

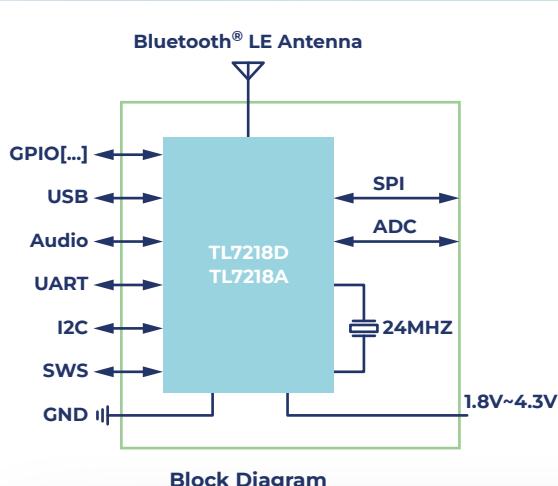
ML7218X Module



ML7218D1-MERCURY-M0-PE11



ML7218A-GAIA-M0-PE11



The **ML7218X module** integrates a high-performance 32-bit RISC-V MCU with multi-standard wireless communication capabilities. It features an adaptive power management technology that enables ultra-low-power design, while providing a rich set of peripheral interfaces. This combination meets the high-efficiency and energy-saving requirements in complex IoT scenarios.

Multi-Protocol



Supports Bluetooth® LE, Zigbee, Thread and 2.4GHz proprietary standards for a wide range of wireless communication needs.

Bluetooth® LE: LE 2M, LE Coded

Thread: Supports IPv6 and 6LoWPAN protocols

Zigbee: Compatible with Zigbee Pro R23, R22, and R21 versions

2.4GHz Proprietary: Flexible 2.4GHz wireless communication

Efficient Processing



32-bit RISC-V MCU: Up to 240MHz with DSP extensions

Memory: 512KB SRAM (including 256KB retention SRAM) and 2MB embedded flash

Security Mechanisms



Secure Boot and OTA Updates: Supports secure boot, secure OTA updates, and firmware encryption

Encryption and Verification: RSA2048/ECC256 signature verification, hardware-accelerated AES, ECC, and hash functions

Secure Debugging: Secure debug port control to protect data during development

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ML7218A-GAIA

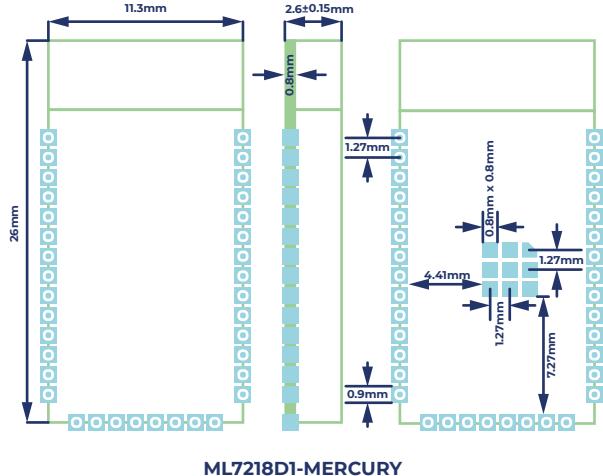
Wireless Performance	Receive Sensitivity		-96dBm @LE 1 Mbp
	Transmit Power	Up to 8.5dBm	Up to 9dBm
	Stable Connection		
Power Features	Working Current	2.4 mA @ Bluetooth® LE Rx 3.3 V DCDC mode 3.5 mA @ Bluetooth® LE Tx 3.3 V DCDC mode	2.6 mA @ Bluetooth® LE Rx 3.3 V DCDC mode 2.8 mA @ Bluetooth® LE Tx 3.3 V DCDC mode
	Sleep Current	No SRAM retention: power consumption as low as 1µA	
Rich Interfaces	GPIO	Up to 20	
	Communication	3 SPI, 2 I2C, 3 UART and 1 FS USB	3 SPI, 2 I2C, 2 UART, 1 FS USB and Debug port
	Audio	7 PWM, 3 I2S, 5 ADC, 1 AMIC, 2 DMIC	7 PWM, 3 I2S, 10 ADC, 1 AMIC, 2 DMIC

