1. Description

The NETB-LTE module is a cellular network interface device designed for our MLED display and TBox timer. Communication is established over the LTE mobile network (4G) via our FDS TCP cloud server and allow to communicate with our displays or receive timing pulses from a TBox over long distances with minimal delay.
Data can either be send P2P from one module to another one (TBox to display for example), or directly from a computer via the NETB-LTE and vice versa.

1.1. Switches and connectors

1) ON/Off switch
2) Power LED
3) LTE signal LEDs
4) Server connection status
5) LTE antenna (SMA connector)
6) USB-C connector
7) MR30 connector - RS232
8) XT60 connector - power (12V-24V)

2. Power ON/OFF

The ON/OFF button switch has 2 functions:

a) Battery status (Module OFF)
   - Press and hold for 1sec the ON/OFF switch
   - Battery level is displayed on the LTE signal LEDs

b) Switch ON / OFF the module
   3 Power ON/Off modes can be selected by the user (Via the NETB-Setup PC app)

1) Secure mode:
   - Press and hold (1sec. – 2secs.) the ON/OFF switch until the battery LED status turn Yellow (battery status is displayed on the LTE signal LEDs)
   - Immediately release the switch and quickly repress it (within 1 second) and hold down until all the LTE signal LEDs plus the power LED turns to Green.
   - To switch OFF the NETB-LTE, simply repeat step a and b (until the power LED turns Red)

2) Simplified mode:
   - To switch ON the NETB-LTE, Press and hold for approximately 3sec the ON/OFF switch until the battery LED turns green
   - To switch OFF the NETB-LTE, Press and hold for approximately 3sec the ON/OFF switch until the battery LED turn red

3) Auto mode:
   - In this mode the NETB-LTE turn ON automatically when power is detected on USB, and turns OFF when USB is removed

!!! NOTE: When switching OFF the device, the power and server Status LEDs remains Red for a few seconds until the Server connection is properly closed and module shut down.

3. Power Status LEDs

3.1. Battery status whilst charging

Power LED	NETB On/Off	USB	Battery
Yellow	OFF	connected	Battery Charging
Green	OFF	connected	100% charged
Yellow Flashing	ON	connected	Battery Charging
Green Flashing	ON	connected	100% Charged

3.2. Battery status with device ON and USB disconnected

Power LED	NETB On/Off	USB	Battery
Green	ON	disconnected	60% - 100%
Yellow	ON	disconnected	15% - 50%
Red	ON	disconnected	< 15%

3.3. Battery status while pressing power switch

Signal LEDs	Battery
4 Green	76% - 100%
3 Green	51% - 75%
2 Green	26 – 50%
1 Green	5% - 25%
1 Red	< 5%

4. Server status LED

4.1. Connection status

Status LED	
Red	Initialization and network registration
Yellow	Registered to network but not connected to server
Green flashing	Connected to server

4.2. Error status

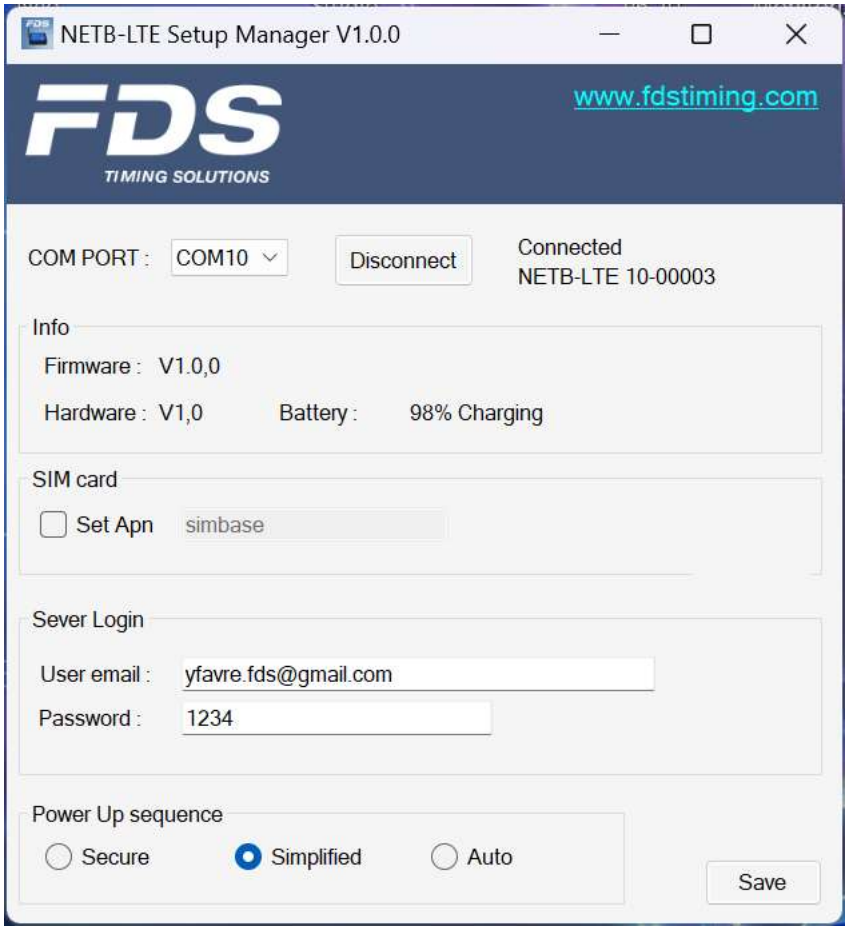
Flashing sequence	
●●	Error during modem initialization
●●●	SIM card error (either not detected or wrong PIN)
●●●●	No signal detected
●●●●●	Registration to network failed
●●●●●●	Socket initialization failed
●●●●●●●	Connection to Server failed

