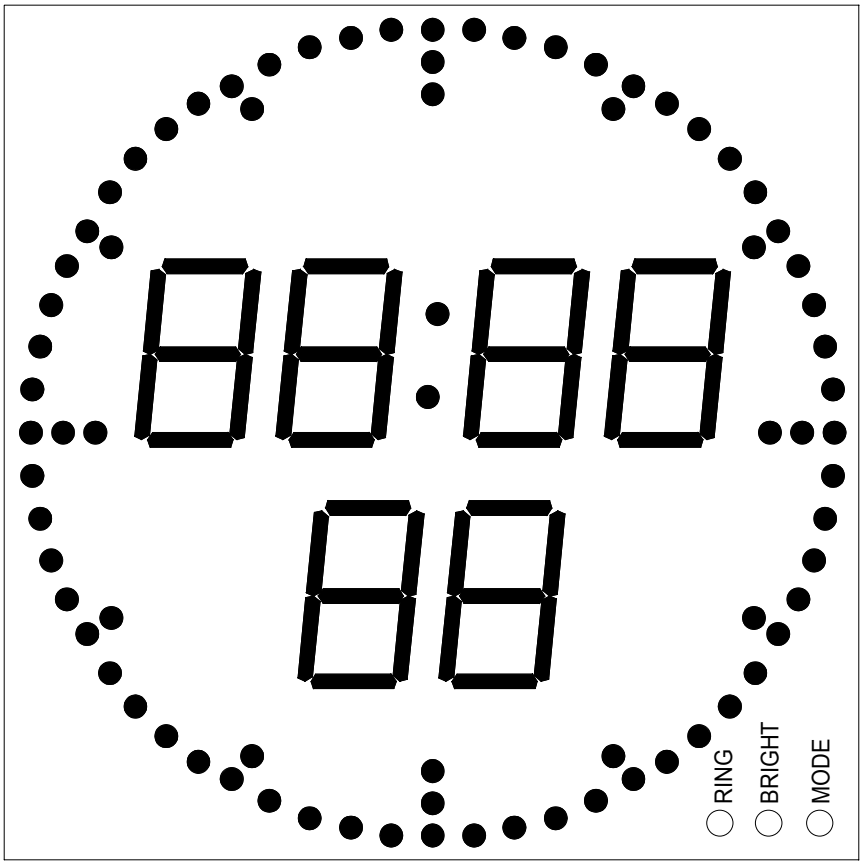
Operating Manual
Version: 3.0
August 7, 2007

Displays of the MTD Time Timer Time Code System

# AV-MTD DSR 230 R/G/Y




Alpermann+Velte

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# A1 Safety Instructions

**General rules:** Only use the device as directed in a dry atmosphere. Treat the device with the same care as other studio devices. Please follow the advice in the following operator's manual.

**Damages in transit:** If the device shows obvious damages from transit the shipper in question must be notified and the dealer must be informed.

**Positioning:** Position device only where sufficient air circulation can be maintained. Extreme temperatures, dust, humidity, shocks and strong electromagnetic fields must be avoided.

**Maintenance:** Use a moist soft textured fabric cloth when cleaning the housing. Do not use polish or any other cleaning agents.

**Repairs:** The device does not require any extra maintenance. There are no user serviceable parts inside the device. Repairs should be sent to an authorized service partner.

**EMC:** The EMC regulations are observed only under the following condition: use high quality shielded cables at data inputs and outputs.

# A2 Copyright



For further information please contact your local dealer or:

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# A3 CE declaration of conformity

We,

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herewith declare under our sole responsibility that the

## AV-MTD DSR 230 R/G/Y

meets the intent of the following directives, standards and specifications:

73/23/EEC Low Voltage Directive

- EN 60950 electrical and mechanical safety

89/336/EEC Electromagnetic Compatibility

EN 50081-1 Emissions
- EN 55022
- EN 55103-1

EN 50082-1 Immunity
- EN 55024
- EN 55103-2

# Functions overview

MTD DSR 230 are displays (7-segment LEDs) of 45 mm digit height, and a LED seconds ring.

R or G or Y responds to the colour of the LEDs : R = red, G = green, Y = yellow.

*Alpermann+Velte* has developed a system for Multiple Time Displays (MTD). A MTD system consists of a central generator unit, digital displays and/or analogue clocks, and user console(s). The central generator unit outputs a special LTC format. This LTC will henceforth denoted as LTC(MTD). The LTC(MTD) represents the data link to all the digital displays, and it contains real time, date and user selectable timers.

To select the **operating mode** use HEX turn switch **MODE** at the front. To use the unit as an LTC reader display, mode „6" (= LTC time display) should be selected. All other modes are provided for being used in a MTD system, and the display will extract the data of the LTC(MTD). In case a minus sign should be displayed it appears at the most significant digit (tens of hours). If this digit is not blank, it will be overwritten with the minus sign.

