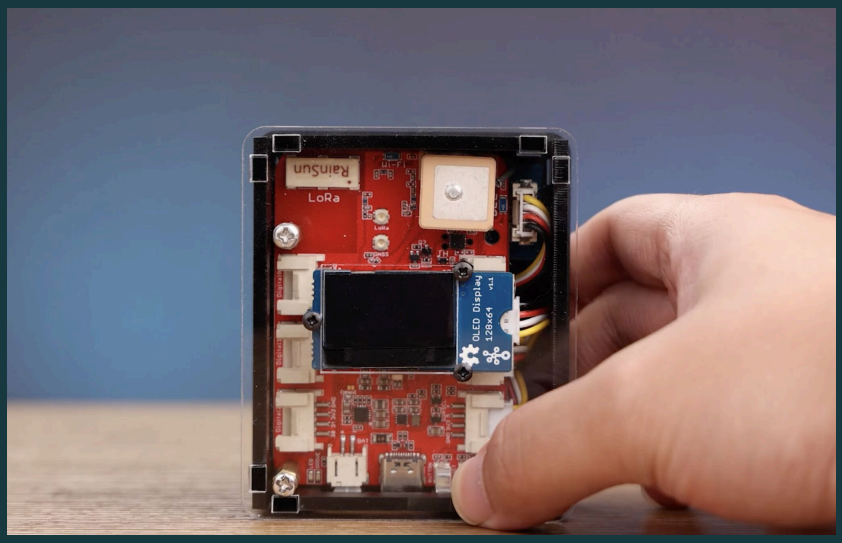
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INDUSTRIAL PRODUCT DATASHEET

