



ThinkNode LoRa Dev Board Series

Product Catalogue

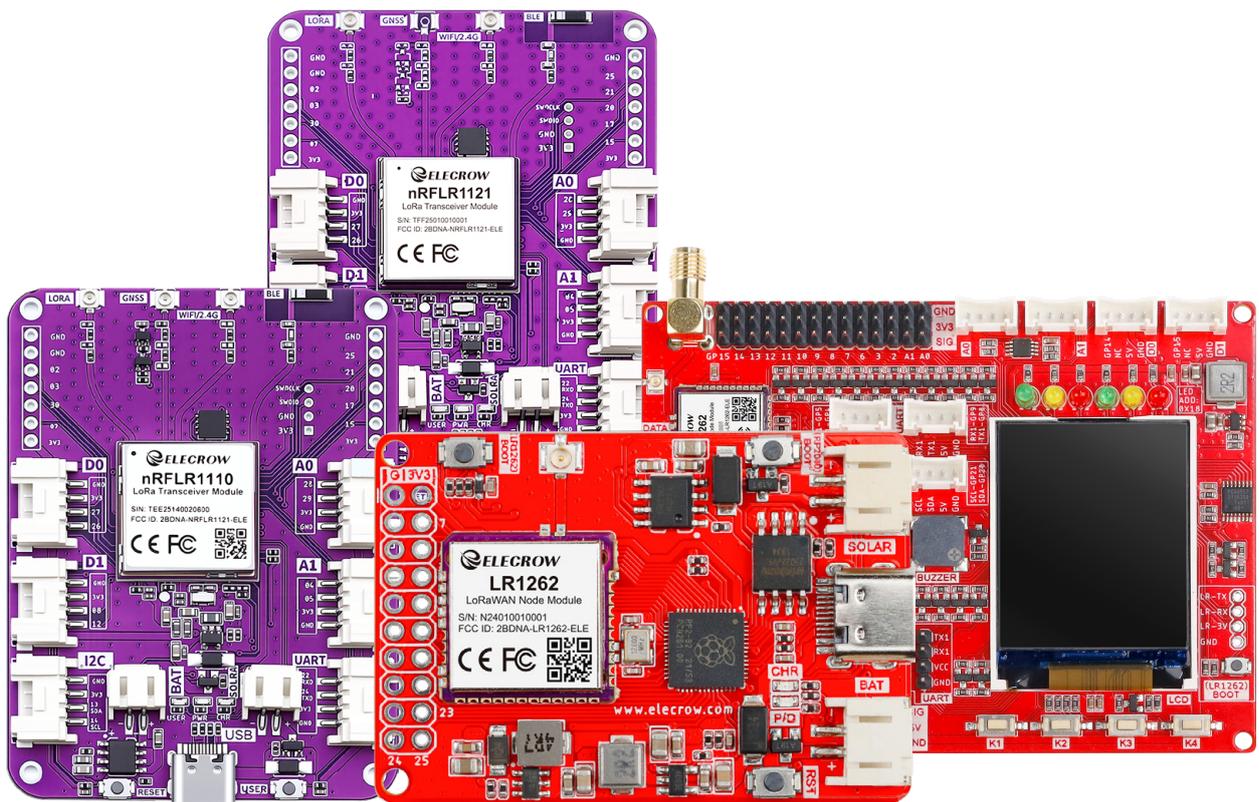
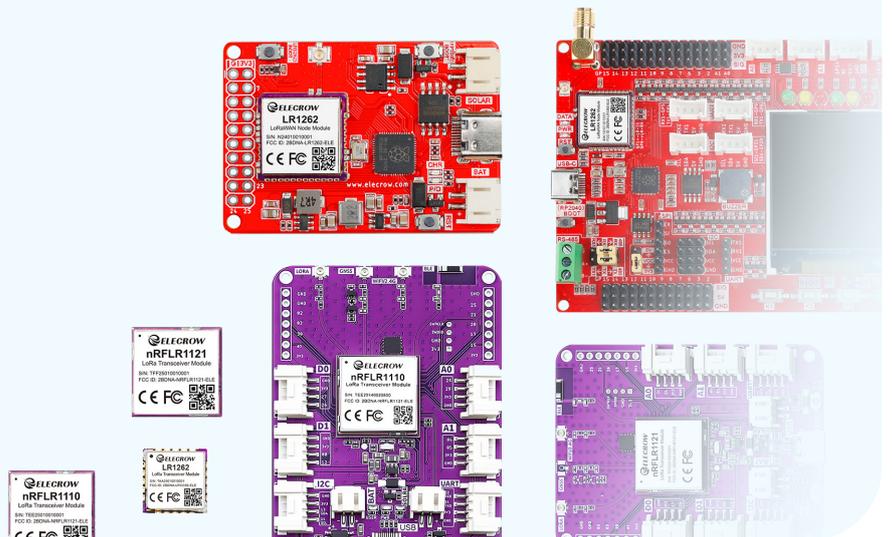


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More models coming soon



From Idea to Implementation: A Fast Track

The Thinknode LoRa development board series provides an all-in-one platform designed to simplify complexity and enable plug-and-play functionality for users at every stage. It addresses three core challenges:

