

SX-SDMAX6E-DW

Tri-Band Connectivity and Concurrent Dual Wi-Fi 6/6E

Bluetooth Combo Module

2.4/5/6 GHz | SDIO Interface

Fast and reliable wireless connectivity



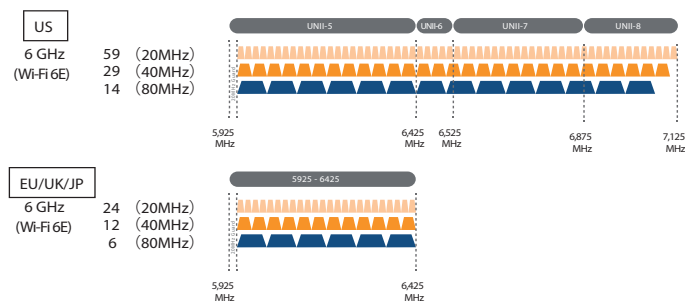
Overview

The SX-SDMAX6E-DW is a tri-band Wi-Fi 6E + Bluetooth v6.1 combo module engineered for medical and industrial embedded applications where quick, reliable, and low-latency wireless connectivity is required. It features NXP's IW693, a 2x2 Dual-Band (5-7 GHz), 1x1 (2.4 GHz) concurrent dual wireless 6/6E and Bluetooth SoC (system-on-chip). The SDIO interface is perfect for low-power embedded device enabled by a power efficient processor without PCI Express interface while it is able to deliver stable, high-performance connectivity in congested Wi-Fi conditions and support smooth roaming for mobile devices.

Features

Wi-Fi 6E 6 GHz band support

The SX-SDMAX6E-DW supports tri-band operation covering the 2.4/5/6 GHz bands. Networks utilizing the 6 GHz band will have reduced congestion and will be able to operate in an overall cleaner wireless environment.



Concurrent Dual Wireless (CDW)

The SX-SDMAX6E-DW supports CDW enabling a 2x2 Wi-Fi connection in the 5-7 GHz band concurrently with a 1x1 Wi-Fi connection in the 2.4 GHz band. NXP has enabled four operating modes, with Silex adding two additional modes to further optimize power consumption.

- Mode 1: CDW 2x2 Wi-Fi 6/6E 5-7 GHz (802.11ax) and 1x1 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 2: CDW 1x1 Wi-Fi 6/6E 5-7 GHz (802.11ax) and 1x1 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 3: 2x2 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 4: 2x2 Wi-Fi 6/6E 5-7 GHz (802.11ax)
- Mode 5: 1x1 Wi-Fi 6 2.4 GHz (802.11ax)
- Mode 6: 1x1 Wi-Fi 6/6E 5-7 GHz (802.11ax)

The CDW enables embedded devices to operate Wi-Fi interfaces in either station mode or access point mode simultaneously and independently. Some legacy Wi-Fi solutions support station mode and access point mode through a time-division multiplexing approach on the same channel. In contrast, CDW provides more versatile and reliable Wi-Fi connectivity by enabling concurrent operation across separate interfaces.

Industrial operating temperature support

The SX-SDMAX6E-DW is designed to operate within an industrial-grade temperature range of -40°C to 85°C, enabling reliable Wi-Fi connectivity for industrial embedded devices. Achieving this level of performance requires more than selecting industrial-grade components; it also requires rigorous testing across the full temperature range to ensure the module performs as specified while meeting regulatory requirements.

Common architecture with PCIe modules

The SX-SDMAX6E-DW is based on a common architecture shared with the SX-PCEAX-LP and SX-SDMAX6E. When a BSP is maintained across multiple products that require different Wi-Fi connectivity capabilities to meet performance or power consumption requirements, Wi-Fi driver source code maintenance is simplified. The SX-SDMAX6E-DW also shares the same certification IDs (FCC: N6C-SDMAX6E,ISED: 4908A-SDMAX6E), simplifying regulatory compliance for products utilizing this common platform.

