

HORITA MDD-100
SMPTE Time Code Day/Date LED Display
USER MANUAL

HORITA®

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1 GENERAL

The MDD-100 is a studio alphanumeric day/date display which reads SMPTE longitudinal time code (LTC) and provides either a month/day/year readout, or a day-of-week/month/day readout. The MDD-100 can optionally be equipped to read vertical interval time code (VITC).

If the incoming time code is for a different time zone, for example, Greenwich Time, a "local" time zone adjustment offsets the displayed date from the values supplied by the time code so that the MDD-100 displays the local date, accurately referenced to Greenwich Time.

The MDD-100 is an ideal date display device for use with HORITA's MTD-100 numeric time/date display and other HORITA GPS/SMPTE time code products.

2 FEATURES

- * Date display format can be set to **month/day/year: NOV 15 12**, or **day-of-week/month/day: TUE NOV 15**
- * Zone switch permits changing the time zone to cause the MDD-100 to display the local date of other geographical areas anywhere on the globe.
- * The date format in addition to the time zone value are retained in non-volatile memory.
- * Sixteen-segment, alphanumeric LED display with 0.8" high red characters provide good visibility and legibility from across a room.
- * Reads play speed SMPTE LTC. Originating zone number and date data is expected in the user bits portion of the time code.
- * Works with Horita or Leitch user bit date encoding format, selectable via an internal jumper.
- * Outputs 2V P-P reshaped SMPTE time code for passing on to other units.
- * Operates from +9V to +14V DC for portable use in the field. Includes a 9 Volt AC adapter.
- * Desktop sized MDD-100 measures 8.75"W x 1.5"H x 4.5"D

3 CONNECTING THE MDD-100

3.1 Connecting Power

Included with your MDD-100 is an AC power adapter that provides a 9 volt, 500 milliamperes DC output. This adapter is equipped with a miniature phone plug with the "+" (positive) voltage output connected to the front tip of the plug.

Insert the power plug into the MDD-100 "+9V DC" connector and plug the adapter into 110-120 volt, 60-Hz AC power.

WARNING:

ELECTRICALLY OPERATED PRODUCT

As with all electrical products, precautions should be observed during handling and use to prevent electrical shock.

NOTE:

Make sure the plug is inserted all the way into the power connector or else damage to the power adapter may result. Do not use an adapter of more than 9 volts at 500 milliamperes or damage to the MDD-100 may result.

3.2 Connecting LTC In and Out

Figure 3-1 shows a basic hookup for the MDD-100.

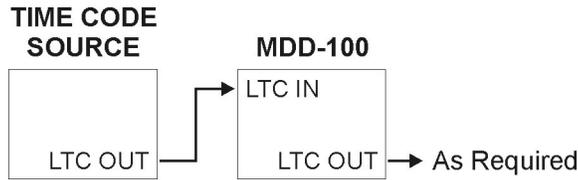


Figure 3-1, Basic MDD-100 Hookup

Connect SMPTE LTC from its source to the RCA connector labeled LTC IN. Reshaped, 2V P-P LTC is available at the RCA connector labeled LTC OUT.

4 OPERATING THE MDD-100

To operate the MDD-100, connect the SMPTE time code to LTC IN, apply power, and set the POWER switch to ON.

The MDD-100 retrieves the most recently used display format and time zone value from its non-volatile memory.

If valid time zone and date information is detected in the user bits of the incoming time code, the MDD-100 will display the date. If an invalid time zone/date is detected, the display defaults to January 1, 1980.

4.1 Required User Bits Format For Date Display

In order to correctly display date information and to adjust for time zone differences, the MDD-100 requires the time code user bit format for the month, day, and year be as shown in Figure 4-1. This is the Horita date encoding format. This format permits display of the date and time zone when viewed on a standard time code reader display of the user bits.