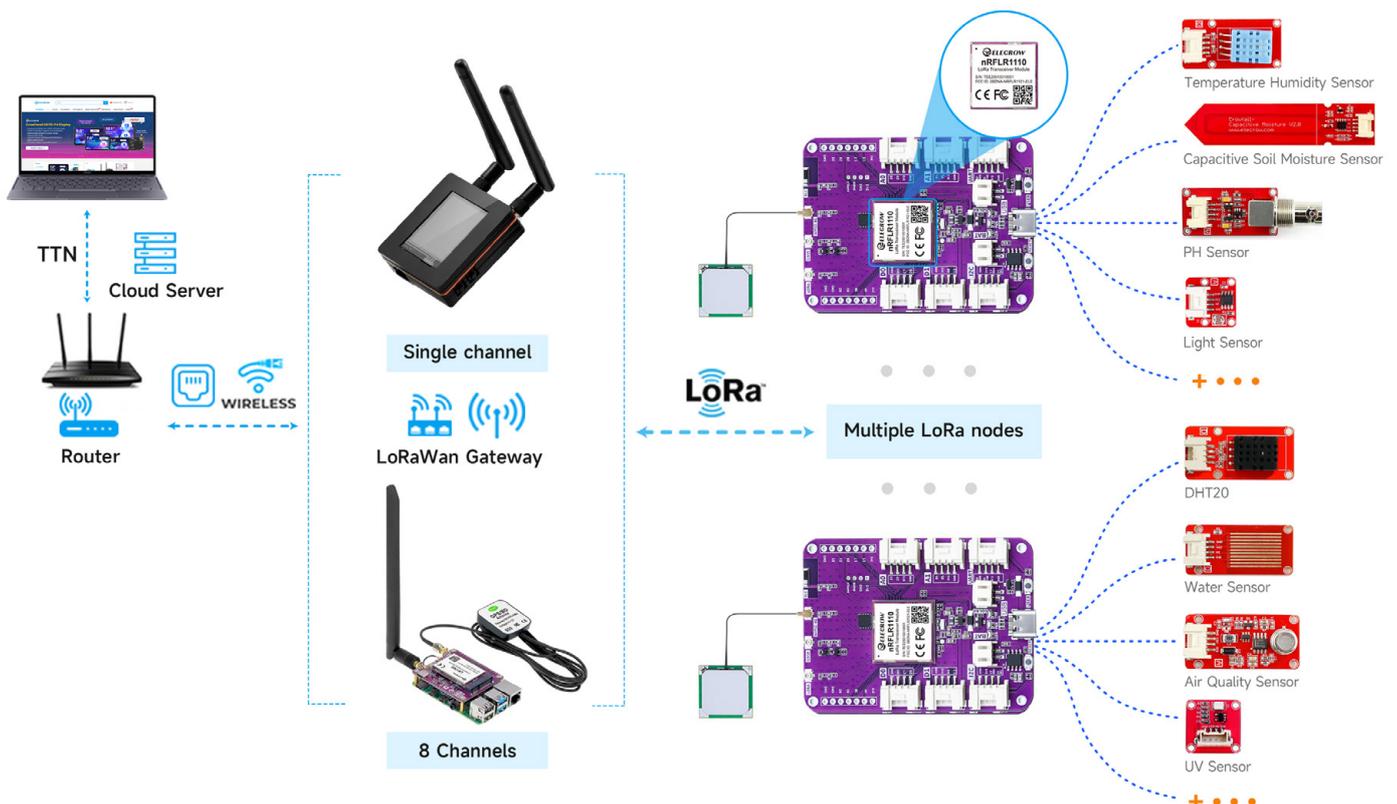
First, **lowering barriers to entry** – beginners and educators can learn through hands-on experimentation without needing deep RF theory knowledge.

Second, **accelerating innovation** – makers and product managers can leverage rich expansion interfaces to transform concepts into demonstrable prototypes within hours, rapidly validating feasibility.

Third, **streamlining development and evaluation** – engineers can focus directly on core application development using our pre-validated hardware and comprehensive SDK, while chip evaluators gain access to reliable, real-world performance testing environments that reduce mass production risks.

In essence, this is more than a development board – it's a bridge and accelerator for learning, prototyping, developing, and evaluating LoRa applications, efficiently transforming your IoT ideas into reality.

Network Topology



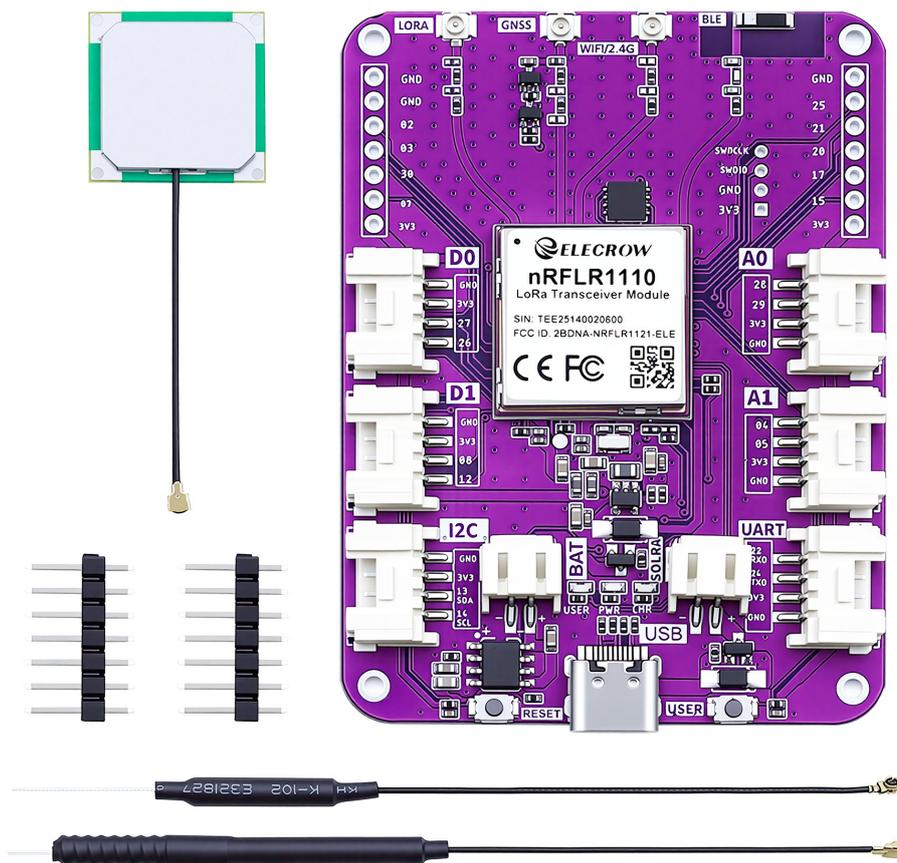
LoRa Node Expansion Board (nRFLR1110)

Product Overview

This module features the nRF52840 microcontroller, providing LoRa point-to-point transparent transmission and LoRaWAN network capabilities with dual-band support for 868/915MHz.

