

MTD AC 230/300 Option: Digital Display

Supplement to the Operating Manual MTD AC 230/300

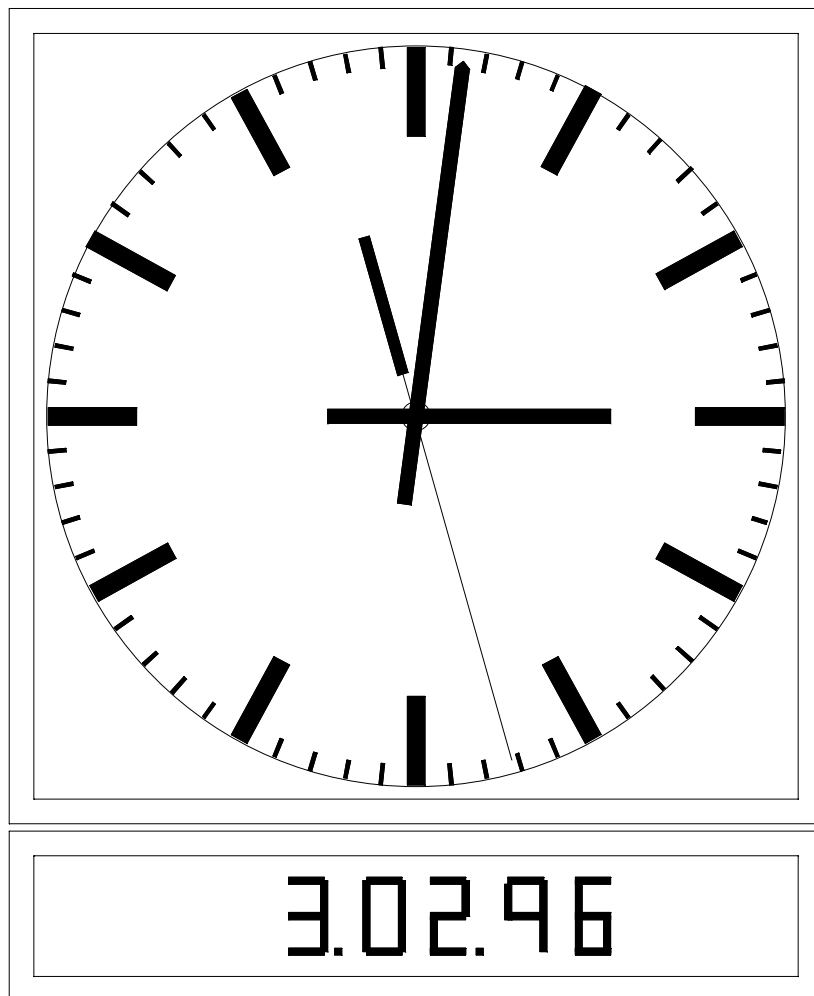


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Functional Description MTD AC 230/300 Option: Digital Display

Functions Overview

This option combines an analogue clock with a digital display. The digital display with six digits (7-segmented LEDs with 25mm digit height) are available with digit colour R=red, G=green or Y=yellow. Analogue clock and digital display are independent from each other and can display the same time or different times. The digital display is able to show all the times of the MTD Time Timer Time Code System, it operates in the same way as the MTD D25 R/G/Y6 displays. The digital display is a 24-hour clock, the analogue clock is a 12-hour clock. For detailed description of the analogue clock see operating manual of MTD AC 230 or MTD AC 300.

Three turn switches inside the housing serve to select the operating mode of the master/slave combination:

BCD turn switch **BRIGHT** adjusts the brightness of the digital display.

HEX turn switch **MODE** selects the operating mode of the digital display.

HEX turn switch **ZONE** selects the operating mode of the analogue clock.