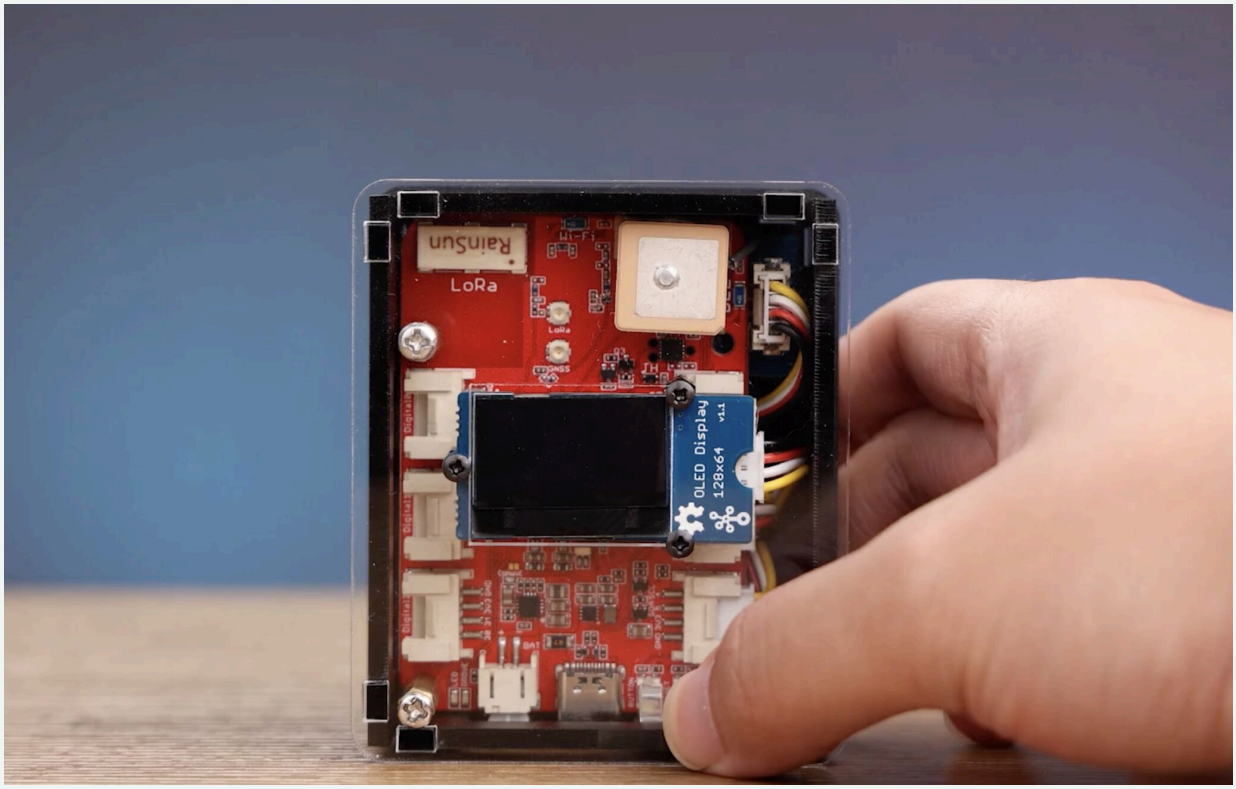
Wio Tracker 1110 Dev Kit for Meshtastic

A plug-and-play Meshtastic development kit with GPS, environmental sensors, and OLED display for off-grid communication and monitoring applications.

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Overview

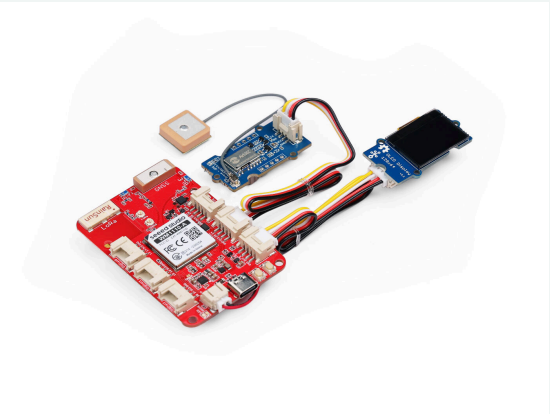


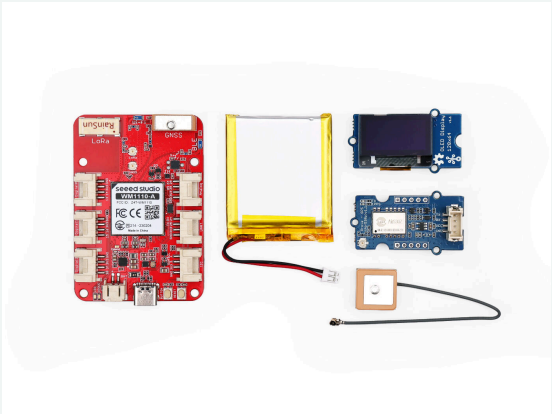
The Wio Tracker 1110 Dev Kit for Meshtastic is a plug-and-play hardware kit combining the Wio Tracker 1110 Dev Board with Grove GPS and OLED display modules, enabling long-range, off-grid LoRa communication with Meshtastic firmware. It supports real-time multi-satellite positioning, environmental monitoring via onboard sensors, and versatile expansion through additional Grove connectors, suitable for asset tracking, outdoor adventures, and remote environmental data collection.

Key Features

- **Easy Setup**: The hardware kit is plug-and-play, allowing you to easily connect the 2 Grove Modules to the Wio Tracker 1110 Dev Board. Simply flash the Meshtastic firmware to the board to experience long-range, off-grid communication in areas without existing or reliable communications infrastructure.
- **Real-time Positioning & Monitoring**: Equipped with a Grove GPS (Air530) module, it supports high-precision multi-satellite positioning (GPS, Beidou, Glonass, Galileo, QZSS, SBAS). The onboard temperature and humidity sensors provide real-time environmental data.
- **HMI Display**: Features a Grove 0.96" OLED Display (128x64) for clear, real-time data visualization (battery power, GPS location, nearby devices, signal status, historical messages, and more) and interaction (debugging).
- **Extensive Expansion Interfaces**: With 4 remaining plug-and-play Grove connectors on board, you can add more **Grove sensors and modules (300+ available)** for various applications.
- **Open-source Hardware and Software**: Compatible with Arduino, the kit supports further development and customization, providing rich development resources to tap into the open-source Meshtastic community.
- **Enclosure Reference Designs Available**: We offer the source codes for 2 enclosure designs (one laser-cut acrylic enclosure and one 3D-printed enclosure), available for free download in the Documents Section. You are encouraged to redesign and customize the enclosures for your specific applications. (P.S. We are considering making the enclosures available for order soon and would love to hear your feedback or suggestions to improve the design.
  Contribute your voice here:**https://www.seeedstudio.com/blog/2024/07/04/introducing-wio-tracker-1110-dev-kit-for-meshtastic-building-open-source-off-grid-decentralized-and-free-lora-mesh-network/**
  - **Acrylic Enclosure**
  - **3D Printed Enclosure**