Equipped with 6 interfaces (A×2/D×2/IIC×1/UART×1), the module enables rapid LoRa node deployment and seamless integration with common sensors including temperature /humidity, air quality, light, and PM2.5 sensors. It's widely applicable in weather stations, smart homes, intelligent factories, and logistics.

For outdoor deployment, the module integrates a lithium battery charge/discharge circuit with solar panel charging support. Additionally, reserved pin headers with included dual-row headers allow flexible expansion options.



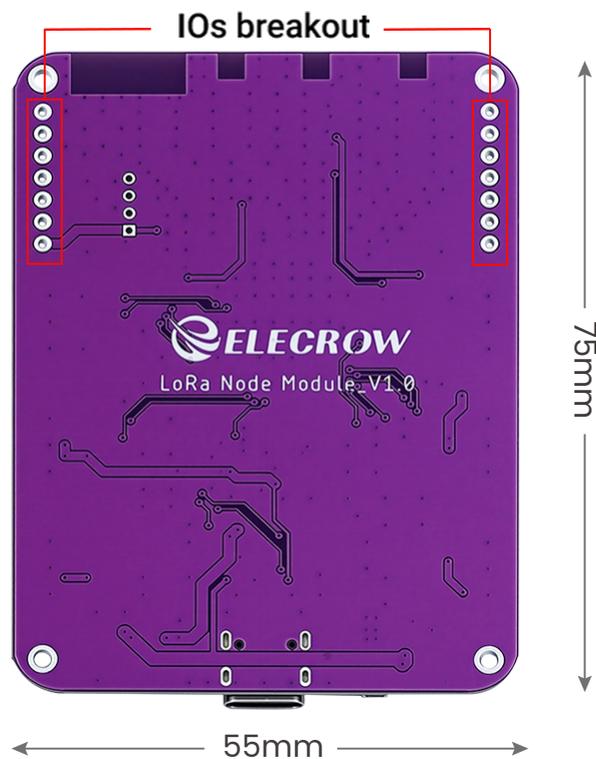
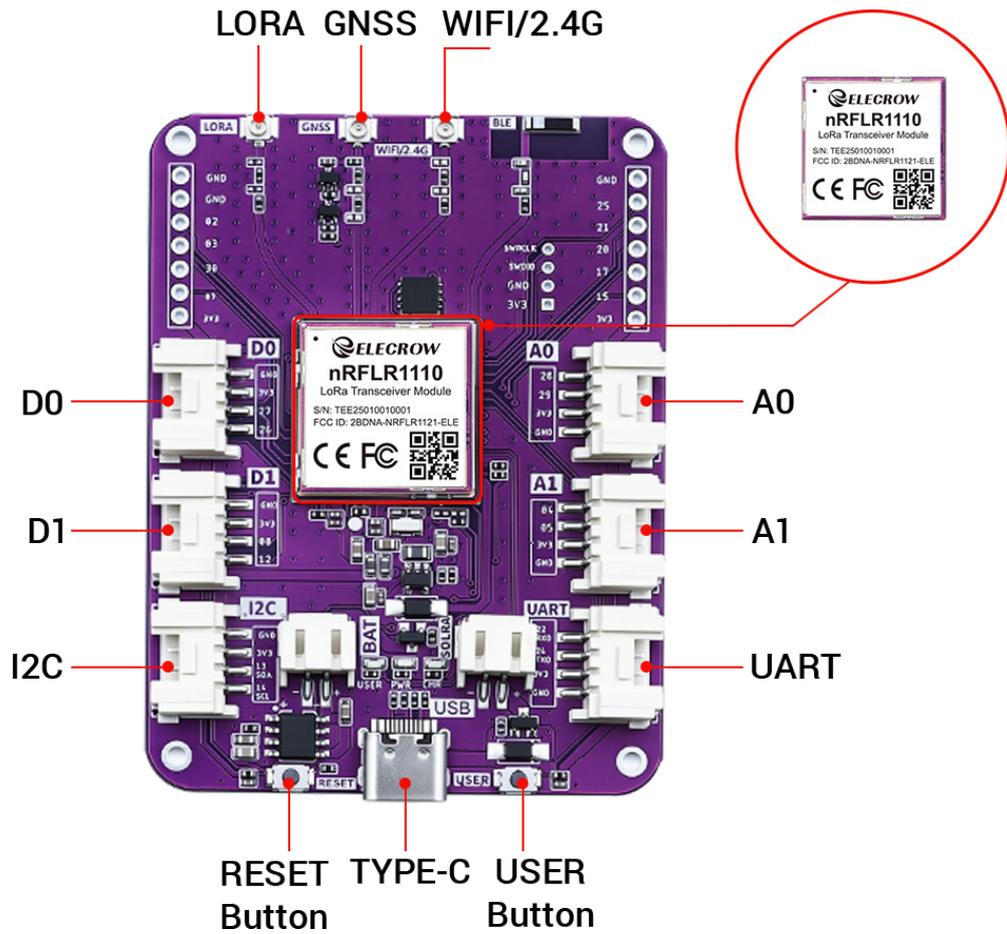
Key Features

