Product summary

IRIS-W10 series

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Stand-alone Wi-Fi™ 6 multiradio modules

Standard

Professional

Automotive

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

14.6 × 16.8 × 2.1 mm

14.6 × 20.9 × 2.1 mm

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 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	5.4			5.4		
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.

IRIS-W10 series

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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	Bluetooth LE
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), Taiwan (NCC), South Korea (KCC), Australia (ACMA), New Zealand, Brazil (Anatel), South Africa (ICASA)
Health and safety	EN 62479, EN 62368-1, IEC 62311
Medical Electrical Equipment	IEC 60601-1-2
Bluetooth	Qualified against Bluetooth Core 5.4

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.