5. Register your NETB-LTE device

First of all, make sure you have a “FDS-Cloud service account”. If not, create one on www.webresults.fdstiming.com or via one of our IOS/Android apps such as “Remote Timer”.

To register a new device to your account (and possibly activate the service if this is the first time you use it), make sure you have an active SIM card installed inside your NETB device. By default, FDS provide a SIM card with an annual fee unless you prefer to manage your own SIM card and operator. Then follow the procedure below.

1) Open the PC app “NETB-LTE Setup Manager” and connect it to your NETB device via USB.
2) Complete the “User email”. It must be the same one you used during registering for your FDS WebTiming account. Now enter your password (max 16 digits). If this is the first time you use this service, the password will be saved in your account.



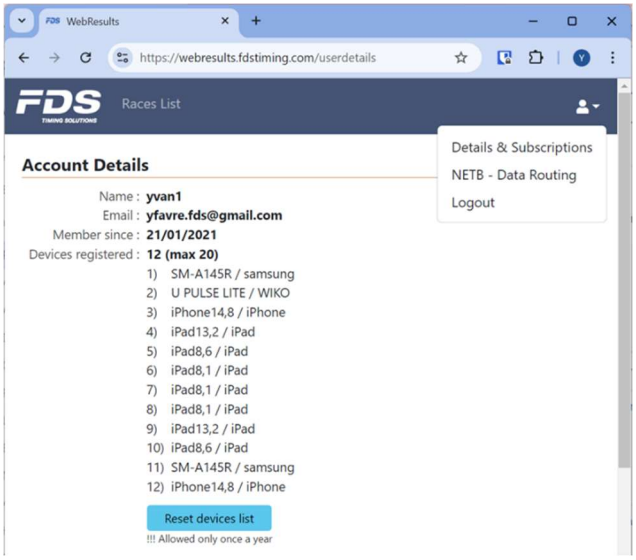
3) You can also select your preferred power On/Off sequence
   - **Secure** This is the standard FDS power On/Off sequence
   - **Simplified** Only one long press on the power switch
   - **Auto** Power up as soon as USB is detected
4) Disconnect from the PC app and power On your Device.

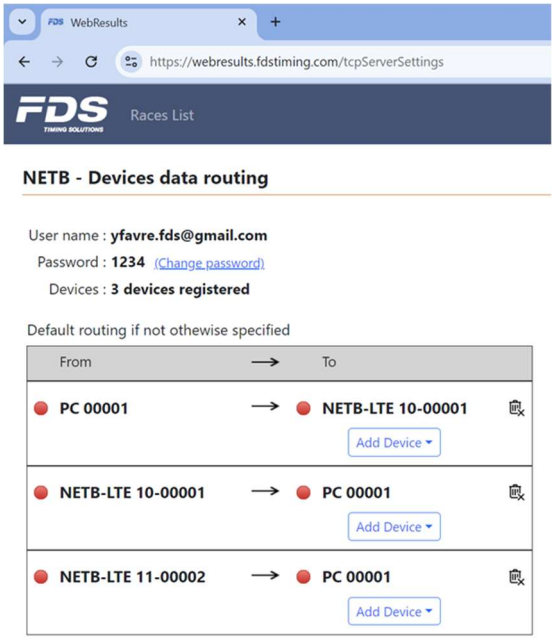
Cellular registration and server connection can take a few minutes (especially the first time you use it in a specific location). If the status LED start to flash Red and Yellow then there is a connection error (see flashing error code for more details).
When the status LED turn green then the connection is successful.
If your email or password is invalid the connection will be automatically closed.
If this is the first time you use a NETB device with your account, the first connection will activate the service. You will then need to power it off as soon as the status LED turn green and perform a second connection to register your device and get 1-year free subscription to the service.

