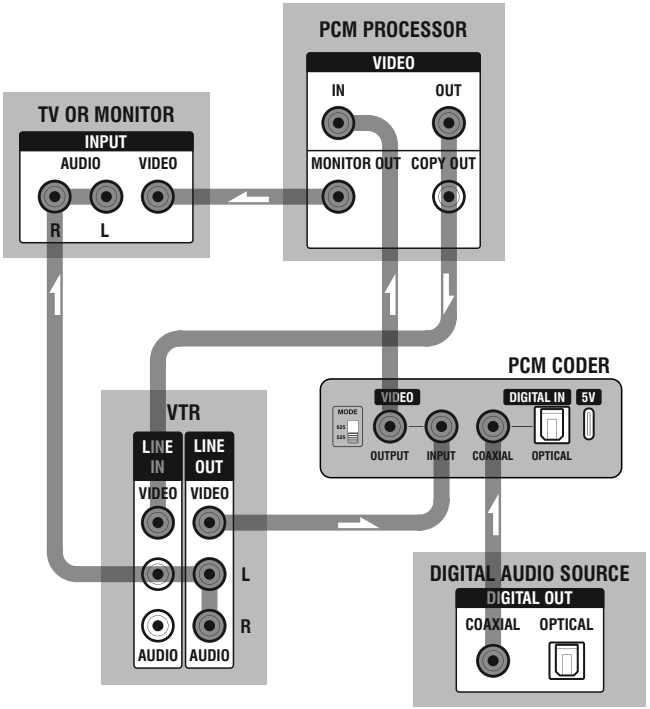
Connect the VIDEO OUT jack of the PCM Coder to the VIDEO IN jack of the VTR for PCM recording on a VTR.



PCM Coder can pass-through video signal via VIDEO IN jack to the VIDEO OUT jack in standby mode or power off.

CONNECTING TO A PCM PROCESSOR

To use PCM Coder as DIGITAL IN add-on unit for a PCM Processor connect the VIDEO OUT jack of the PCM Coder to the VIDEO IN jack of the PCM processor.



Connect the VIDEO OUT of the VTR jack to the VIDEO IN jack of the PCM Coder for PCM playback from a VTR on the PCM Processor. PCM Coder will pass-through signal to the PCM processor while the PCM coder in standby mode or power off.

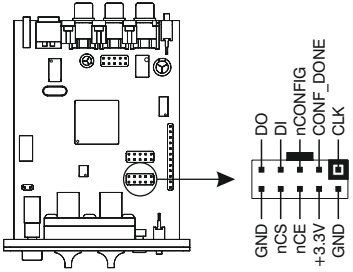
For PCM recording from the PCM Coder on the VTR it may be necessary to use COPY OUT mode of the PCM processor (depends on the specific model).

SERVICE INSTRUCTIONS

ONBOARD SWITCHES AND INTERNAL CONNECTORS

ACTIVE SERIAL CONFIGURATION CONNECTOR

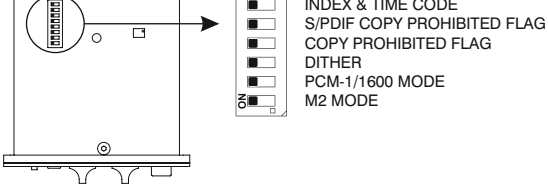
This connector allows to update firmware in flash memory via Active Serial Programming Mode.



ADVANCED CONTROL SWITCH

This set of switches allows to enable or disable the following parameters:

Swap L&R (swap the left and right channels)
Index & time code** (enables built-in index and time code generator)
Copy prohibited flag (DO NOT USE TO BYPASS COPY PROTECTION!)
Dither* (enables dither for 16-bit to 14-bit conversion)
PCM-1/1600 mode* (switches the device to PCM-1 & PCM-1600/1610 format)
M2 mode* (switches the device to M2 format, uses nonlinear 14-bit compounded quantization with three polygonal lines)



*experimental parameters
**not implemented in most consumer PCM processors

SPECIFICATIONS

Signal system: Conforms to CCIR television standard, PAL/SECAM and NTSC color

Code format: Conforms to the EIAJ STC-007/008 technical specifications (standard format using 14-bit or 16-bit quantization)

Number of channels: 2 channels

Sampling frequency: 44.1 kHz

Bit depth: 14-bit or 16-bit linear quantizing

General

Power requirements: 5V USB Type-C power supply

Power consumption: 1W

Dimensions: 85×35×120 mm (W/H/D)
(3 1/3×1 1/3×4 3/4 in)
including projecting parts and controls

Weight: 210 g (net)
300 g (in shipping carton)

Supplied accessories: USB Type-C cable

Design and specifications subject to change without notice.

TECHNICAL TERMS

14-bit format and 16-bit format

The 16-bit format is compatible with the 14-bit, so a tape recorded with the 16-bit format can be played back on another PCM processor which conforms to the 14-bit format.

Error correction capability of the 14-bit and 16-bit formats

During recording with the EIAJ 16-bit format, the 14-bit format error correction word "Q" replaces the 15th and 16th bits of the data, so that the 16-bit format is compatible with the 14-bit format. In the 14-bit format, data contain the error correction words, "P" and "Q": in the 16-bit format, data contain only the error correction word, "P". Accordingly, the error correction capability of the 16-bit format is inferior to that of the 14-bit format. If a tape recorded with the 16-bit format is played back on a PCM processor which conforms to the 14-bit format, the error correction capability will be equal to one parity bit of the 16-bit format.

Dither

Dither is low level noise which is intentionally added to digital audio to mask the negative effects of conversion to lower bit depth.