- nRFLR1110 & nRF52840 Chip
- Support GNSS Position
- Supports Solar Charging
- Multiple Interfaces, plug-and-play

Specifications

Controller/LoRa Communication	
SoC	nRF52840, 32-bit single-core, 64MHz
Memory	256KB RAM, 1MB Flash (onboard), 8MB Flash (external)
Baseband	Semtech LR1110IMLTRT (nRFLR1110 module)
LoRa Performance	
TX Power	+20dBm @Max (LoRa)
RX Sensitivity	-141dBm @SF12/125kHz
LoRaWAN Protocol	V1.0.4
Data Rate	0.076~62.5Kbps
Modulation	LoRa/(G)FSK/GMSK
Frequency	850~930MHz (868MHz, 915MHz compatible)
Spreading Factor	SF5~SF12
Range	5~6km, up to 15km max(antenna & environment dependent)
Additional Connectivity	
Wi-Fi	WiFi Sniffer
Bluetooth	Bluetooth 5.3, BLE, mesh network
GNSS	Built-in GPS/BeiDou
Hardware Features	
Interfaces	TYPE-C,WiFi/GNSS/LoRa antennas, D×2, A×2, I2C, UART, battery/solar connectors
Controls	1× Reset button 1× User button RST: Program restart/system reset User: Customizable
Indicators	Power (Red), Charging (Green), User-defined (Blue) LEDs
Dimensions	75mm(L) x 55mm(W) x 7.5mm(H)
Operating Temperature	-30°C ~ +85°C
Power	
Supply Voltage	Typical 5.0V
I/O Voltage	Typical 3.3V
Clock	32MHz TCXO

Hardware Details



Applications

Smart cities, smart agriculture, industrial automation, environmental monitoring, smart homes, logistics management, healthcare, Asset Tracking.

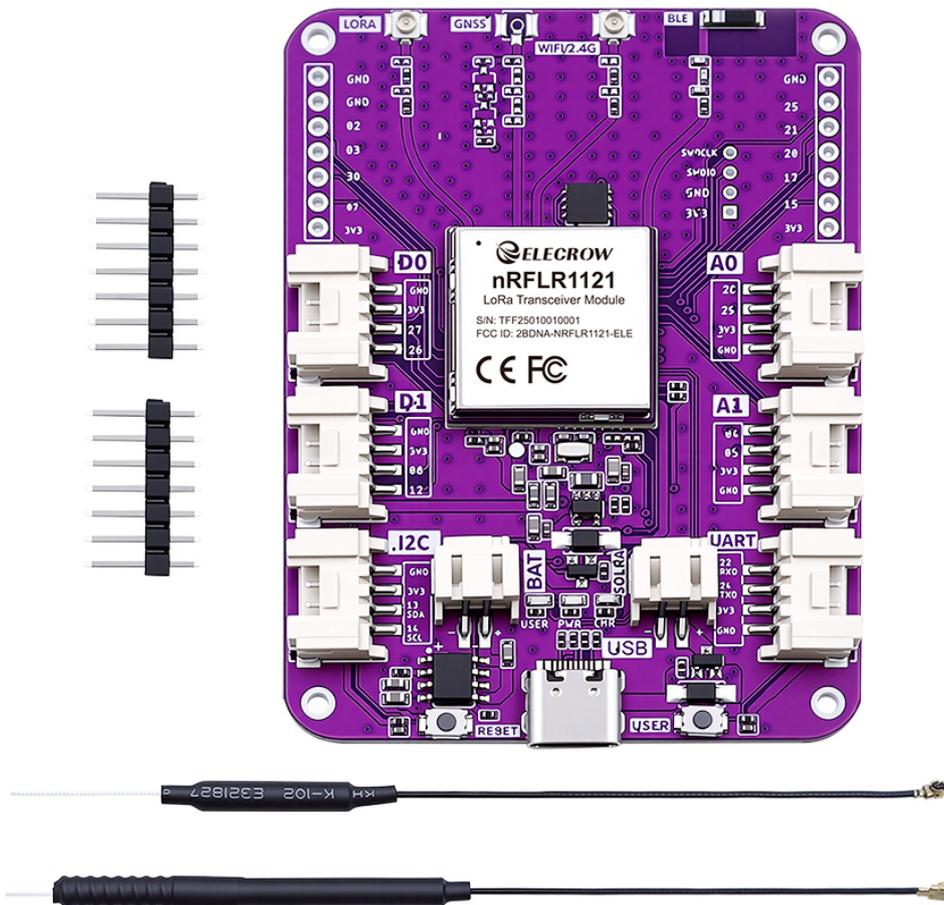
LoRa Node Expansion Board (nRFLR1121)

Product Overview

This module features the nRF52840 microcontroller, supporting LoRa point-to-point transparent transmission and LoRaWAN networks with dual-band firmware for 868/915MHz.

Equipped with 6 expansion interfaces (A×2/D×2/I2C×1/UART×1) for rapid LoRa node deployment with various sensors.

Integrated lithium battery charge/discharge circuit with solar panel charging support for outdoor applications.