The **brightness** of the LED's are adjustable by using the BCD turn switches **RING** and **BRIGHT** located at the front:

| **Stage** | **Functions of RING to adjust the seconds ring** | **Functions of BRIGHT to adjust the digits** |
|---|---|---|
| 0 | The seconds ring will be switched off. | The digits become inactive, only a decimal point in the lowest possible brightness is lit up. |
| 1 - 7 | Adjusts the brightness (1 = lowest, 7 = highest). | Adjusts the brightness (1 = lowest, 7 = highest). |
| 8 | Reserved. | Reserved. |
| 9 | Switches the seconds ring in a test mode, where all LED's are lit up with maximum brightness. | Switches the display of the digits in a test mode, where all LED's are lit up with maximum brightness. |

After power-on, all of the LED's will light up shortly and then the display will show the revision number (e.g. „9.5 TS"), any built-in options and the selected operating mode.

# Operating modes

Positions of the HEX turn switch:

| Mode | Description | Remarks |
|---|---|---|
| 0 | local stop timer | not recommended for this unit |
| 1 | 1st main time | LTC(MTD): display of one time unit out of A - F, 2, 3 |
| 2 | MTD real time | LTC(MTD): 6-digits HH:MM:SS real time display |
| 3 | MTD date | not recommended for this unit |
| 4 | MTD real time | LTC(MTD): real time display HH:MM (same as 2, but with a 4-digits display) |
| 5 | LTC time information | LTC reader: display of time HH:MM (same as 6, but with a 4-digits display) |
| 6 | LTC time information | LTC reader: display of time HH:MM:SS |
| 7 | LTC user bits | LTC reader: display of user bits (binary groups), LEDs of seconds ring and colons switched off |
| 8 | 2nd main time | LTC(MTD): display of one time unit out of A - F, 2, 3 |
| 9 | 3rd main time | LTC(MTD): display of one time unit out of A - F, 2, 3 |
| A | time A | LTC(MTD): display of time A (e.g. stop timer A) |
| B | time B | LTC(MTD): display of time B (e.g. stop timer B) |
| C | time C | LTC(MTD): display of time C (e.g. stop timer C) |
| D | time D | LTC(MTD): display of time D (e.g. stop timer D) |
| E | time E | LTC(MTD): display of time E (e.g. stop timer E) |
| F | time F | LTC(MTD): display of time F (e.g. stop timer F) |

After a change of mode with the HEX turn switch the display indicates the new mode for a moment (e.g.: "mode B"). As soon as new LTC data are read, the selected time can be displayed.

## Modes 1, 8 and 9: Display of Main time

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.

Any user console (e.g. MTD BE, MTD BTK, CP20, MTD BE19, TCU, ...) is used to select which time unit out of these eight is determined to serve as the "Main Time".

→ Please also refer to "LTC(MTD) failure " ←

# Modes 2 and 4 = Display of the Real Time

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

The following formats may be selected via any user console (e.g. MTD BE, MTD BTK, CP20, MTD BE19, TCU, ...) to display the real time:

- Leading zeros (of the hours) on/off.
- Three user selectable symbols to separate hours/minutes: colon, decimal point or without any.
- Display formats: 7 = 24-hour format (6-digits at mode = 2, 4-digits at mode = 4),
  8 = 12-hour format (6-digits at mode = 2, 4-digits at mode = 4).

→ Please also refer to "LTC(MTD) failure " ←

# Modes 5 and 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 (mode = 5) or HH:MM:SS (mode = 6), i.e. separating symbols are set to colon, leading zeros will be displayed.

Reading the LTC(MTD) the following formats may be selected via any user console (e.g. MTD BE, MTD BTK, CP20, MTD BE19, TCU, ...) to display the LTC time:

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

# 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 any user console (e.g. MTD BE, MTD BTK, CP20, MTD BE19, TCU, ...):

- Leading zeros on/off.
- Flashing in case of negative values on/off.
- Three user selectable symbols to separate hours/minutes: 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“)
  The formats 1, 2, and 3 mostly make use of the upper 4 digits, i.e. with format 1 time -9:59 to 59:59, with format 2 time -9:59 to 99:59, with format 3 time -999 to 9999.

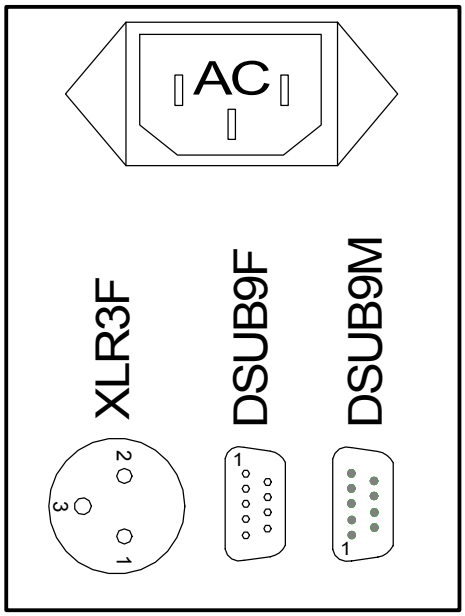
→ Please also refer to “LTC(MTD) failure “ ←

