November 2026 V1.0

# DLED-96

User Manual




FDS TIMING SOLUTIONS

FDS-TIMING, SWITZERLAND

# DLED-96

The **DLED-96** is a 96×16-pixel, fixed-size, multifunction, full-color, high-intensity LED display available in single- or double-sided configurations.

## 1. Connections

### Bottom




1) GPS antenna SMA connector
2) Radio antenna SMA connector
3) Power switch
4) RS232/RS485 (SUBD-9)
5) RS232 (MR30)
6) Ethernet (RJ45)
7) General-purpose inputs (3.5 mm jack)
8) Power connector XT60 (12–24 VDC)

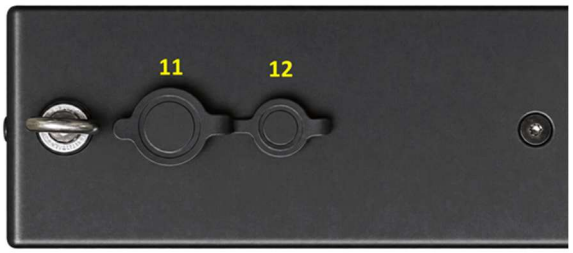
**Optional LTE module:**

9) LTE antenna SMA connector
10) Status LED



**Top**

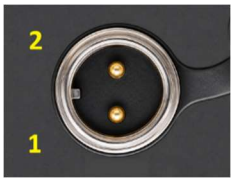
11) Power input (GX20)
12) RS232/RS485 (GX16)




## 2. Power Connectors

Two power connectors are available: one located on the top and another beneath the display. Both inputs are protected against reverse polarity using diodes. When both inputs are connected to a power source simultaneously, the input with the higher voltage will automatically supply power to the device.
The acceptable input voltage range is **12 V to 24 V**. Note that for a given power requirement, a lower input voltage will result in a higher current draw.

GX20




XT60




1 : GND
2 : 12–24 VDC

## 3. Data Connectors

### 3.1. RS232 & RS485

Three connectors are available:

- Top connector (GX16): RS232 and RS485
- Connector under the display (SUBD-9): RS232 and RS485
- MR30 connector: RS232 only

**Important:** All data connectors are wired in parallel to the same communication lines. Therefore, only one connector should be used at a time. When an RS232 signal is detected, the RS485 driver is automatically disabled.

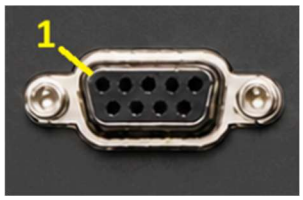
**GX16**

1 : GND
2 : RS232 - TXD
3 : RS232 - RXD
4 : RS485 - B
5 : RS485 - A




**SUBD-9**

1 : RS485 - A
2 : RS232 - TXD
3 : RS232 - RXD
5 : GND
9 : RS485 - B




**MR30**

1 : GND
2 : RS232 - TXD
3 : RS232 - RXD

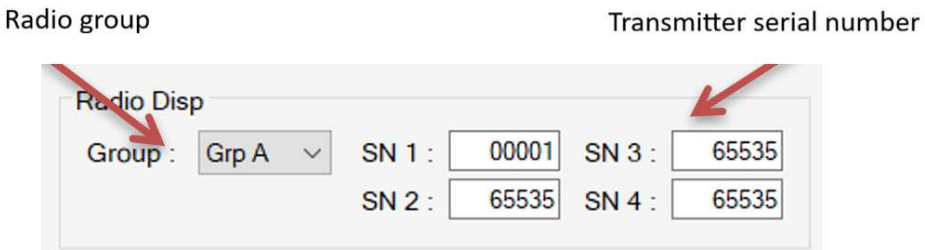



## 3.2. Ethernet

An Ethernet connection is also available on the DLED-96 via an RJ45 connector located beneath the display.
By default, the device operates as a TCP/IP server with a dynamic IP address (DHCP)**.** The default communication port is 7000**.**
If a static IP address is required, the Ethernet module settings can be modified through a web browser**.**
**Warning:** Only experienced users should change these settings, as incorrect configuration may result in permanent loss of network connectivity with the DLED-96.
The default username and password are both “admin”.

## 3.3. Reception of data by radio

The DLED-96 is fully compatible with the FDS display radio protocol. It can be operated either in conjunction with a TBox or via the WINP-Radio-TX transmitter (RS232 to radio).
The DLED-96 accepts data only from a predefined list of transmitter serial numbers (whitelist). This list must be set using the application “Display Setup Manager”.




⚠ Radio transmissions can never be 100% guaranteed. An unfavorable environment, lack of line of sight, interference or an improper installation might lead to the loss of data.
FDS cannot be held responsible for any of the above.

## 3.4. Optional LTE extension

An optional LTE extension module can be installed on the bottom side.
If installed, login credentials to our timing/data server can be set using the application “Display Setup Manager”.