Key Features

- nRFLR1121& nRF52840 Chip
- Supports Solar Charging
- Multiple Interfaces, plug-and-play
- Wide Range of Applications
- Satcom S-band

Specifications

Controller/LoRa Communication	
SoC	nRF52840, 32-bit single-core, 64MHz
Memory	256KB RAM, 1MB Flash (onboard), 8MB Flash (external)
Baseband	Semtech LR1121IMLTRT (nRFLR1121 module)
LoRa Performance	
TX Power	+20dBm @Max (LoRa)
RX Sensitivity	-141dBm @SF12/125kHz
LoRaWAN Protocol	V1.0.4
Data Rate	0.091~62.5Kbps
Modulation	LoRa/(G)FSK/GMSK
Frequency	850~930MHz (868MHz, 915MHz compatible) and LoRa 2.4 GHz
Spreading Factor	SF5~SF12
Range	5~6km, up to 15km max(antenna & environment dependent)
Additional Connectivity	
Satcom	Satcom S-band
Bluetooth	Bluetooth 5.3, BLE, mesh network
Hardware Features	
Interfaces	TYPE-C,WiFi/LoRa antennas, D×2, A×2, I2C, UART, battery/solar connectors
Controls	1× Reset button 1× User button RST: Program restart/system reset User: Customizable
Indicators	Power (Red),Charging (Green), User-defined (Blue) LEDs
Dimensions	75mm(L) x 55mm(W) x 7.5mm(H)
Operating Temperature	-30°C ~ +85°C
Power	
Supply Voltage	Typical 5.0V
I/O Voltage	Typical 3.3V
Clock	32MHz TCXO

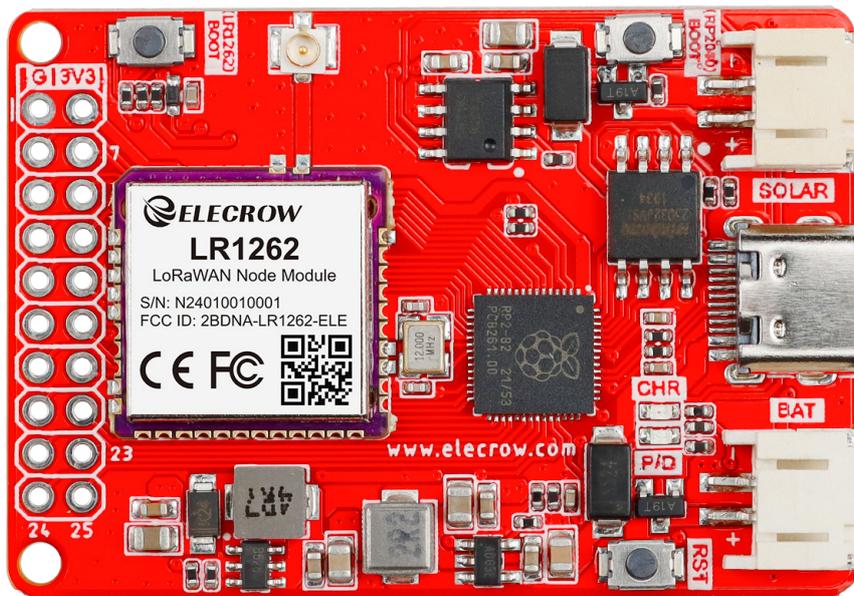
LR1262 Node Board LoRaWAN Node Module

Product Overview

This module integrates the RP2040 microcontroller with the LR1262 LoRa module, supporting LoRa point-to-point transparent transmission and LoRaWAN networks with dual-band firmware for 868/915MHz.

Equipped with 6 expansion interfaces (A×2/D×2/I2C×1/UART×1) for rapid LoRa node deployment, compatible with common sensors including temperature/humidity, air quality, light, and PM2.5. Widely applicable in weather stations, smart homes, intelligent factories, and logistics.

Integrated lithium battery charge/discharge circuit with solar panel charging support for outdoor deployment. Features reserved 20-pin headers with included dual-row pins for flexible expansion.