6. NETB data routing

Data routing between PC and NETB devices as well as devices status can be set and monitored on your WebTiming account.

Log on to the webpage www.webresults.fdstiming.com and select “NETB – Data Routing” on the right-side menu.





You will find information about your registered devices as well as the password used for the Server connection.

To register a new device, follow the procedure on chapter 4. It will automatically be added to your account with 1-year free subscription to the server service (this doesn’t include SIM card fees and registration if using our provided SIM card).

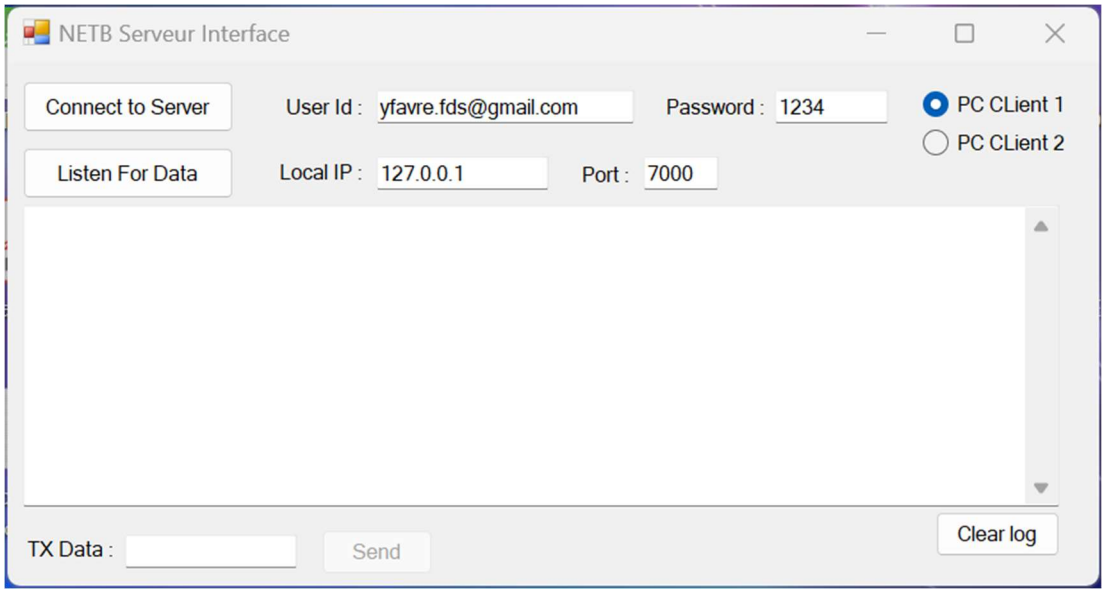
Once the device appears on your account as the photo above, you can select which other device or PC will send data to it. If you are using our PC interface with your timing software, it will appear as PC 00001 / PC 00002. You can route the data to one or more NETB devices.

You can also route data from one NETB to another NETB.

7. NETB Server PC interface

This application will redirect all traffic from your Timing software to our NETB cloud server.

To use it, just enter your NETB server Login credential (User email and password) and connect to the server.
Change the default Local IP (computer local) if needed as well as port number. Then press the "Listen" button. You can now connect your Timing app to the local server app.



8. SIM card

FDS provides a default IoT SIM card with annual registration fees. It has a worldwide coverage including more than 160 countries. For our customers wishing to use their own SIM card, please follow the instructions below.

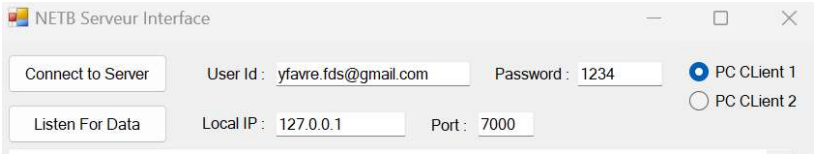
Note: FDS-Timing cannot be held responsible of any damages caused by opening the device and swapping SIM cards.

a) Remove carefully the 4 screws of the enclosure and disassemble the bottom cover.
b) Next to the battery, you will find the SIM card holder. Be careful while removing or inserting your SIM card as an incorrect handling could easily damage the socket.
c) Reassemble the enclosure with the screws (do not overtighten as it could damage the plastic thread.
d) On the Setting application, check the box "Set APN" and enter the APN of your operator. Once completed make sure to save the modification.

9. Setup and wiring

9.1. PC application to MLED display

Use this configuration to drive your MLED display from a PC software or any compatible timing applications. Your applications must allow the transfer of display data via an Ethernet socket. In order to transfer the data from your application to our FDS TCP server you need to use our NETB Server Interface software (You can choose the local IP and port).



