LimeNET Micro 2.0 Development Boards

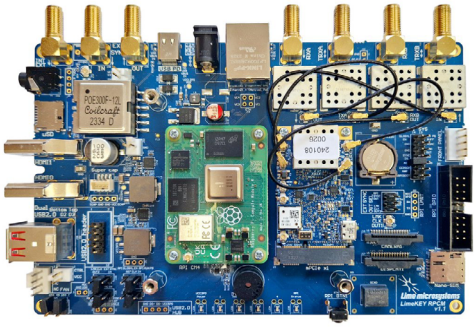
CS-LIME-28/29

Product Overview

09/09/2025

For the most up-to-date information, visit www.mouser.com or the supplier's website.

Description



Lime Microsystems LimeNET Micro 2.0 Development Boards are a highly flexible SDR system based on LimeSDR XTRX and Raspberry Pi CM4 for computing and RF features. These boards feature a 2x2 MIMO Front-End Module for high-output power, integrated Low Noise Amplifiers (LNAs), and SPDT switches for FDD and TDD modes of operation. The LimeNET micro 2.0 development boards include various connectors, including USB 2.0, Ethernet, HDMI, and coaxial RF, making it versatile for different development needs. These boards also come with advanced synchronization options, such as GNSS, White Rabbit, and external reference inputs.

These boards are available in 170mm x 110mm size with a barrel jack connector (9V to 14V and 2A to 3A), USB power delivery (12V, 1.5A, or 2.5A), and PoE (12V and 2A). Typical applications include private 5G networks, Internet of Things (IoT), spectrum monitoring, radio astronomy, and wireless networks in rural or remote areas.

The LimeNET Micro 2.0 DE is LimePSB RPCM preinstalled with a Raspberry Pi CM4 and LimeSDR XTRX, all in an actively cooled acrylic enclosure.

The LimeSDR XTRX is an embeddable high-performance Software-Defined Radio (SDR) board in a compact Mini PCIe form factor. This board is an ideal platform for developing logic-intensive digital and RF designs with an AMD Artix™ 7 XC7A50T-2CPG236I FPGA and an LMS7002M RF transceiver. The LimeSDR XTRX is a suitable building block for MIMO configurations from 2Tx2R to 32Tx32R and features a frequency range up to 3.8GHz with a bandwidth of over 100MHz. This board can be used with digital processors (ASICs, GPPs, and GPUs) of varying speed and power dissipation to fit any narrow or broadband air interface.