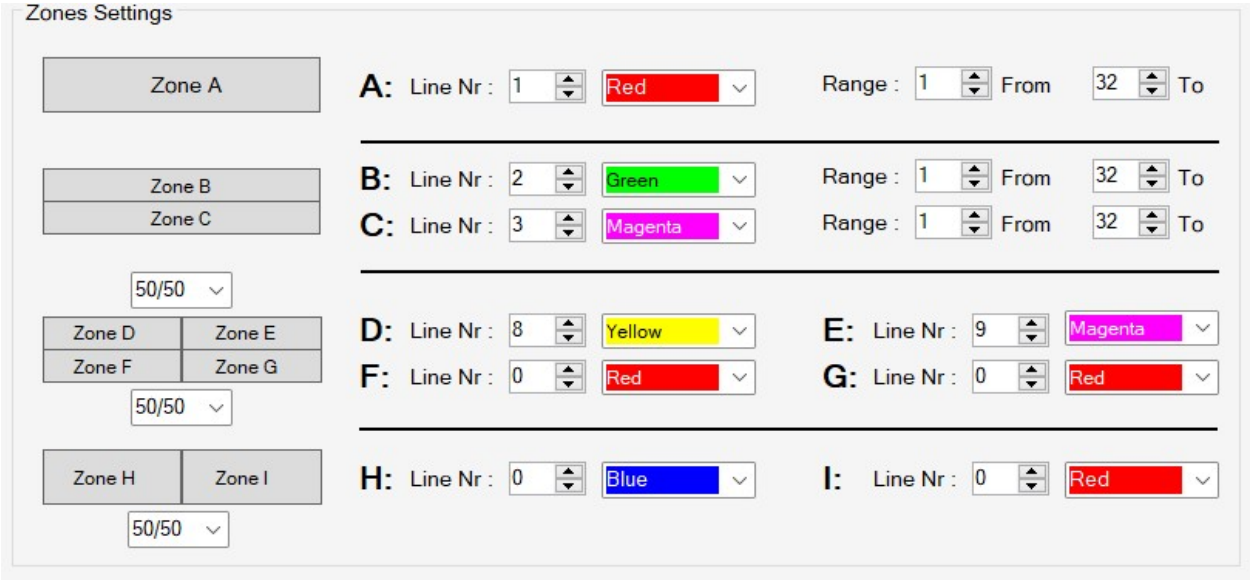


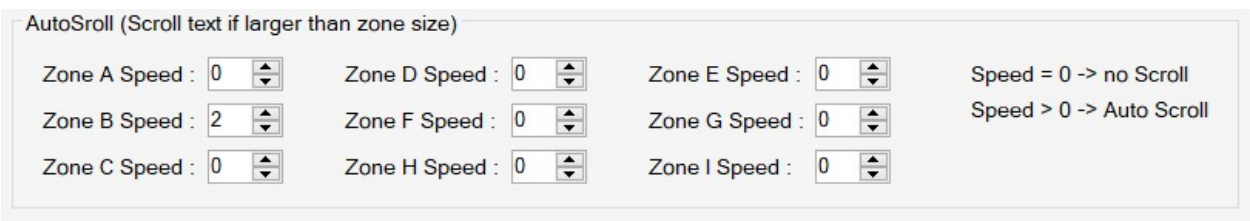
## 4. Display zones and settings

The total display area is divided into nine zones (labeled A through I) as shown below.
Please note that some zones share the same display area and therefore should not be used simultaneously.

- Line number & color:
  - Each zone must have a line number and a color defined.
  - Line number = 0 → zone disabled (not used).
- Range (only for zones **A–C**):
  - Optional ***range_from*** and ***range_to*** can be defined to display a substring of the received frame.
  - For example, if a range is set from 5 to 15 and the received frame is "this is a range demo", the DLED-96 will display the text "is a range".
- The proportion between adjacent zones (D–E, F–G, H–I) can be adjusted.
- Auto Scroll:
  If the "Auto Scroll Speed" parameter defined for a zone is greater than zero, any text longer than the zone width will be automatically scrolled across the display.
- Fonts:
  - Zones **B, C, D, E, F, G**: fixed 6×8 font.
  - Zones **A, H, I**: choose one of Regular (12×14), Narrow (10×14), Full Height (12×16).

"Display Setup Manager" application



## 5. Firmware Update Procedure

Updating the DLED-96 firmware is straightforward. The FdsFirmwareUpdate software is required.

1. **Install Software**
   - Install the application **FdsFirmwareUpdate** on your computer.
   - Launch the application.
2. **Connect Device**
   - Make sure the display is switched OFF.
   - Connect the RS232 cable between your PC and the display.
3. **Select COM Port**
   - Choose the COM port corresponding to the connected display.
4. **Select Firmware File**
   - Select the **".bin" firmware file** for the update.
5. **Start Update**
   - Press **Start** in the program, then switch the power ON.
   - The DLED-96 firmware will update automatically.

## 6. Technical specifications

| | |
|---|---|
| Radio frequencies:<br>Europe<br><br>India<br>Russia<br>North America<br>Japan | <br>868.0 - 868.6 MHz 25 mW<br>869.4 - 869.65 MHz 100 mW<br>865 - 867 MHz 100 mW<br>868.7 - 869.2 MHz 100 mW<br>920 - 924 MHz 100 mW<br>922 - 927 MHz 20 mW |
| Power input | 12–24 V, up to 65 W single-sided, 130 W double-sided<br>Connectors: GX20 on top, XT60 on bottom |
| Data input | RS232 connectors: SUBD-9, MR30, GX16<br>RS485 Rx only connectors: SUBD-9, GX16<br>Ethernet connectors: RJ45 |
| Control inputs | Two general-purpose inputs on a 3.5 mm stereo jack |
| GPS | Constellations: GPS, GLONASS, Galileo, BDS<br>With external active antenna |
| LTE extension | Cellular LTE class 1 transmission module (4G) |
| Luminance on white balance | > 7000 nits |
| Operating temperature | -20 °C to +60 °C |
| Dimensions | 97 × 25 × 9 cm |
| Weight | 5.6 kg |

## 7. Copyright and Declaration

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