X5M Pro

Documentation

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The high precision external GNSS antenna receiver that works with your Android or iOS smartphone or tablet. The perfect solution for entry-level and field experienced professional users. with RTK+PPK+NTRIP corrections. Features an NTRIP correction system that receives data via Internet or Bluetooth and an RTK correction system that receives data via LoRa.

Version: 3.0

Main advantages:

- Multi-band RTK (433MHz and 915MHz frequencies available), PPK, and NTRIP corrections with fast convergence times and robust performance, offers centimeter-level accuracy with a Fix solution in seconds
- Uses the same GNSS L1/L2/e5 technology found in professional receivers with state-of-the-art components
- Simultaneous reception of all constellations: GPS, GLONASS, GALILEO, and BEIDOU
- Includes its own multi-band helical GNSS and LoRa antennas
- Data transfer connection via USB port and Bluetooth
- Compatible with GIS and Photogrammetry Applications that operate with NMEA data
- It has a red point Laser for easy location of the points to be georeferenced on the field
- Compatibility with Android and iOS devices

NOTE: For iOS users, the only compatible app is SW Maps.

If you have any questions that are beyond the scope of this documentation, Please feel free to contact our Mettatec X5 Support contact.

Included components

- GNSS X5 Mobile Pro unit
- HeliX5 multi-band GNSS antenna
- LoRa 433 MHz or 915 MHz antenna (Frequency selected by client)
- Rover pole Adapter with 5/8″ thread
- USB Type-C cable for power supply

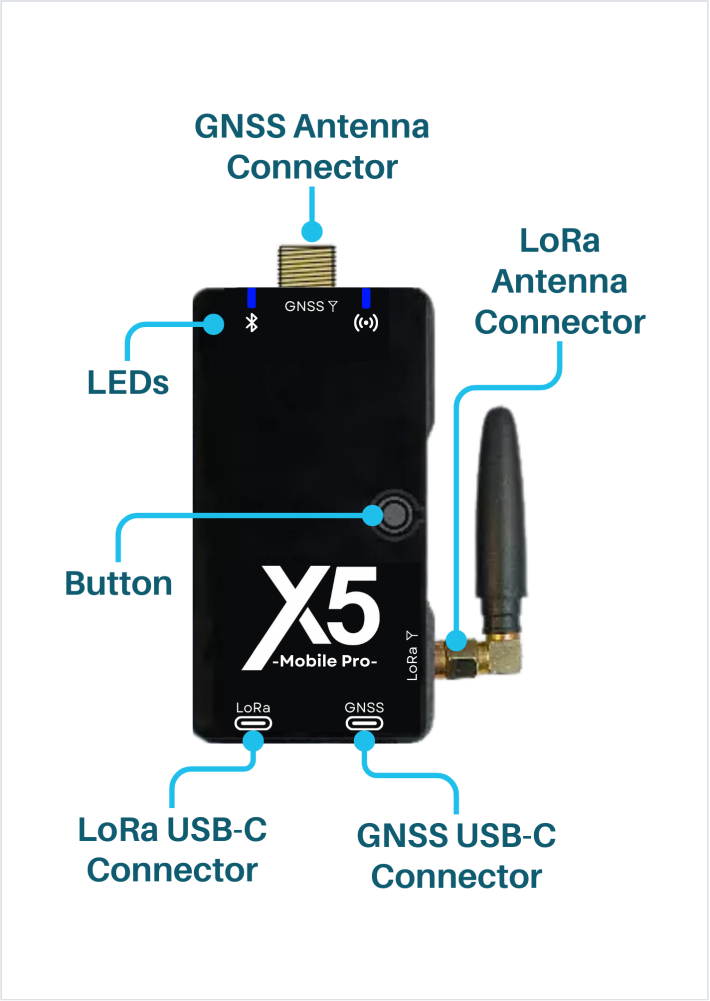
Translate

Technical specifications

Mechanical	• Dimensions: 85 × 40 × 13 mm (without antenna) • Weight: 80g • Operation temperature: -40 to 85 °C
Electrical	• Input voltage: 4.75 – 5.5 V • Antenna DC bias: 3.3 V • Peak current consumption: 5V @ 250 mA • Average current consumption: 5V @ 120 mA • Current limit on USB cable: 500 mA
Connectivity	• Bluetooth V4.2 BR/EDR • USB Serial
GNSS	• Concurrent reception of GPS, GLONASS, Galileo, and BeiDou • Receives both L1C/A and L2C bands • Signal tracked GPS/QZSS L1 C/A, L2 GLONASS L1OF, L2 BeiDou B1I, B2I Galileo E1-B/C, E5b • Number of channels 184 • Navigation update rate: 1 Hz GNSS • Position accuracy: NTRIP 0.01 m + 1 ppm CEP • Convergence time: NTRIP < 10 sec • Time to First Fix: 25s (cold), 2s (hot) • Max Altitude: 50 km (31 miles) • Max Velocity: 500 m/s (1118 mph)

Radio configuration	• Available in ISM 433MHz and 915MHz frequency bands
	• Antenna gain: 3 dBi
	• Max distance: 10 km, in clear and open area and line of sight
	• Both modules (GNSS Base Station and X5 LoRa) parameters
	  ◦ Channel: Determines the frequency band used for communication, it can be an integer from 0 to 80.
	  ◦ NET ID: Unique identifier used to distinguish the LoRa network, default 0, it can be an integer from 0 to 255.
	  ◦ Baud rate: Defines the amount of bits transmitted per second, it can range from 1200 to 115200 bps with a default of 9600 bps.
	  ◦ Air rate: Refers to the data rate at which information is transmitted over the air, from 0.3 to 62.5 kbps with a default of 2.4 kbps.
	  ◦ Packet size: Maximum amount of data that is transmitted in a single packet. It can be from 32, 64, 128 or 240 (default) bytes.
	  ◦ Transmission power: Strength of the transmitted signal. The default setting is 30 dBm, with options of 27, 24, and 21 dBm.