Features

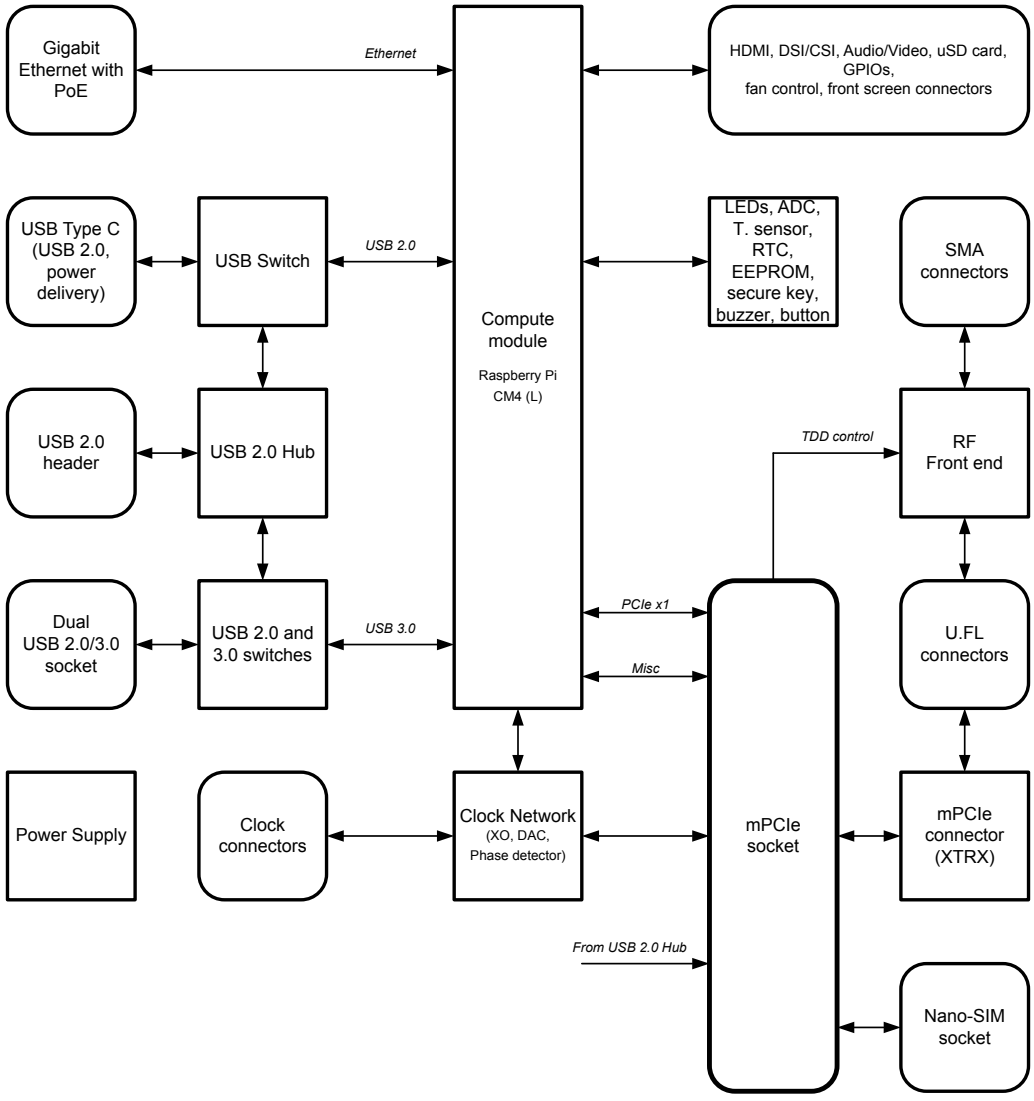
- **Connectors:**
  - Raspberry Pi CM4 connector (dual row)
  - USB 2.0 (Type-C®) socket (USB boot and power delivery)
  - Dual USB 2.0 (type A) socket (downstream ports) or Front Panel USB 2.0 header (unpopulated)
  - Ethernet jack (Gigabit Ethernet with PoE)
  - Mini PCIe x1 Gen 2 (5Gbps)
  - 2x HDMI 2.0 receptacle (up to 4Kp60 supported)
  - 2x 15-pin FPC connectors for MIPI DSI display and CSI camera
  - 3.5mm four-pin jack for analog audio and composite video
  - MicroSD card socket
  - Nano-SIM socket
  - Coaxial RF (4x SMA female + 4x U.FL female) connectors for RF front end
  - Coaxial pass-through U.FL to external SMA connector
  - 20-pin Raspberry Pi CM4 GPIO header (3.3V)
  - 14-pin Raspberry Pi CM4 SYS header
  - Five-pin front display connector (power, I^2C, button)
  - Raspberry Pi CM4 UART0 header (unpopulated)
  - Two-pin and four-pin FAN connector (5V default or 3.3V or VCC_INT voltage)
- **RF front end:**
  - MIMO (2x TRX, 2x RX) configuration
  - LNAs, PAs, RF switches, power, and mode control (TDD and FDD)
- 170mm x 110mm board size
- **Clock system:**
  - 30.72MHz (default) onboard VCOCXO and 30.72/38.4/40MHz (optional) VCTCXOs
  - Possibility to tune onboard XO by onboard DAC, by phase detector to match a reference clock input (PTP or external clock)
  - Reference clock/PPS input and output SMA connectors (EXT_SYNC_IN and EXT_SYNC_OUT)
  - Possibility to synchronize multiple boards using coaxial SMA connectors (EXT_SYNC_IN and EXT_SYNC_OUT)
- **Board power sources:**
  - Barrel jack connector (9V to 14V and 2A to 3A)
  - USB power delivery (12V, 1.5A or 2.5A)
  - PoE (12V, 2A)
- **Miscellaneous:**
  - Board temperature sensor
  - EEPROM
  - Secure key storage, shift registers
  - RTC, ADC
  - USB 2.0 hub
- **General user inputs/outputs:**
  - 4x general-purpose dual-color (RG) LEDs
  - 20-pin CM4 GPIO header (3.3V)
  - Front button