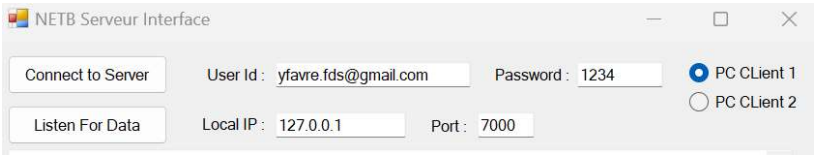
Set the correct NETB data routing from your WebTiming account as in the example below. Make sure the selected source “PC 00001” is the same as the one the NETB Server Interface
Note: you can redirect the same data to more than one NETB (many destinations)

On the display side, connect the NETB-LTE module to the display using the MR30 male/male connectors cable. You can power the NETB-LTE with the same supply as the MLED using a XT60 Y cable or just using the internal battery.

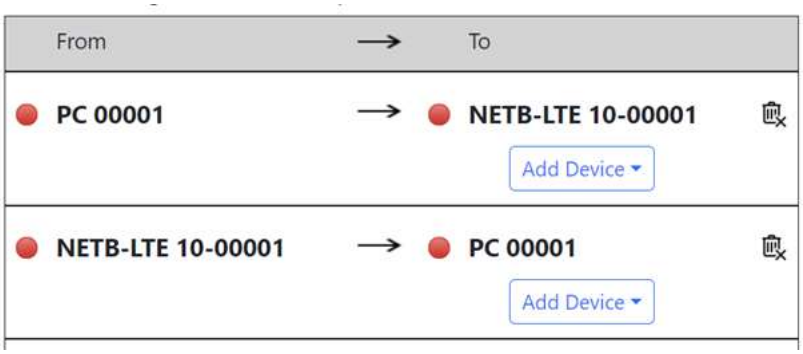
9.2. TBox/DBox to PC timing application

Use this configuration to redirect timing impulses from a TBox/DBox to your compatible PC timing application (should accept Ethernet connection with timer).

In order to transfer the data from our FDS TCP server to your application, you need to use our NETB Server Interface software (You can choose the local IP and port).



Set the correct NETB data routing from your WebTiming account as in the example below. Make sure the selected source “PC 00001” is the same as the one the NETB Server Interface Some Timing Apps need to send request to the TBox (recall unreceived times). To do so you have to set the data routing in both directions.



On the TBox side, connect the NETB-LTE module to the TBox RS232 output using a special Jack to MR30 cable. You can either power the NETB-LTE from its internal battery, via USB or XT60.

9.3. TBox to MLED (or any RS232 device)

Use this configuration to redirect either display data or timing impulses from any RS232 compatible App or device. This is a generic setup for P2P connection between 2 devices. It requires the use of 2 x NETB-LTE modules.

Set the correct NETB data routing from your WebTiming account as in the example below. Depending on your setup, data transfer might need to be in both directions.

Example of use:

TBox to MLED display (when using SmartChrono iOS app)

- 1 NETB on the TBox RS232 port
- 1 NETB on the MLED side

PC Timing App without Ethernet support to MLED or TBox

- 1 NETB on the PC via USB
- 1 NETB on the MLED or TBox

10. How to update the firmware

Updating the firmware is relatively simple. The software “FdsFirmwareUpdate.exe” is required And can be downloaded from our website.

e) Install the program “FdsFirmwareUpdate.exe” on your computer
f) Connect the USB cable between your PC and NETB_LTE
g) Run the program “FdsFirmwareUpdate.exe”
h) Select the COM Port
i) Select the update file (.bin)
j) Press Start on the program
k) Reset the NETB-LTE by inserting a small pin on the reset hole in the back of the box

Firmware and apps can be found on our website: https://fdstiming.com/download/

Important !!!

- Before performing a firmware update It’s a good practice to save a copy of the previous version.
- Avoid making an update just before a competition.
- After an update, make some tests to be sure all is working fine.
- If any issue is encountered you can revert back to the previous saved firmware version.

11. Technical specifications

Cellular network	World coverage LTE (4G)
Power supply	USB-C / XT60 (12V-24V)
Battery	LiPo 3000mAh
Autonomy on battery @20°C	> 36h
Operating temperature	-20°C to 60°C
Dimensions	90x70x28 mm
Weight	140gr

12. Copyright and Declaration

This manual has been compiled with great care and the information it contains has been thoroughly verified. The text was correct at the time of printing; however, the content can change without notice. FDS accepts no liability for damage resulting directly or indirectly from faults, incompleteness or discrepancies between this manual and the product described.

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FDS-TIMING Sàrl
Rue du Nord 123
2300 La Chaux-De-Fonds
Switzerland
www.fdstiming.com