Ports and LEDs descriptions



- **LoRa USB-C connector:** For power the module and configure LoRa radio
- **GNSS USB-C connector:** For power the module and receive data corrections
- **Antenna connector:**
  - SMA connector for 433MHz/915MHz LoRa antenna
  - MCX connector for GNSS antenna
- **RF LED:** Blinking: Transmitting or receiving data with LoRa (Rx/Tx)
- **BT LED:**
  - Blinking every 100 ms: Waiting for Bluetooth connection with Android compatibility
  - Blinking every 200 ms: In LoRa configuration mode
  - Fading: Waiting for Bluetooth connection with iOS compatibility
  - Solid: Bluetooth connected
- **Button:**
  When connecting the X5 Mobile Pro via USB Serial cable, it is possible to modify its **compatibility with Android or iOS**. To do this, the button must be held down when connecting the device. After the button is released, the Bluetooth connection search will start with the BT LED sequence corresponding to the selected compatibility. If the button is not pressed when connecting, the previously established compatibility will be maintained.

Utilization

Installation on mobile device

NOTE: You must count with a **Base and caster connection** to use this device and receive NTRIP corrections. Contact us to receive credentials for our free caster at https://cloud.mettatec.com/login. Also you need to have Internet access on your

mobile device.

To install the X5 Mobile Pro in your device, follow the next steps:

1. Paste the velcro provided in your mobile device.
2. Attach the X5 Mobile Pro.
3. Connect the multi-band Helix antenna.
4. Connect the USB-C cable provided to power up the X5 Mobile.

For Bluetooth mode, enter your device configuration and synchcronize with your X5M. It appears with Bluetooth ID: **X5 Mobile Pro XXXX**, where XXXX is the MAC address.

Operation modes

There are the following modes of operation:

Configuration Mode

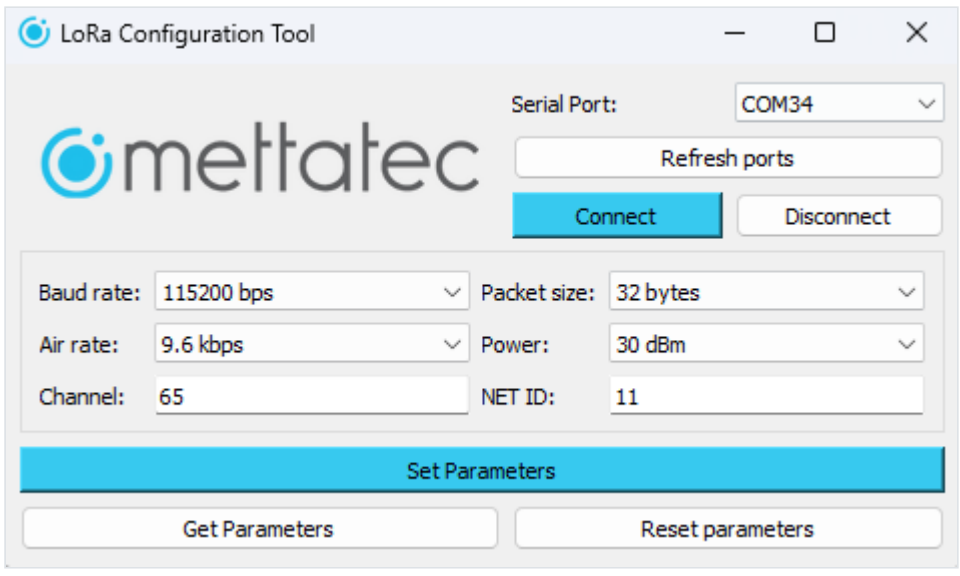
- Keep the button pressed for at least two seconds to enter this mode. LoRa parameters can be changed with the provided executable application
- It is necessary to restart the X5 Mobile (disconnect and reconnect) to return to operation mode

Tx/Rx Mode

- Receive the corrections from the Base Station

LoRa configuration

1. Connect the X5 Mobile Pro to your computer (USB-C cable). Make sure the switch is on **Configuration mode**.
2. Open the LoRa Configuration Tool. Identify the port where you connected the device, and click the “Connect” button. If you do not find the Serial Port, click the “Refresh ports” button.



3. Set the parameters of your preference. Once you get the confirmation message, you can disconnect the device from your computer.
4. Reconnect your X5 Mobile Pro to return to Transmission mode. Make sure that the LoRa configuration of your device is the same that you just set.

Video tutorials

X5M Pro | Connection with Pix4DCath and ...

X5 Mobile Pro | Radio LoRa Configuration

X5 Mobile | GNSS Firmware update

X5 Mobile | Configuration using u-center

Downloads

Download the necessary firmware updates and executable applications for your device.

- X5 LoRa Configuration Tool

Release notes

See what's new added, changed, fixed, improved or updated in the latest versions.

Version 2.0

ADDED Now the position is fixed faster.