<u>User Bit</u>	<u>Description of Use</u>
UB1	BCD units of day
UB2	BCD tens of day
UB3	BCD units of month
UB4	BCD tens of month
UB5	BCD units of year
UB6	BCD tens of year
UB7	BCD units of time zone
UB8	BCD tens of time zone

Figure 4-1, Horita User Bits Date Format

The MDD-100 also supports decoding of the Leitch format for encoding the date into the user bits of the time code. The Leitch format does not display a human readable date and time zone when viewed on a standard display of user bits.

Refer to Section-5 of this manual for instructions on accessing the internal jumper for this selection.

4.2 Selecting the Date Display Format

The rear panel DATE switch selects between the two date display formats of **month/day/year** or **day-of-week/month/day**.

4.3 Selecting the Time Zone

In addition to containing time and date information, the incoming time code may also contain the time zone value from the generating time code source. The ability to set a local time zone value for the MDD-100, which may differ from that supplied by the incoming time code, allows for automatic adjustment of the displayed date values.

For example, the generating time code source might have a current time value of 1:32 AM, a date of 16-NOV-96, and a time zone number of 00 indicating Greenwich Mean Time. The user may wish his MDD-100 to display the current date in Los Angeles. By setting the MDD-100 time zone number to 08 (U.S. west coast), the displayed date is automatically adjusted for the time and date difference between Los Angeles and Greenwich, England.

Setting of the local time zone number is accomplished via the rear panel ZONE switch. When pressed to its momentary SET position, the MDD-100 displays its current local zone number as "ZON nn" (where "nn" is the local zone number). If

held in the SET position for more than one second, the zone number display begins to blink, indicating that the zone number setup mode is now active. When released, the adjusted date is displayed. Subsequent toggles of this switch to its SET position increment the zone number and cause the date display to be adjusted accordingly. In this manner, the user can simply step through the zone numbers, checking the displayed date value until the correct zone number is found.

Once the ZONE switch has remained in its released MAN position for more than two seconds, the new local zone number is saved in the non-volatile memory and the zone setup mode ends. The display remains set to its current date format, but stops blinking.

Placing the ZONE switch into its TC position forces the displayed date value to match that supplied by the incoming time code. No time zone adjustment is made.

The values contained in the user bits time zone fields range from 00 to 23. Time zone 00 represents Greenwich, England. The time zone number increases as one moves west from time zone 00.

The following Table 4-2 provides the time zone values for various locations around the world:

<u>Zone</u>	<u>Location</u>
0	London (Greenwich)
1	Iceland
2	Azores
3	Rio de Janeiro
4	Buenos Aires (Eastern Daylight Time)
5	New York (Eastern Standard Time)
6	Chicago (Central Standard Time)
7	Denver (Mountain Standard Time)
8	Los Angeles (Pacific Standard Time)
9	Whitehorse, Yukon Territory
10	Anchorage, Alaska
11	Nome, Alaska
---	(International Date Line)
12	New Zealand
13	Kamchatka
14	Sydney
15	Tokyo
16	Manila
17	Djakarta
18	Igarka, Siberia
19	Omsk
20	Sverdlovsk
21	Baghdad
22	Moscow
23	Paris

Table 4-2, Horita Time Zone Value Geographical Locations

The MDD-100 expects a time zone value to be encoded into user bits UB7 and UB8. However, if this is not the case for the incoming time code being used, this can be disabled via an internal MDD-100 jumper.. Refer to Section-5 of this manual for instructions on accessing the internal jumper for this function.

4.4 Mounting Options

The standard MDD-100 is shipped as a desktop unit. Two other mounting options are available.

The HORITA S100EK Rackmount Ear Kit allows the MDD-100 to be installed in a standard 19" equipment rack. This kit includes two rackmount "ears" and all necessary mounting hardware. All HORITA Series 100 display units are one rack unit high (approximately 1-½"). Two units can be mounted side-by-side by using two Rackmount Ear Kits. Series 100 units can also sit side-by-side in a rack "tray".