Key Features

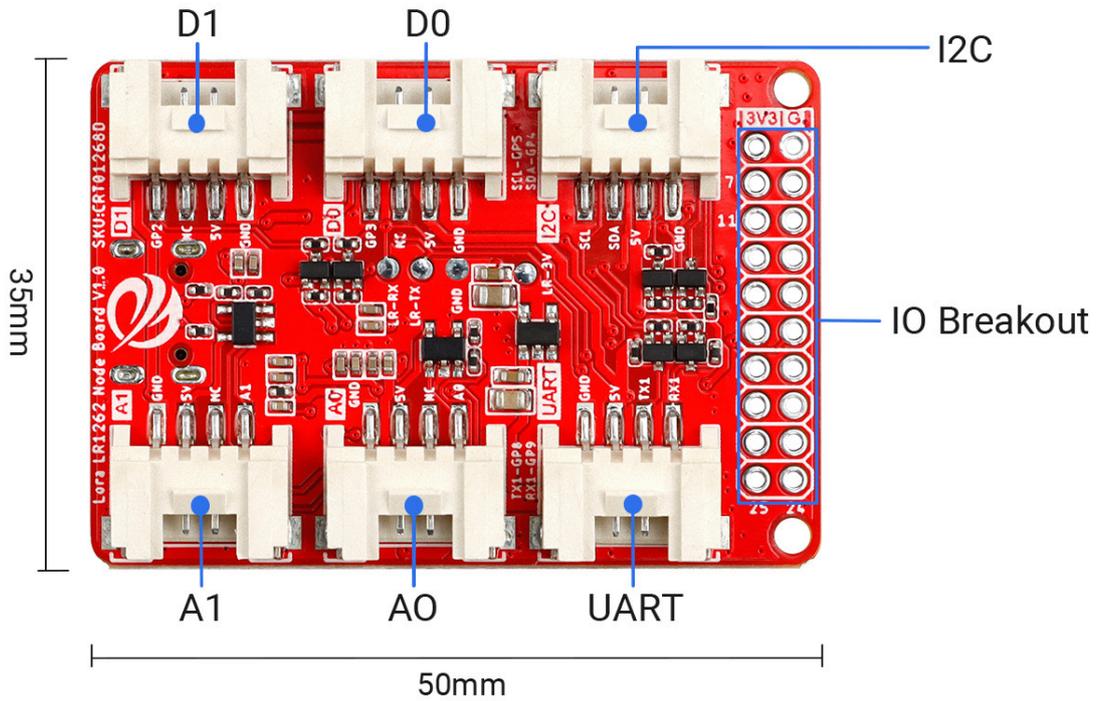
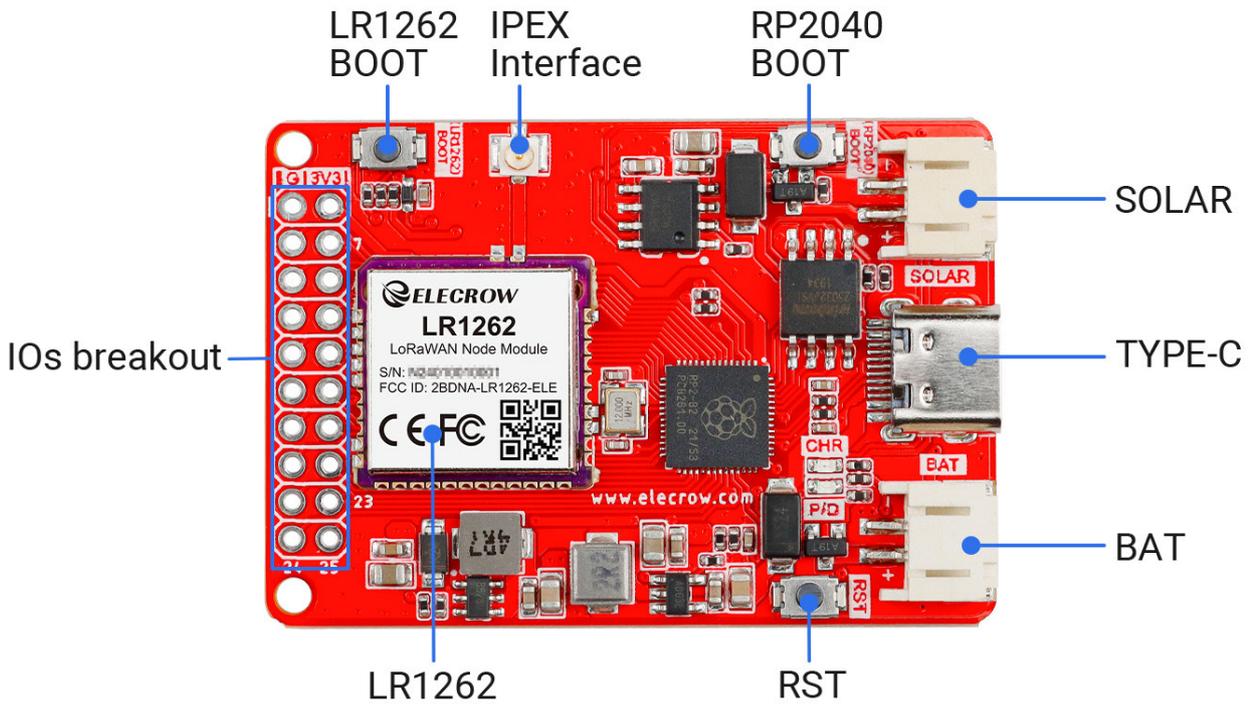
- Controller: RP2040 dual-core ARM Cortex-M0+ processor for high-performance computing
- Integrated LR1262 module, supports 803-930MHz frequency band
- Rich expansion interfaces, compatible with 150+ Crowtail series modules
- Supports LoRa point-to-point transparent transmission and LoRaWAN protocol
- Compatible with Arduino/MicroPython development environments

Specifications

Controller/LoRa Communication	
SoC	RP2040, Dual-core Arm Cortex-M0+ @ 133MHz
Memory	264KB SRAM, 4MB onboard flash
Baseband	SX1262
LoRa Performance	
TX Power	+22dBm @Max (LoRa)
RX Sensitivity	-137dBm @SF12/125kHz
LoRaWAN Protocol	V1.0.4
Data Rate	0.018~62.5Kbps
Modulation	LoRa/(G)FSK/GMSK
Frequency	850~930MHz (868MHz, 915MHz compatible)
Spreading Factor	SF5~SF12
Range	5~6km, up to 15km max(antenna & environment dependent)
Antenna Interface	IPEX Gen 1 connector
Hardware Features	
Interfaces	1× USB-C port 6× 5V Crowtail interfaces (2× analog, 2× digital, 1× UART, 1× IIC) 2×10 general-purpose GPIO headers 1× Battery connector 1× Solar panel connector (5V 1A)
Dimensions	50mm (L) × 35mm (W)
Operating Temperature	-30°C ~ +85°C
Power & Development	
Input Voltage	USB 5V-1A
Environment	Arduino/MicroPython

Note: Solar panel can only charge connected lithium battery; cannot power module directly.

Hardware Details



Applications

Function expansion, simplified development, industrial control, IoT, educational experiments.