# 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.**

# Connections, Specifications, Dimensions




## LTC balanced
## IN - LOOP

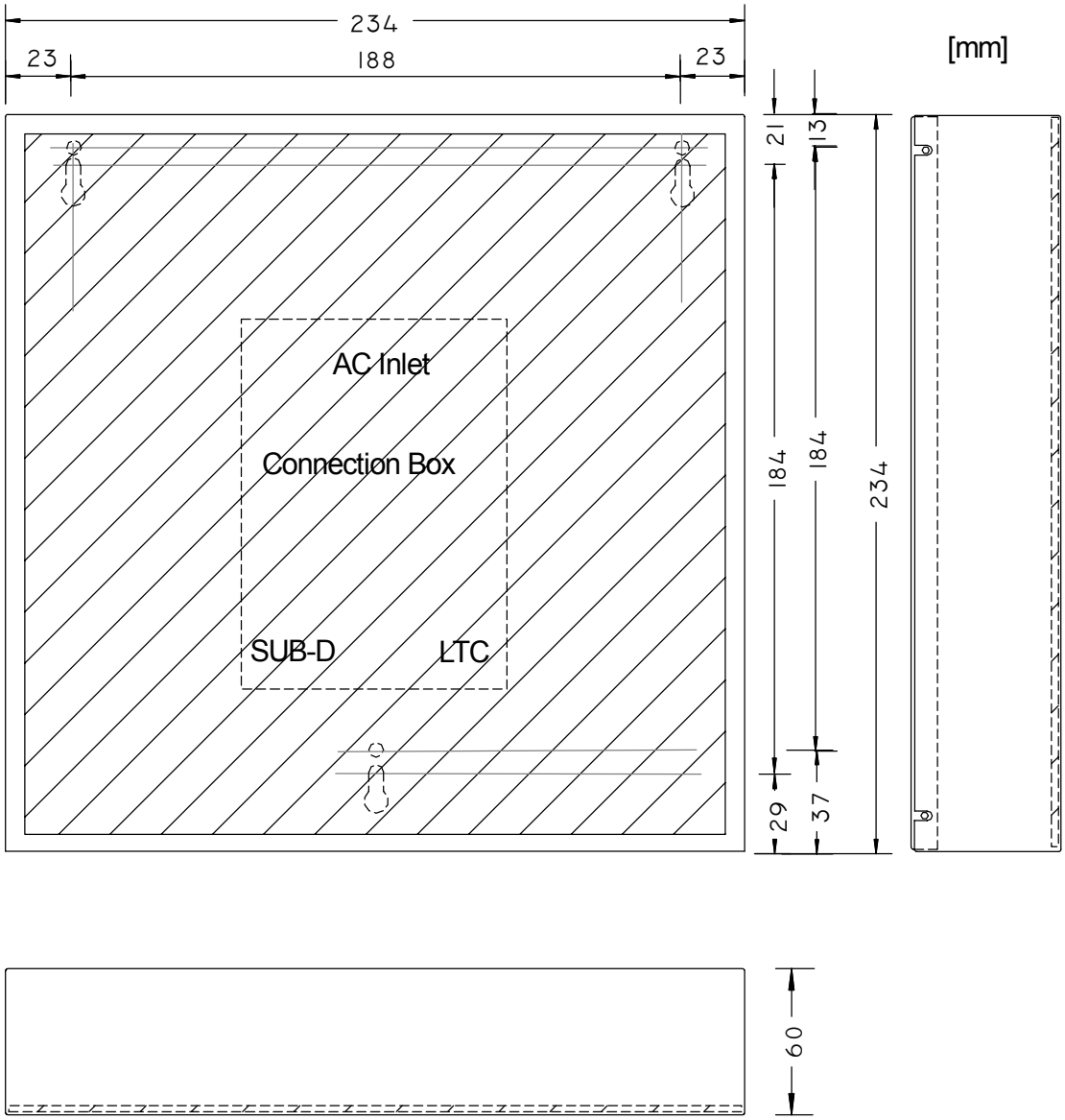
| Signal | XLR3F | DSUB9F | DSUB9M |
|---|---|---|---|
| GND | 1 | 5 | 5 |
| LTC_x | 2 | 3 | 3 |
| LTC_y | 3 | 4 | 4 |

Example of LTC cables:

1. High quality: 3-wire audio cable, shielded (e.g. Belden 9533 or similar)
2. Accepted quality: twisted pair, shielded. Cross section of wires ≥ 0.23 $mm^2$ (AWG 24) or diameter of wires ≥ 0.54 mm.

| | |
|---|---|
| LTC: | 100 mV – 5 V, balanced, 100 K-Ohm |
| Dimensions: | 234 (W) x 234 (H) x 60 (D) mm |
| Weight: | 2.5 kg approx. |
| Power supply: | 100 - 240 VAC, 50/60 Hz |
| Power consumption: | max. 15 W, typical 12 W |
| Operating temperature: | 5° C to 40° C |
| Relative humidity: | 35% to 85%, non-condensing |

Mechanical:


234
23
188
23
[mm]
21
13
AC Inlet
Connection Box
SUB-D
LTC
184
184
234
29
37
60