Product summary
IRIS-W10 series

Stand-alone Wi-Fi 6 multiradio modules

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Tri-radio wireless MCU module

- Dual-band Wi-Fi 6, Bluetooth Low Energy 5.4 and Thread
- Powerful MCU for advanced customer applications
- Full set of enhanced security features
- Matter over Wi-Fi or Thread
- PCB antenna or external antenna options
- Global certification

Standard

Professional

Automotive

14.6 × 16.8 × 2.1 mm   IRIS-W101

14.6 × 20.9 × 2.1 mm   IRIS-W106

Product description

IRIS-W10 series are small, stand-alone, dual-band Wi-Fi and Bluetooth Low Energy wireless microcontroller unit (MCU) modules. The modules are ideal for users looking to add advanced wireless connectivity to their end products.

Several Wi-Fi 6 features improve network efficiency, latency, range, and power consumption compared to earlier Wi-Fi generations. In addition, Bluetooth Low Energy 5.4 and Thread mesh networking protocol make IRIS-W10 suited to many different use cases. The Matter application protocol is supported over Thread, Wi-Fi, and Ethernet, allowing interoperability with various products in a growing ecosystem.

The powerful open CPU configuration embeds an Arm® Cortex®-M33 MCU, clocked up to 260 MHz, with 1.2 MB SRAM and 8 MB or 16 MB flash. With several peripheral interfaces (UART, USB, SPI, SDIO, RMII, QVGA, I2S, I2C, and GPIOs), IRIS-W10 modules can operate completely stand-alone, hosting advanced software applications for many different use cases.

The IRIS-W10 series includes hardware security features like secure boot with a hardware root of trust, Arm® TrustZone® processor security technology, Edgelock hardware crypto engine, encrypted flash, and protection of the debug port. The wireless communication can be secured with WPA2/WPA3 authentication, Wi-Fi enterprise security, TLS encryption, HTTPS, and Bluetooth LE secure connection pairing.

IRIS-W106 comes with an internal PCB antenna to provide a robust low-profile solution with high performance and an extensive range, while IRIS-W101 has a module pin to connect to an external antenna of choice. The modules are globally certified for use with the internal antenna or a range of external antennas. This reduces time, cost and effort for customers integrating Wi-Fi, Bluetooth Low Energy, and Thread in their products.

The modules suit a wide range of applications, including industrial automation, smart buildings and homes, smart city, medical and healthcare devices, telematics, and point-of-sales.

	IRIS-W101-00B	IRIS-W101-10B	IRIS-W101-30B	IRIS-W106-00B	IRIS-W106-10B	IRIS-W106-30B
Grade						
Automotive						
Professional	•	•	•	•	•	•
Standard						
Radio						
Chip inside	RW612	RW610		RW612	RW610	
Bluetooth qualification	v5.4			v5.4		
Bluetooth Low Energy	•			•		
Bluetooth output power [dBm]	10			10		
Wi-Fi 2.4 / 5 [GHz]	2.4 and 5			2.4 and 5		
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac/ax			a/b/g/n/ac/ax		
Wi-Fi output power [dBm]	20			20		
Thread	•	•		•	•	
Antenna type (see footnotes)	pin	pin	pin	pcb	pcb	pcb
Application software						
Open CPU for embedded apps	•			•		
Interfaces						
HS USB 2.0 OTG	♦			♦		
UART	♦			♦		
SPI	♦			♦		
SDIO 3.0	♦			♦		
Ethernet RMII	♦			♦		
I2C	♦			♦		
I2S	♦			♦		
GPIO pins (user available)	64			64		
AD converters [num. of bits]	16			16		
DA converters [num. of bits]	10			10		
Features						
MCU (see footnotes)	Arm Cortex-M33, 260 MHz					
RAM [MB]	1.2			1.2		
Flash [MB]	8	16	8	8	16	8
FOTA	♦			♦		
Arm TrustZone-M	♦			♦		
Secure boot	♦			♦		
WPA2/WPA3	♦			♦		

pin = Antenna pin
pcb = Internal PCB antenna

♦ = Feature enabled by HW. Support depends on the open CPU app SW.