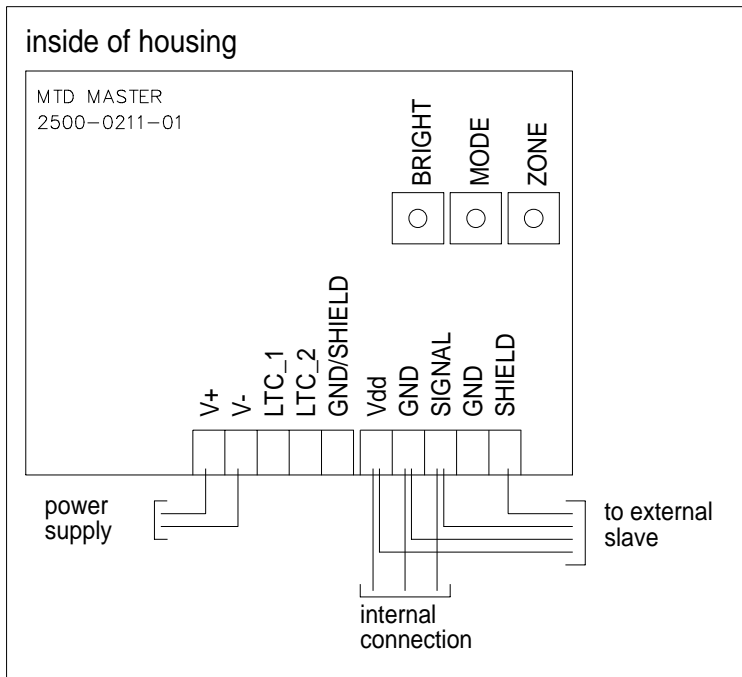
While changing the operating mode using turn switch **MODE** or **ZONE** the display shortly indicates the new mode, e.g. "Mode B" or "Zone 2". After having selected a new mode using switch **MODE** the selected time will be displayed as soon as new LTC data has been read.

After power-on the display indicates the revision number (e.g. "7.0 TA"), further built-in options if any, the selected operating mode of the analogue clock (e.g. "Zone 2") and the selected operating mode of the digital display (e.g.: "Mode A").

If a negative time is displayed, a minus sign is indicated at the most significant digit (tens of hours). If this digit is not blank, it will be overwritten with a minus sign.

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The Turn Switches to Select the Operating Modes



The brightness of the LED's is adjustable by using the turn switch BRIGHT:

Stage	Function
0	The display becomes inactive, only a decimal point in the lowest possible brightness is lit up.
1 - 7	Adjusts the brightness (1 = lowest, 7 = highest).
8	Reserved.
9	Test mode, where all LED's are lit up with maximum brightness.

Turn switch **ZONE** selects the operating mode of the analogue clock, see operating manual of MTD AC 230 or MTD AC 300.

Turn switch **MODE** selects the operating mode of the digital display, see following description.

Operating Modes of the Digital Display

Positions of the HEX turn switch MODE:

Mode	Description	Remarks
0	reserved	
1	1 st main time	display of one time unit out of A - F, 2, 3
2	real time	
3	date	
4,5	not used	
6	LTC time information	LTC reader: display of time
7	LTC user bits	LTC reader: display of user bits
8	2 nd main time	display of one time unit out of A - F, 2, 3
9	3 rd main time	display of one time unit out of A - F, 2, 3
A	time A	display of time A (e.g. stop timer A)
B	time B	display of time B (e.g. stop timer B)
C	time C	display of time C (e.g. stop timer C)
D	time D	display of time D (e.g. stop timer D)
E	time E	display of time E (e.g. stop timer E)
F	time F	display of time F (e.g. stop timer F)

Modes 1, 8 and 9: Display of Main Timers

With this function the displays of the MTD System can be operated by remote control. Within one system three groups of displays may be defined, each group may be remote controlled independently from the other groups, within one group all displays show the same time. The individual group is defined by the operating mode selection:

- displays of mode 1 will show the first „Main Time“
- displays of mode 8, will show the second „Main Time“
- displays of mode 9 will show the third „Main Time“

The „Main Time“ shown at the displays may be one of the following time units:

A, B, C, D, E, F, real time or date.

An user console (e.g. MTD BE, MTD BTK, MTD BE19, ...) is used to select which time unit out of these eight is determined to serve as the “Main Time”.