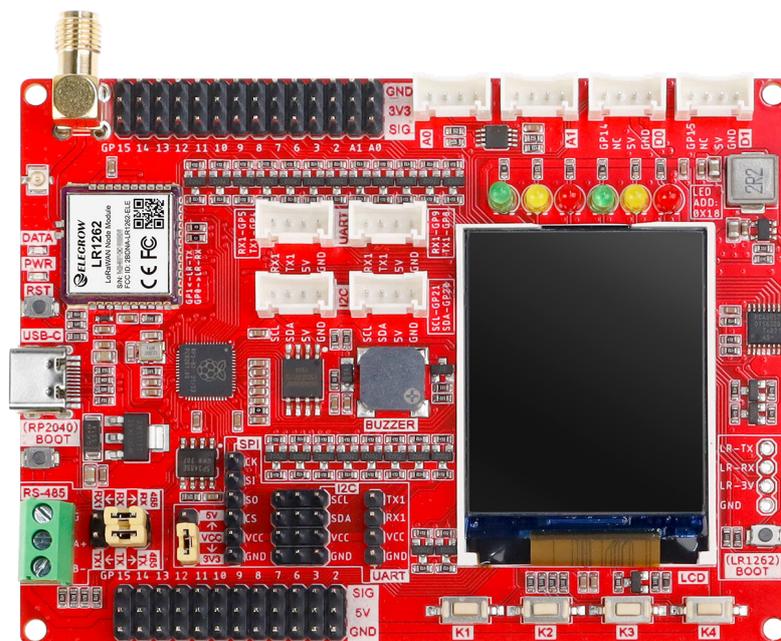
LoRaWAN LR1262 Development Board

Product Overview

This LoRa development board features the RP2040 dual-core ARM Cortex-M0+ microcontroller paired with the LR1262 ultra-low-power long-range transceiver module. It supports LoRa point-to-point transmission and LoRaWAN protocol, suitable for IoT, robotics, and embedded systems.

Rich interface resources: Compatible with Crowtail module series, with GPIO, RS485, SPI, I2C, UART, and other standard interfaces. Provides 3.3V/5V output for common sensors and electronic modules.

Onboard integration: 1.8-inch SPI LCD (128×160), buzzer, custom buttons, RGB indicator LEDs, and other functional components to streamline development and facilitate rapid prototyping.



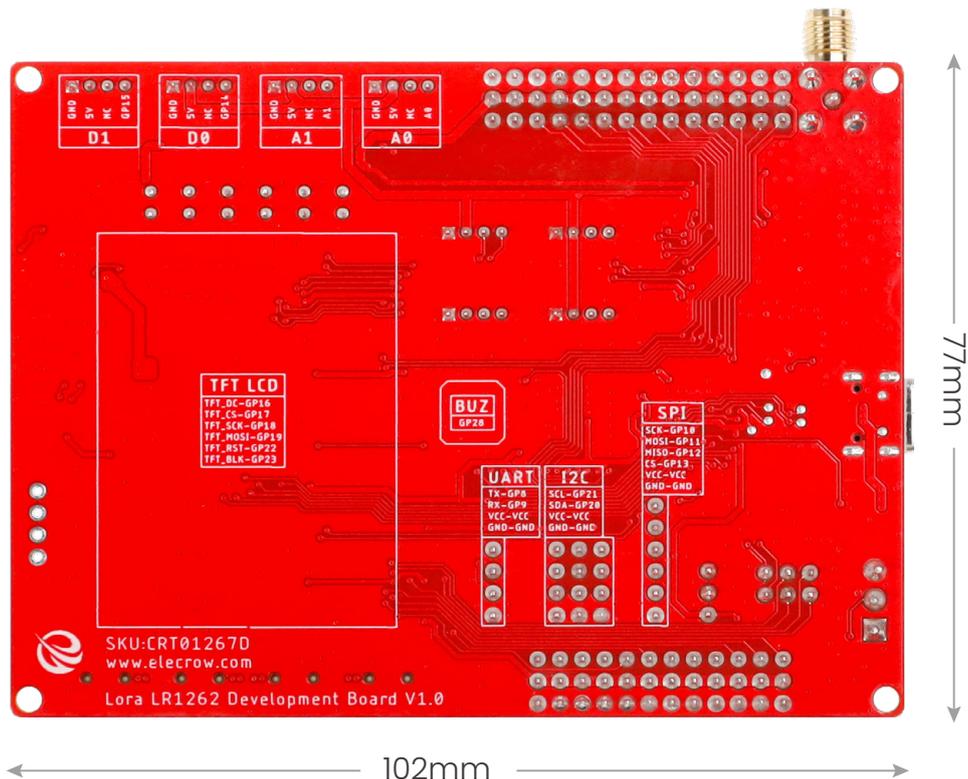
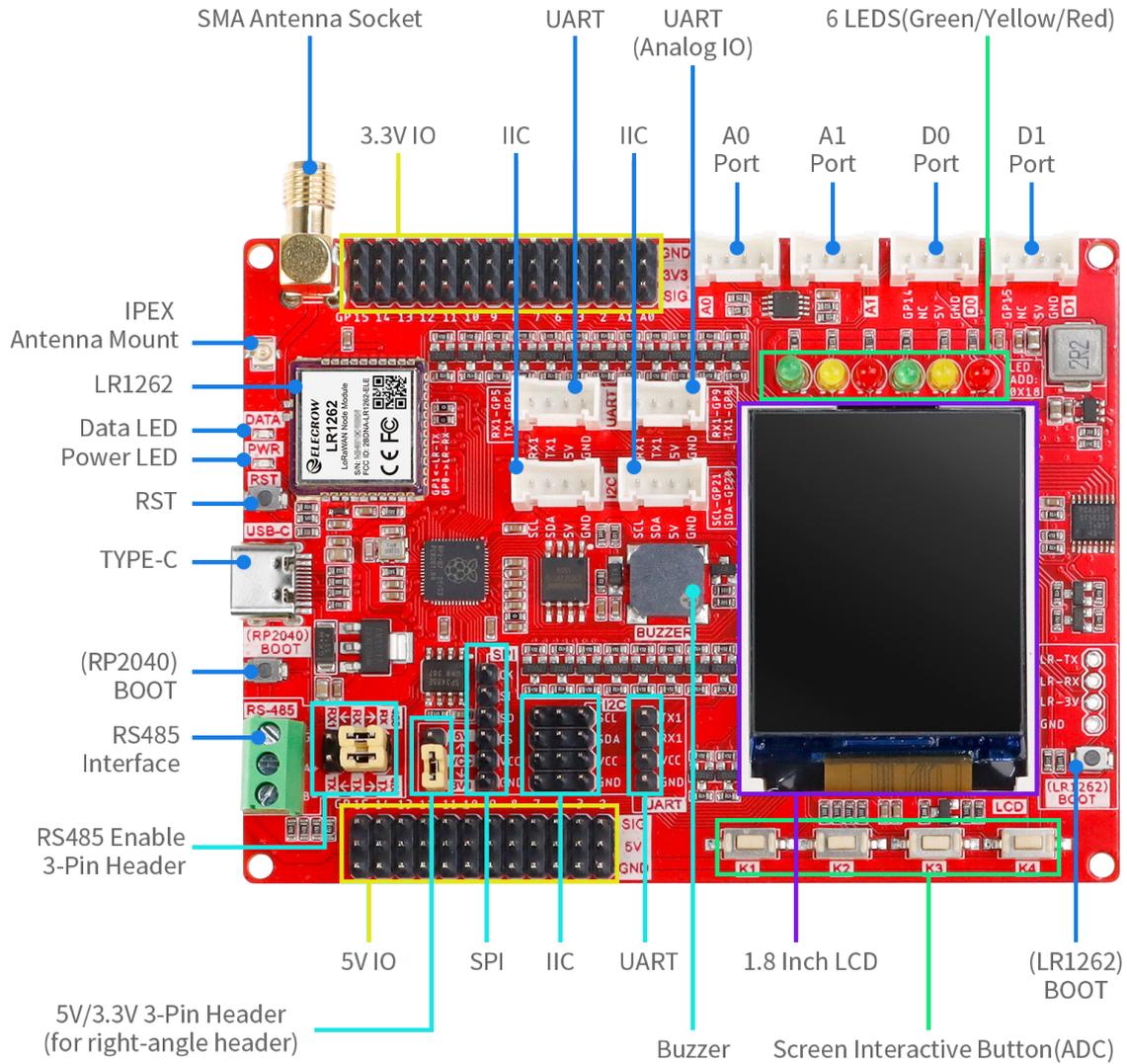
Key Features