Applications

- Private 5G networks
- Wireless networks in rural or remote areas
- Internet of Things (IoT)
- Spectrum monitoring
- Radio astronomy
- Customizable and scalable network projects

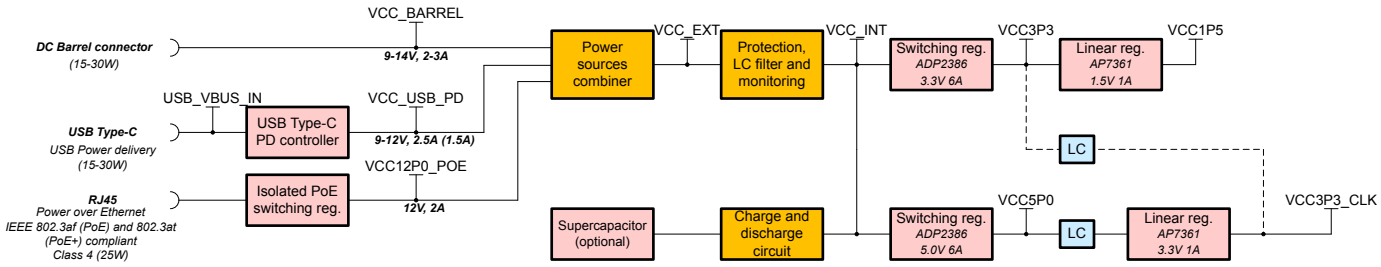
LimePSB RPCM Block Diagram

The heart of the LimePSB RPCM carrier board is Raspberry PI Compute Module 4 or Compute Module 5, which may be used to transfer digital data between the CM4/5 and the mPCIe board while performing data processing.



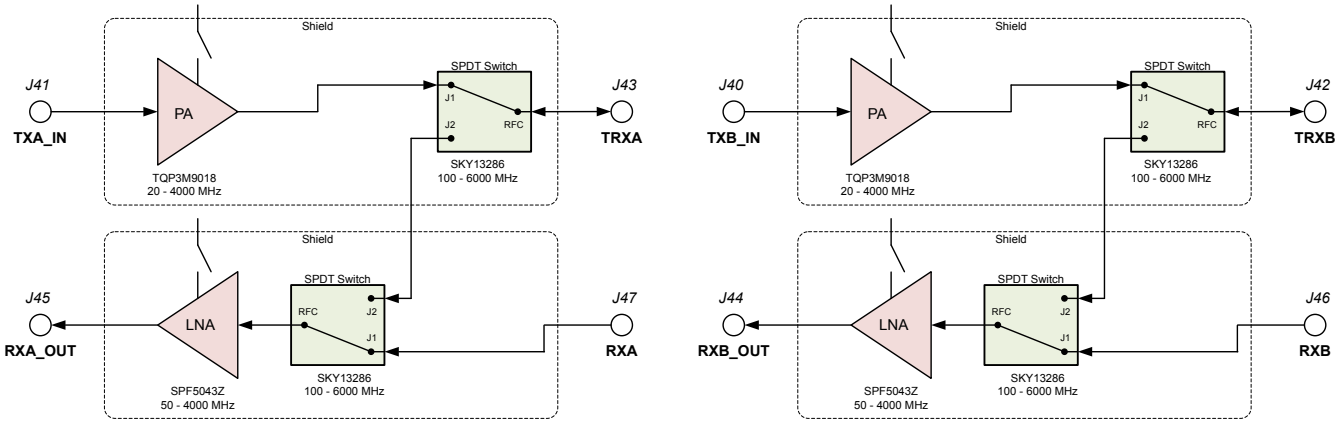
LimePSB RPCM Power Diagram

The LimePSB RPCM board power delivery network consists of different power rails with different regulators, voltages, and filters. The LimePSB RPCM board may be supplied from USB Type-C® port (USB power delivery), Ethernet RJ45 port (PoE), or barrel DC connector (9V to 14V).