→ Please also refer to „LTC dropout“ ←

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Mode 2 = Display of the Real Time

In this mode, the time unit 2 (real time encoded in the LTC(MTD)) receives one additional frame and then this time is displayed.

The following formats may be selected via an user console (e.g. MTD BE, MTD BTK, MTD BE19, ...) to display the real time:

- Leading zeros (of the hours) on/off.
- Three user selectable symbols to separate hours/minutes/seconds: colon, decimal point or without any.
- Display formats: 7 = 24-hour format
 8 = 12-hour format

→ Please also refer to „LTC dropout“ ←

Mode 3 = Display of the Date

In this mode, the time unit 3 (date encoded in the LTC(MTD)) is displayed.

The following formats may be selected via an user console (e.g. MTD BE, MTD BTK, MTD BE19, ...) to display the date:

- Leading zeros (i.e. leading zero at highest position) on/off
- Three user selectable symbols to separate day/month/year: colon, decimal point or without any
- Display formats: 1 = DD/MM/YY
 2 = MM/DD/YY
 3 = YY/MM/DD

Mode 6 = Display of the LTC Time Information

The time of the LTC (according to SMPTE/EBU specification) is displayed. The LTC is read forward or reverse, within a range of 20-34 frames/second. One frame is added to the readout time when moving in the forward direction, subtracted when moving in the reverse direction.

Reading LTC which is not of LTC(MTD) format, the time is displayed as HH:MM:SS, i.e. a 6-digit format, separating symbols are set to colon, leading zeros will be displayed.

Reading the LTC(MTD) the following formats may be selected via an user console (e.g. MTD BE, MTD BTK, MTD BE19, ...) to display the LTC time:

- Leading zeros on/off
- Three user selectable symbols to separate hours/minutes/seconds/frames: colon, decimal point or without any
- Display formats: 1 = hours/minutes/seconds
 4 = minutes/seconds/frames

Mode 7 = Display of the LTC Binary Groups

The user bits of the LTC (according to SMPTE/EBU specification) are displayed. LTC is read „forward“ or „reverse“, within a range of 20-34 frames/second.

The display shows the six user digits of higher significance in hexadecimal format. Leading zeros will be displayed, but no decimal point or colon.

Modes A, B, C, D, E, F = Display of Time A - F

The times A, B, C, D, E, F are encoded in the user bits of the LTC(MTD). The function of each time can be individually selected by an user console, e.g. as a stop timer, or a difference time, or a VTR time ...

To display these times the following display formats may be selected via an user console (e.g. MTD BE, MTD BTK, MTD BE19, ...):

- Leading zeros on/off
- Flashing in case of negative values on/off
- Three user selectable symbols to separate hours/minutes/seconds: colon, decimal point or without any
- Display formats:
 - 1 = HH:MM:SS (stop timer)
 - 2 = MM MM:SS
 - 3 = SS SS SS
 - 4 = MM:SS:FF
 - 5 = MM:SS.T
 - 6 = SS SS.T
 - 7 = HH:MM:SS (24-hour format „real time“)
 - 8 = HH:MM:SS (12-hour format „real time“)

→ Please also refer to „LTC dropout“ ←

LTC(MTD) Failure

In case of a dropout of the LTC(MTD) during the current operation a display set to mode 1, 8 or 9 (main time), 2 (real time), A, B, C, D, E or F will keep on with the actual function using its internal clock, i.e. an up-counting or down-counting time will continue counting, a still time will not change.

A dropout has occurred when both decimal points and colons are simultaneously lit up.

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Technical Specifications of the Clock Combination

With this option the technical data of the analogue clocks MTD AC 230 and MTD AC 300 will change as follows:

	AC 230	AC 300
Dimensions (WxHxD):	235 x 280 x 63 mm	307 x 367 x 63 mm
Weight:	2.5 kg approx.	3.5 kg approx.
Current consumption:	550 mA max., 400 mA typ.	11 W max., 9.5 W typ.