The HORITA S100SK Wallmount Swivel Bracket Kit allows the MDD-100 to be mounted on a wall or attached to a studio camera or other equipment for viewing by studio personnel. The bracket kit allows the unit to swivel to adjust the viewing angle up or down and to the left or right. Two bracket kits can be used to mount two units individually or can be used such that one mounts to the wall and the other holds the two units together. Each kit includes a bracket, knurled thumbscrews,

and wall mounting hardware.

5 MAINTENANCE

5.1 Cleaning

1. Do not attempt to disassemble your MDD-100 to clean it.
2. Clean your MDD-100 using only a damp cloth.
3. NEVER use water or solvents such as alcohol, window cleaner, etc., to clean your MDD-100.

5.2 Service and Troubleshooting

If you suspect your MDD-100 is not operating properly, check the following:

1. Check all cables for opens or shorts.
2. If using an AC power adapter different from the one supplied with the MDD-100, make sure it supplies the MDD-100 with at least 9 volts (maximum of 14 volts) when the MDD-100 is switched on.

You may return your MDD-100 to HORITA for service. Please contact HORITA first, either by phone or mail, before returning your unit.

5.3 Accessing Internal Jumpers

Internal jumper selections are provided for disabling the MDD-100 from using user bits UB7 and UB8 for a time zone value, for selecting between Horita and Leitch date encoding formats, and for limiting the risetime of the time code output signal.

To access these jumpers, remove the top cover from the MDD-100 by removing the four hex screws. The locations of these jumpers are shown in Figure 5-1.

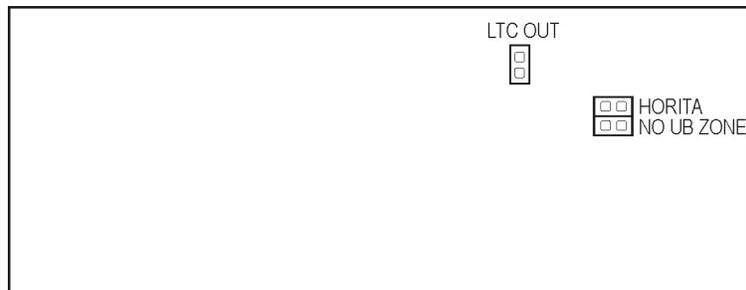


Figure 5-1, Jumper Locations

5.4 Disable User Bit Time Zone Decoding

The MDD-100 expects a time zone value in UB7 and UB8. If the time zone value is not encoded into the user bits, decoding can be disabled via an internal MDD-100 jumper. Install the shunt jumper across both pins of the 2-pin header labeled "NO UB ZONE" to disable time zone decoding. Install the jumper on only one pin to enable decoding.

5.5 Select Between Horita or Leitch Date Encoding Format

The MDD-100 uses an internal jumper to allow selection of Horita or Leitch encoding format for the date. Install the shunt jumper across both pins of the 2-pin header labeled "HORITA" if the date is encoded in the Horita format. Install the jumper on only one pin if the date is encoded in the Leitch format.

5.6 Limit LTC Output Risetime

The LTC OUT jumper allows adjustment of "risetime" of the regenerated LTC output signal waveform. Install the shunt jumper across both pins of the 2-pin header labeled LTC OUT to limit the risetime to 25uS, $\pm 5uS$. Install the jumper on only one pin if for wide band LTC output. Factory setting is no shunt (wide band).

6 SPECIFICATIONS

Power

Operation	9-to-14V DC, 200 milliamperes
Connector	3.5 MM mini phone jack
AC Adapter	9 volt, 500 milliamperes

Connectors

TC IN	
TC OUT	RCA
POWER	3.5MM Mini Phone

Switches And Controls

ZONE	Toggle switch (momentary in SET position)
DATE	Toggle switch
POWER ON/OFF	Toggle switch

Environment

Operating	5°C to 40°C (41°F to 104°F)
Storage	-10°C to 60°C (14°F to 140°F)

Dimensions

8.75"W x 1.5"H x 4.5"D

Weight

Approximately 13 Oz.
(shipping weight approximately 29 Oz. including power adapter)

Specifications subject to change without notice