TCD100A

SMPTE - IRIG TIME CODE

CLOCK / DATE DISPLAY

Masterclock®

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See important *limited warranty* information starting on page 5.

TCD100   SMPTE / IRIG-B TIME CODE DISPLAY

Introduction

The TCD100 is a versatile, multi-featured time code display. The basic unit decodes and displays all versions of SMPTE linear time code.

SMPTE decoding supports 30 fps (including drop-frame), 25 fps and 24 fps. IRIG-B decoding supports the 1kHz modulated format (B1). Other TCD100 features include:

- Selectable time - hh:mm:ss - or date - mm:dd:yy - display (if date is encoded in time code)
- Selectable 24 hour/12 hour time display with PM indicator
- Hour adjustments from -11 to +12 to accommodate even hour time zone offsets
- Portable 12 VDC power input (supplied with wall mount transformer- 115 or 220 VAC)
- Adjustable time code input to accommodate signal levels between -15 and +20dB

Operation

Operating Environment

The TCD100 is not water or moisture proof. Treat it as you would any other delicate electronic device and do not expose it to water, excessive heat or physical abuse.

Access to PC Board

In order to gain access to the setup switches it is necessary to remove the case from the TCD100 as follows:

First disconnect the power and other cables from the unit. Even though the highest voltage inside the TCD100 is 12 VDC (which is generally not dangerous to touch), accidentally shorting a trace or wire inside the unit with power on could destroy or damage one of the sensitive electronic modules. **Accidentally shorting a wire or trace or subjecting the unit to a static discharge, even for a very small fraction of a second, can destroy these modules.** *Such damage is not covered by the warranty.*

Remove the two Phillips screws on the rear panel; the end with the power socket. Holding the case of the unit in one hand, slide the rear panel assembly outward from the rear. The entire rear panel assembly and PC board will slide out.

As was mentioned above, the PC board is sensitive to any electrical signal including static discharge. Do not touch the PC board with any external wiring and, whenever possible, handle the unit by the rear panel or on the edge of the PC board as you would a Compact Disk.   When not changing the switches, always keep the PC board installed in the case.
When reassembling the unit take care that the PC board is properly fitted into the slots in the base of the chassis. When properly inserted, the PC board and rear panel assembly will slide easily into the case, no force is necessary. The warranty does not cover damage caused to the unit while removing or reassembling the PC board.

Configuring the Time Code Display

The TCD100 configuration, as shipped from the factory, is SW1 switch bank all switches in the off position.

Default Configuration

Defaults are: SMPTE time code display, no time zone offset, 12 hour AM/PM display format.

Switch bank SW1 controls the following configuration items:

```
  ----Switch # ----                   ---Switch #--
   1    2    3    4   Hour Offset    5   6   7   8

  off  off  off  off..... 0          |   |   |   |.. on =  IRIG-B1 decoding
  on   off  off  off..... 1          |   |   |   |.. off = SMPTE decoding
  off  on   off  off..... 2          |   |   |
  on   on   off  off..... 3          |   |   |...... on =  date display
  off  off  on   off..... 4          |   |   |...... off = time display
  on   off  on   off..... 5          |   |
  off  on   on   off..... 6          |   | ........ on =  24 hour display format
  on   on   on   off..... 7          |   | ........ off = 12 hour display format
  off  off  off  on...... 8          |
  on   off  off  on...... 9          | ............ on =  hour offset positive
  off  on   off  on...... 10         | ............ off = hour offset negative
  on   on   off  on...... 11
  off  on   off  on...... 12
```

Configuring The Hour Offset

SW1 switches 1 through 4 set the absolute value of the hour offset. With switch 5 in the off position the TCD100 treats the offset as a negative value. With switch 5 in the on position the TCD100 treats the offset as a positive value. The position of switch 5 doesn't matter when switches 1 through 4 are all in the off position (0 hour offset).

Configuring 24 hour/12 hour Display Format

Switch 6 selects between 24 hour and 12 hour display format. In the 12 hour display format a decimal will illuminate in the lower right-hand side of the display during the PM hours.

Configuring time/date display

Switch 7 selects between time and date display mode. For date to be displayed the date must be encoded in the incoming SMPTE time code to the Leitch specification. If no date is encoded and date display is selected the TCD100 could display erroneous information.

The time/date display switch is ignored when decoding IRIG time code. Only the time can be displayed in this mode.

SMPTE / IRIG Select

Switch 8 selects SMPTE or IRIG time code. This switch setting is examined only on system power-up.

Initial Operation

Insert DC power connector into the power receptacle and the 12 VDC (AC plug mounted) power supply into an appropriate AC source.

After application of power the TCD100 will go through an internal checkout and then display a dash on each digit of the LED display until time code is applied to the unit.

Connect a source of SMPTE or IRIG-B time code to the BNC connector. The time (or date if selected and available) should immediately appear on the display.

Time Code Is Not Displayed

If after applying power and time code, the display does not display the incoming time or if the time display is intermittent check the following:

1. Verify that the cable between the time code source and the TCD100 is good.

2. Verify that the time code source is currently generating time code.

3. Verify that the TCD100 is configured to decode the type of time code being generated by the time code source.

<u>Input Level Adjustment</u>

If all of the above are determined to be correct the time code input level may need to be adjusted. The procedure for adjusting the input level is as follows: (Note that with some models it may be necessary to remove the rear panel to access the level adjustment)

1. Insert a small flat head screwdriver through the hole labeled 'Level Adjustment' on the back panel of the TCD100. Be careful not to accidentally touch anything inside the case other than the shaft of the level adjust pot.

2. Turn the adjustment pot counter-clockwise at least 15 full turns.

3. While watching the time display panel, slowly turn the adjustment pot clockwise until smooth flowing continuously incrementing time code is displayed.

SPECIFICATIONS

Input

Format:	SMPTE - 24 - 25 or 30 fps or IRIG-B(1)
Level:	approx. - 1.25 Vpp (0 db/600 Ω)
Impedance:	approx. > 10 K ohm
Connector:	BNC female

Power Requirements

Input voltage	12 VDC
Input power connector	2 mm male power jack

Power consumption - @ 12V   @ 200 ma (2.4 W)

Physical

Size:	1.5 x 4.1 x 5.5 in. (3.8 x 10.4 x 14 cm)
Weight	17 oz. (480 gr.)

Operating Temperature

Temperature .... 0 to +70 °

LIMITED WARRANTY & SERVICE

This Masterclock, Inc. (hereinafter MC) product warranty extends to the original purchaser.

MC warrants the TCD100 against defects in materials and workmanship for a period of one year from date of sale. If MC receives notice of such defects during the warranty period, MC will, at its option, either repair or replace products which prove to be defective.

Should MC be unable to repair or replace the product within a reasonable amount of time, the customer's alternate remedy shall be a refund of the purchase price upon return of the product to MC. This warranty gives the customer specific legal rights. Other rights, which vary from state to state or province to province, may be available.

Exclusions

The above warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by the customer, customer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product or improper site preparation and maintenance (if applicable).

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Hardware Service

You may return this product to MC for repair service. Please contact the factory for return authorization before returning the unit. When you return the unit for service, you must prepay all shipping charges, duty, and taxes. Except for products returned by the customer from outside the USA, MC will pay for return shipment of products to the customer.