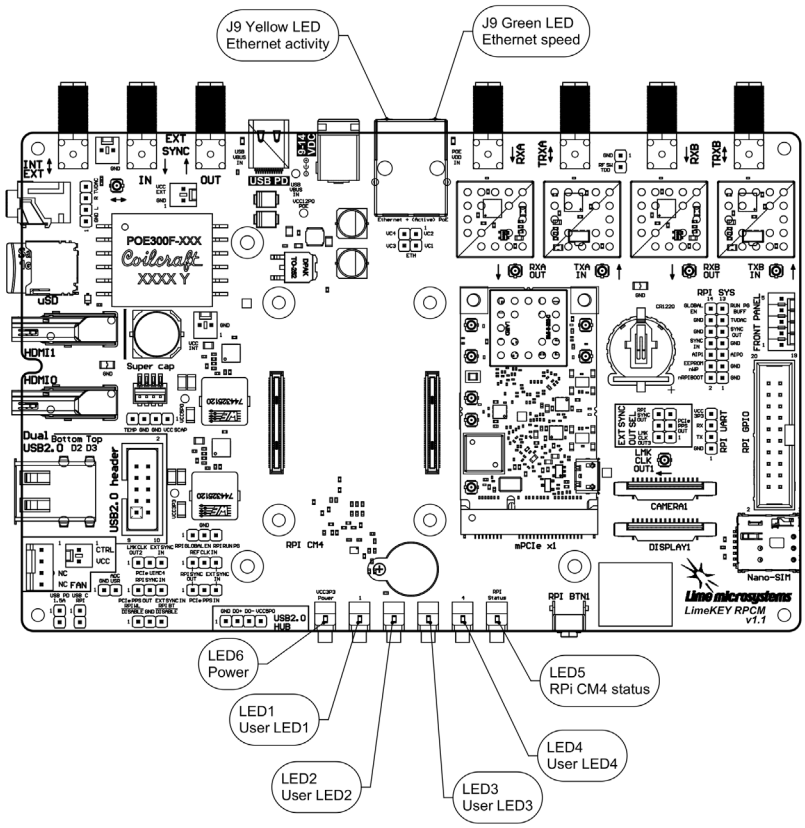
LimePSB RPCM RF Front End Diagram

The LimePSB RPCM RF path features power amplifiers, low-noise amplifiers, and SPDT switches. It also contains two types of connectors: board-edge SMA connectors (J47, J48, J51, J52) used for external connections (antennas or cables) and U.FL connectors (J45, J46, J49, J50) used for internal connections.



* All RF switches are controlled by the same signal RF_SW_TDD

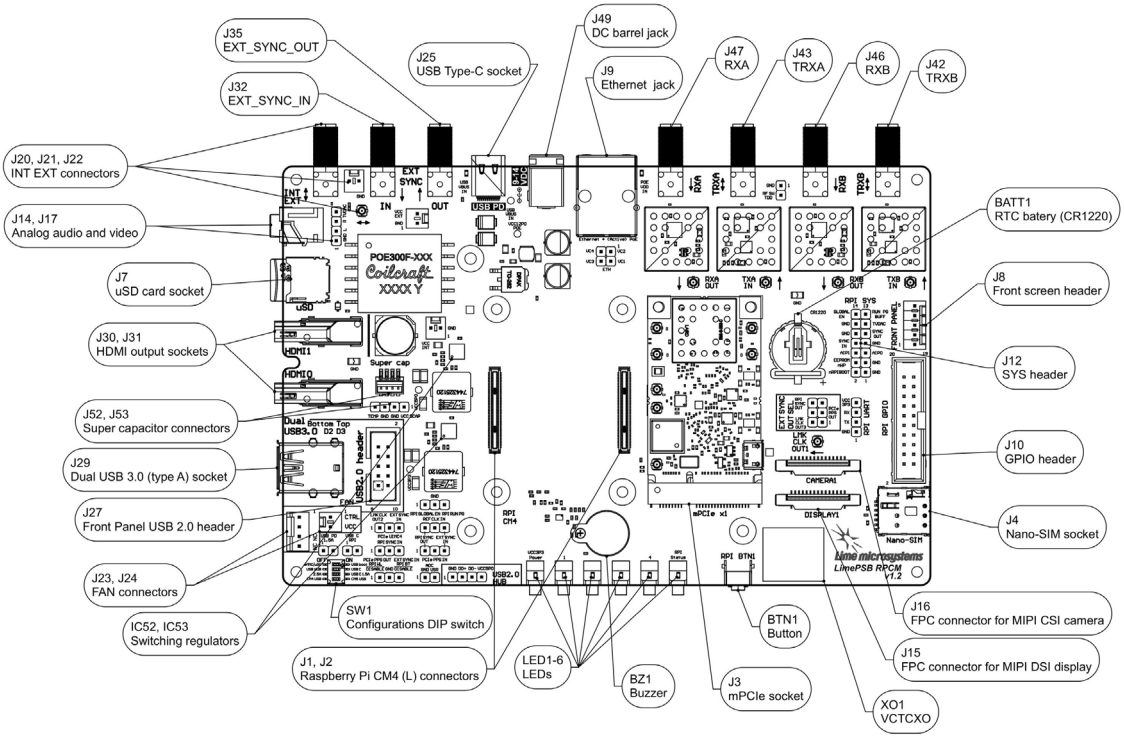
LimePSB RPCM Board User Interface Components