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IRIS-W10 series

Features

Wi-Fi standards	IEEE 802.11a/b/g/n/ac/ax
Wi-Fi channels	2.4 GHz channels 1-14 (depending on region) 5 GHz: 36-165, U-NII Band 1, 2, 2e, 3 (depending on region)
Wi-Fi maximum transfer rates	IEEE 802.11a/g: 54 Mbit/s IEEE 802.11b: 11 Mbit/s IEEE 802.11n: 72 Mbit/s IEEE 802.11ax: 115 Mbit/s
Bluetooth	v5.4 Bluetooth Low Energy
Bluetooth PHY rate	125 kbps, 500 kbps, 1 Mbps, 2 Mbps
Output power	Wi-Fi 2.4 GHz: 20 dBm Wi-Fi 5 GHz: 20 dBm Bluetooth: 10 dBm
Sensitivity	Wi-Fi 2.4 GHz: −99 dBm Wi-Fi 5 GHz: −93 dBm Bluetooth: −100 dBm
Antenna	Internal PCB antenna or antenna pin for connecting to an external antenna

Electrical data

Power supply	3.3 V (+/-10%)
Power consumption	Wi-Fi 2.4 GHz RX: 85 mA Wi-Fi 2.4 GHz TX, 17 dBm: 350 mA Wi-Fi 5 GHz RX: 95 mA Wi-Fi 2.4 GHz TX, 17 dBm: 375 mA Bluetooth LE RX: 58 mA Bluetooth LE TX, 0 dBm: 62 mA

Open CPU for customer applications

Customers develop and embed their own applications on the IRIS-W10 modules using the NXP SDK (open CPU concept). This section describes the hardware features that can be enabled by the IRIS-W10 modules.

MCU system	Arm Cortex-M33, 260 MHz, 1.2 MB SRAM, 8/16 MB flash
Hardware interfaces	HS USB 2.0 OTG UART SPI SDIO 3.0 Ethernet RMII I2C I2S PWM GPIO ADC / DAC
Security	Arm TrustZone-M Hardware cryptographic accelerator Secure bootloader Physical Unclonable Function (PUF) Code watchdog Flash encryption ROM, 256 kB OTP, 2 kB Secure debug interface
Development environment	NXP MCUXpresso SDK

Package

Dimensions	IRIS-W101: 14.6 x 16.8 x 2.1 mm IRIS-W106: 14.6 x 20.9 x 2.1 mm
Mounting	Machine mountable solder pins

Environmental data, quality & reliability

Operating temperature	−40 °C to +85 °C
Storage temperature	−40 °C to +85 °C
Humidity	RH 5-90% non-condensing
RoHS directive	RoHS 2 and RoHS 3

Certifications and approvals

Type approvals	Europe (RED), Great Britain (UKCA), US (FCC), Canada (ISED), Japan (MIC)[1], Taiwan (NCC)[1], South Korea (KCC)[1], Australia (ACMA)[1], New Zealand[1], Brazil (Anatel)[1], South Africa (ICASA)[1]
Health and safety	EN 62479, EN 62368-1, IEC 62311
Medical Electrical Equipment	IEC 60601-1-2
Bluetooth qualification	Bluetooth Low Energy 5.4

1 = Certifications are pending

Support products

EVK-IRIS-W101	Evaluation kit for IRIS-W101-00B module with antenna pin
EVK-IRIS-W106	Evaluation kit for IRIS-W106-00B module with internal PCB antenna
USB-IRIS-W106	Evaluation kit for IRIS-W106-00B module with internal PCB antenna; USB-stick format

Product variants

IRIS-W101-00B	Wi-Fi, Bluetooth LE, and Thread module. Wireless MCU with 8 MB flash. Antenna pin.
IRIS-W101-10B	Wi-Fi, Bluetooth LE, and Thread module. Wireless MCU with 16 MB flash. Antenna pin.
IRIS-W101-30B	Wi-Fi and Bluetooth LE module. Wireless MCU with 8 MB flash. Antenna pin.
IRIS-W106-00B	Wi-Fi, Bluetooth LE, and Thread module. Wireless MCU with 8 MB flash. Internal PCB antenna.
IRIS-W106-10B	Wi-Fi, Bluetooth LE, and Thread module. Wireless MCU with 16 MB flash. Internal PCB antenna.
IRIS-W106-30B	Wi-Fi and Bluetooth LE module. Wireless MCU with 8 MB flash. Internal PCB antenna.

Further information

For contact information, see **www.u-blox.com/contact-u-blox**.

For more product details and ordering information, see the product data sheet.