- Controller: RP2040 dual-core ARM Cortex-M0+ processor for high-performance computing
- Integrated LR1262 module, supports 868/915MHz frequency bands with AT command control
- Rich expansion interfaces, compatible with Crowtail series and common modules
- Onboard buzzer, LED indicators, custom buttons, and 1.8" TFT-LCD (128×160, ST7735S driver)
- Compatible with Arduino/MicroPython development environments for rapid prototyping

Specifications

Core System	
SoC	RP2040, Dual-core Arm Cortex-M0+ @ 133MHz
Memory	264KB SRAM, 4MB onboard flash
Baseband	SX1262
Display	1.8" 128×160 SPI TFT-LCD, ST7735S driver
LoRa Performance	
TX Power	+22dBm @Max (LoRa)
RX Sensitivity	-137dBm @SF12/125kHz
LoRaWAN Protocol	V1.0.4
Data Rate	0.018~62.5Kbps
Modulation	LoRa/(G)FSK/GMSK
Frequency	850~930MHz (868MHz, 915MHz compatible)
Spreading Factor	SF5~SF12
Range	5~6km, up to 15km max(antenna & environment dependent)
Antenna Interface	External antenna: SMA or IPEX Gen 1 connector
Hardware & Interfaces	
Interfaces	1× RS485 communication port 8× 5V Crowtail interfaces (2× analog, 2× digital, 2× UART, 2× IIC) 12× 5V pin header inputs 14× 3.3V pin header inputs 1× 3.3V/5V switchable SPI interface 1× 3.3V/5V switchable UART interface 3× 3.3V/5V switchable IIC interfaces
Controls	1× Reset buzzer 4× User-defined buttons
Indicators	6× Programmable LEDs
Dimensions	102mm (L) × 77mm (W)
Operating Temperature	-10°C ~ 65°C
Power & Development	
Input Voltage	USB 5V-1A
Environment	Arduino/Micropython

Hardware Details



GPIO Pin Definitions

RP2040	LR1262 Dev Board		
GPIO0	LR1262-RXD	GPIO15	GPIO15/Crowtail-D1
GPIO1	LR1262-TXD	GPIO16	LCD-DC
GPIO2	GPIO2	GPIO17	LCD-CS
GPIO3	GPIO3	GPIO18	LCD-SCK
GPIO4	Crowtail-UART1-TXD	GPIO19	LCD-DIN
GPIO5	Crowtail-UART1-RXD	GPIO20	I2C0-SDA0/Crowtail-I2C-SDA /PCA9555-SDA
GPIO6	GPIO6		
GPIO7	GPIO7	GPIO21	I2C0-SCL0/Crowtail-I2C-SCL /PCA9555-SCL
GPIO8	GPIO8/UART1-TX1 /Crowtail-UART1-TX1/485TX		
GPIO9	GPIO9/UART1-RX1 /Crowtail-UART1-RX1/485RX	GPIO22	LCD-RST
		GPIO23	LCD-BLK
GPIO10	GPIO10/SPI1-SCK	GPIO24	485-EN
GPIO11	GPIO11/SPI1-MOSI	GPIO25	DATA
GPIO12	GPIO12/SPI1-MISO	GPIO26	A0/Crowtail-A0
GPIO13	GPIO13/SPI1-CS	GPIO27	A1/Crowtail-A1
GPIO14	GPIO14/Crowtail-D0	GPIO28	BUZZER
		GPIO29	ADC-KEY

Applications

Function expansion, simplified development, industrial control, IoT, educational experiments.



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