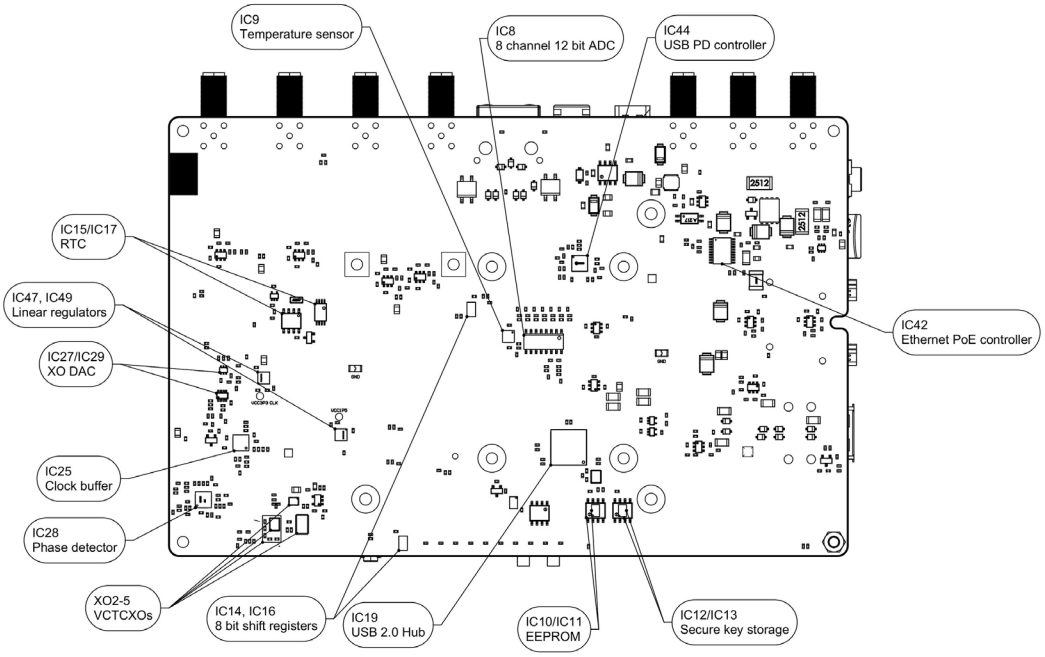


Board Reference	Schematic name	Shift register (IC14) pin	Description
LED1	RPI_LED1_R	Q0	User defined.
	RPI_LED1_G	Q1	
LED2	RPI_LED2_R	Q2	User defined.
	RPI_LED2_G	Q3	
LED3	RPI_LED3_R	Q4	User defined.
	RPI_LED3_G	Q5	
LED4	RPI_LED4_R	Q6	User defined.
	RPI_LED4_G	Q7	
LED5	RPI_STATUS_LED_R		Green is connected to CM4 PI_LED_nPWR (Power On) and red is connected to Pi_nLED_Activity (Activity).
	RPI_STATUS_LED_G		
LED6	VCC3P3		Board power. Connected to 3.3 V power rail
Ethernet connector J9 LEDs	ETH_LED_Y		Green is connected to Ethernet_nLED2 (Ethernet speed indicator: 1Gbit or 100Mbit Link) and yellow is connected to Ethernet_nLED3 (Ethernet activity indicator).
	ETH_LED_G		