Product Gallery











Specification

General		
Voltage - supply	5V (USB 2.0 Type-C)	
	Battery Connector	3.7V

Interface	RFIO	GNSS Antenna Connector* 1 LoRa Antenna Connector* 1
	USB type-C	* 1
	Grove Interface	ADC* 1I2C* 1UART* 1 Digital*3
Button	USER	Configurable button
	RESET	Reset
Exterior FLASH Memory	4M	
LoRa® and Positioning with Semtech LR1110 (This Kit Only Use the LoRa® RF transceiver)		
LoRaWAN® Protocol	V1.0.4	
Frequency Plan	863~928MHz	
Sensitivity	-125dBm @125K/SF7 -141dBm @125K/SF12	
Output Power	20dBm max @LoRa®	
Positioning Technology	GNSS(GPS/BeiDou), WiFi Sniffer	
Range	2~10km (Depends on antenna and environment)	
Bluetooth (Nordic nRF52840)		
Bluetooth	Bluetooth 5.3	
Flash	1MB	
RAM	256KB	
Protocol	Bluetooth LE, Bluetooth mesh, Thread, Zigbee, 802.15.4, ANT and 2.4 GHz proprietary stacks	
Output Power	6dBm max @Bluetooth	
Onboard Sensors - TH Sensor (SHT41)		
	Range	Accuracy
Temperature	-40~125°C	± 0.2°C
Humidity	0~100%RH	±1.8%RH
Onboard Sensors - 3-Axis Accelerometer(Not Used)		
Range	±2g, 4g, 8g, 16g	
Bandwidth	0.5Hz ~ 625Hz	
Sensitivity (LSB/g)	1000 (±2g) ~ 83 (±16g)	

Power Voltage (VCC)	3.3 / 5 V
Driver IC	SSD1308Z
Display Color	White
Dot Matrix	128×64
Panel Size	26.7(W)×19.26(H) mm
Active Area	21.74(W)×11.175 (H) mm
Dot Pitch	0.17(W)×0.175 (H) mm
Dot Size	0.15(W)×0.15 (H) mm
Wide range of operating temperature	-20~70 ℃

Parameters	Values
Supply voltage	3.3V/5V
Working current	up to 60mA
Interface	UART
Time of warm start	4s
Time of cold boot	30s
Working Temperature	-35C-85°C

Storage Temperature		-55°C-100°C
Humidity		5%-95%
Time of Positioning	Pure hardware cold start	27.5s
	Pure hardware hot start	<1S
	Pure hardware recapture	<1S
	Software-assisted A-GNSS	<5S
Sensitivity	Cold start	-148dBm
	Hot Start	-162dBm
	Recapture	-164dBm
	Track	-166dBm
Accuracy	Horizontal positioning accuracy	2.5m
	High positioning accuracy	3.5m
	Speed accuracy	0.1m/s
	Time transfer accuracy	30ns
Consumption	Capture current value@3.3V	42.6mA
	Tracking current value@3.3V	36.7mA
	Low power mode@3.3V	0.85mA
	Ultra-low-power mode@3.3V	31uA

Applications

- **Asset Tracking:** Track the movement and location of your assets and monitor environmental conditions in real-time where the asset is located for better management.
- **Outdoor Adventure:** Use the kit to build a Meshtastic device for off-grid communication with your hiking or camping group. The GPS can help track locations, while temperature and humidity sensors can provide real-time environmental data to ensure safety.
- **Environmental Monitoring:** Collect and transmit environmental data. Deploy the device in remote areas to monitor and log temperature and humidity over time, contributing to local weather data collection. Use the device to track and monitor environmental conditions in wildlife habitats, aiding in research and conservation efforts.

Part List

Wio Tracker 1110 Dev Board for Meshtastic	x1（Required）
Grove - OLED Display 0.96"	x1
Grove - GPS (Air530)	x1

Resource Links

- https://www.seeedstudio.com/Wio-Tracker-1110-Dev-Kit-for-Meshtastic.html
- Wio Tracker 1110 Dev board v1.0_SCH.pdf
- Wio-WM1110_Module_Datasheet_V1.3
- Semtech LR1110 Datasheet
- nRF52840 - Bluetooth 5.3 SoC - nordicsemi.com
- GitHub - Meshtastic Firmware
- Enclosure File (3D-Print)
- Enclosure File (Acrylic)
- Wio Tracker 1110 Dev Board EAGLE Library

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