Module Support

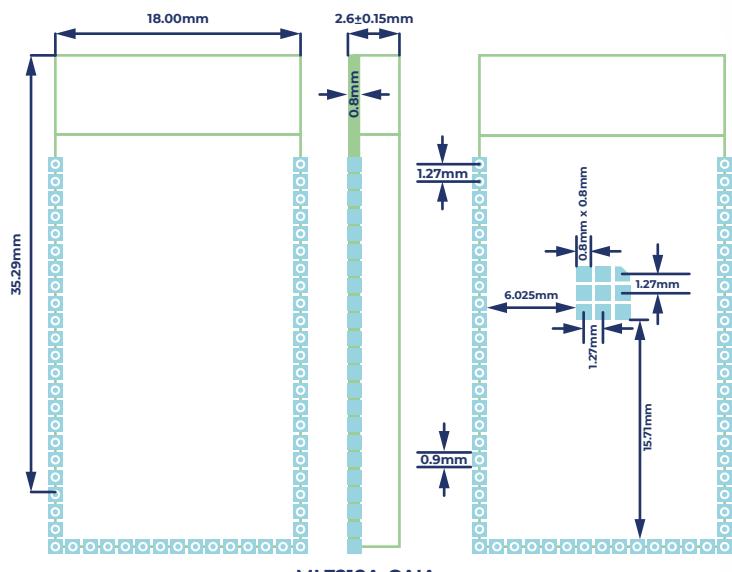
Chip Specifications

Protocol	Bluetooth® Core 6.0, Channel Sounding, Mesh Networking, 802.15.4, Matter, Thread, Zigbee, Apple HomeKit, Apple Find My, 2.4GHz Proprietary
Bluetooth® LE PHY	LE 2M, LE Coded, PAwR
Bluetooth LE Multiple Connections	Central x 4, Peripheral x 4
Location Services	Channel Sounding
MCU	RISC-V 32-bit, 240MHz, DSP Extension, FPU
SRAM	512KB
Flash	2MB
Rich Interface	GPIO(54), SPI(3), USB 2.0(1), I2C(2), UART(3), I2S(3), PWM (7), AMIC(1), DMIC(2), 2-channel SDM, IR(1)
Supply Voltage	1.8V~4.3V, 4.5V~5.5V
Working Current	1.6 mA @ Bluetooth® LE Rx 4.2 V DCDC mode; 2.5 mA @ Bluetooth® LE Tx 4.2 V DCDC mode
Sleep Current (without SRAM retention)	0.8 uA
Tx Maximum Power	10dBm @ GFSK modulation
Rx Receive Sensitivity	-96dBm @ Bluetooth® LE 1Mbps, -103dBm @ 802.15.4 250 kbps
Security Mechanism	Root of Trust and Secure Boot, AES-128/AES-256, ECC, TRNG, Hash, PKE, SKE

Module Dimensions



ML7218D1-MERCURY



ML7218A-GAIA

Development Tool



Software Support

Support for Universal SDK

Platform | Bluetooth® LE | Bluetooth® LE Audio
Matter+Zigbee Dual Mode | Mesh Audio
Low latency Gamepad | Low latency Microphone

Telink has also developed specific applications to showcase better the functionality of the modules

E.g., the Platform SDK has added Camera/Codec/Sensor routines, while the Matter/Bluetooth® LE SDK has added EdgeAI routines

Applications



Smart Home



Remote Control



Wireless HID



Wearable



Asset Tracking

Certification

FCC | IC | CE | TELEC | NCC | SRRC
ROHS | REACH | ESD(+2kV) | PSA1