LimePSB RPCM Board Components Overview

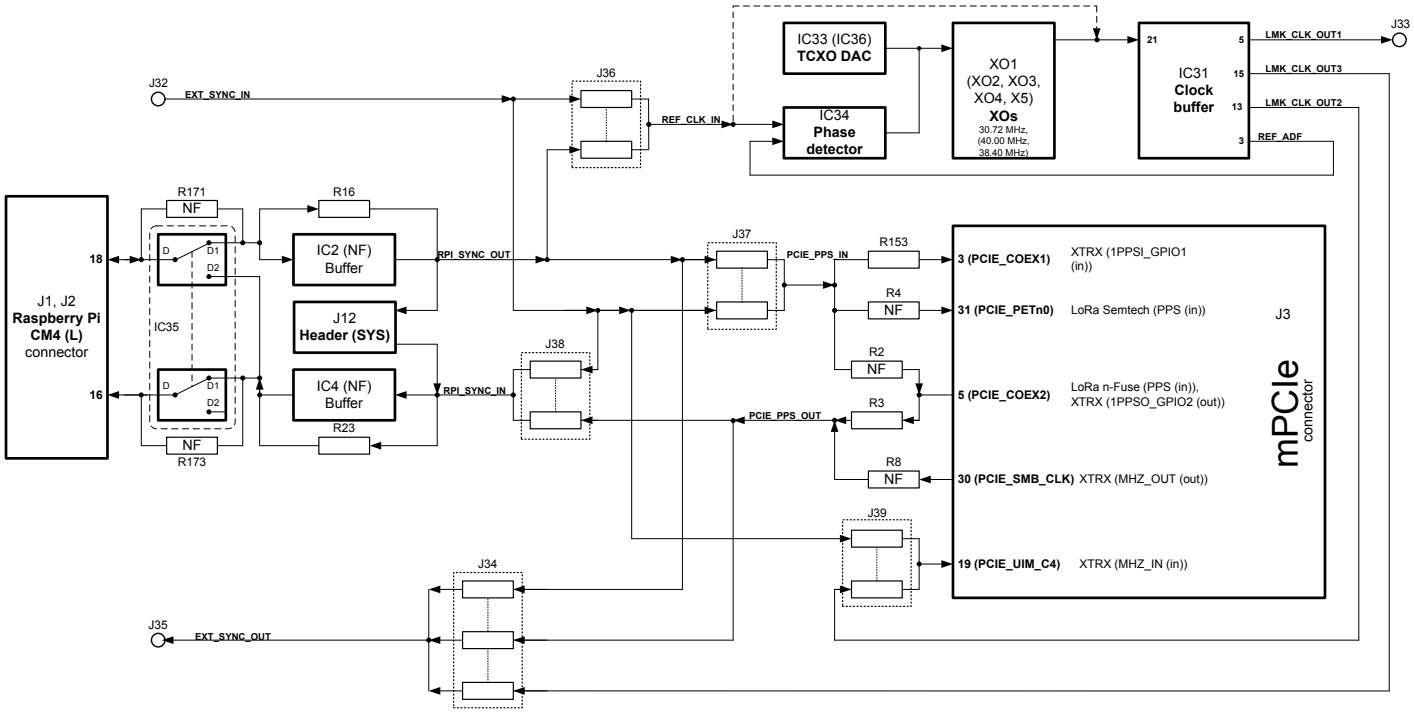
The LimePSB RPCM board is designed to use Raspberry Pi CM4/5 as a host computer and support Raspberry Pi CM4/5L version without eMMC Flash memory. The board-to-board connectors (J1 and J2) are used to connect CM4/5 to the LimePSB RPCM board.





LimePSB RPCM Clock Diagram

The LimePSB-RPCM board clock network comprises onboard voltage-controlled crystal oscillators, phase detectors, clock buffers, a GNSS receiver, reference clock input and output connectors, and clock source selection pin headers. The LimePSB-RPCM board distributes reference clock to and from Raspberry Pi Compute Module 4/5, mini PCIe connector, and external sources.



Launched On

CROWD SUPPLY

LimeNET Micro 2.0 SDR RF Dev Board launched on Crowd Supply in June, 2024

Mouser Part Numbers

View All Parts

To learn more, visit https://www.mouser.com/new/lime-microsystems/limemicro-limesdr-rf-dev-boards/