TAA (Trade Agreement Act) Compliant

The SX-SDMAX6E-DW is a TAA-compliant Wi-Fi 6E SDIO host interface module manufactured at Silex's factory in Kyoto, Japan. It is a high-performance Wi-Fi 6E solution for manufacturers that require components compliant with TAA requirements.



Specifications

Model Name	SX-SDMAX6E-DW-2530S(LGA Surface Mount Module) SX-SDMAX6E-DW-M2 (22mm x 30mm M.2 module)
Chipset	IW693S
Wireless LAN Interface	WLAN: SDIO 3.0 Bluetooth: UART
WLAN Standard	802.11a/b/g/n/ac/ax (2x2, 2x2+1x1, 1x1+1x1, 1x1)
Frequency	2.4 GHz, 5 GHz and 6 GHz
Bandwidth	2.4 GHz: 20MHz/40MHz 5 GHz: 20MHz/40MHz/80MHz 6 GHz: 20MHz/40MHz/80MHz
BT Standard	Bluetooth v6.1 (BR/EDR/LE Compliant)
Antenna Connections	SX-SDMAX6E-DW-2530S: RF pads (2 for Wi-Fi, 1 for BT) SX-SDMAX6E-DW-M2: u.FL (MHF-1) x 3
Power Supply	SX-SDMAX6E-DW-2530S: Main Power Supply: 3.3V and 1.8V IO Power Supply: 3.3V or 1.8V SX-SDMAX6E-DW-M2: Main Power Supply: 3.3V
Operating Conditions	Temperature : -40 ~+85°C Humidity : 15 ~95%RH (No condensation)
Storage Conditions	Temperature : -40 ~+90°C Humidity : 10 ~95%RH (No condensation)
Dimensions	SX-SDMAX6E-DW-2530S: 17mm x 18mm x 2.65mm SX-SDMAX6E-DW-M2: 22mm x 30mm x 4.45mm
Form Factor	SX-SDMAX6E-DW-2530S: 49-pin LGA (Direct Solder) SX-SDMAX6E-DW-M2: M.2 Card Type 2230-S3-E
Driver Support	Linux
Regions	FCC/ISED/ETSI/Ofcom/MIC
Evaluation Platform	FRDM-IMX93

Product Lineup



SX-SDMAX6E-DW-2530S
(Surface Mount)



SX-SDMAX6E-DW-M2
(M.2 Key-E Connector Type)

Ordering Information

Product Name	Form-factor	MoQ / Lot	Packaging
SX-SDMAX6E-DW-2530S	LGA surface mount	1000 pcs	Reel
SX-SDMAX6E-DW-M2	M.2 2230-S3-E	100 pcs	Tray
SX-SDMAX6E-DW-2530S-SP	LGA surface mount	1 pcs	Cut-tape
SX-SDMAX6E-DW-M2-SP	M.2 2230-S3-E	1 pcs	Box incl. 2 antennas

Quality & Longevity

Designed, developed, and manufactured in Japan at Silex's Keihanna headquarters, the SX-SDMAX6E-DW reflects our commitment to exceptional quality and reliability. Backed by more than 20 years of industrial wireless expertise, Silex delivers products built to perform in demanding environments. We also ensure long-term supply continuity through careful component lifecycle management, supporting our customers' needs throughout their product lifecycles.

Driver & Development Support



As an NXP Semiconductors' Gold Partner, Silex has collaborated closely with NXP since the early development stages of the IW693 chipset. This partnership enables Silex to deliver optimized driver software that enhances performance, stability, and ease of integration.

To accelerate your evaluation process, Silex offers:

- Free drivers for the reference program platform
- Comprehensive support for software, hardware, wireless certification, and production

Related Products



IW693 Wi-Fi 6E PCIe Module
SX-PCEAX-LP
SX-PCEAX-LP-M2

Wi-Fi 6E tri-band PCIe module featuring CDW



i.MX95 System-on-Module
EP-200N

Industrial-grade i.MX95 SoM with PCIe/SDIO Wi-Fi host interface.

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silex global sales & support locations



US Office
silex technology america, Inc.
+1-657-218-5199
www.silextechnology.com
sales@silexamerica.com

Europe Office
silex technology europe, GmbH
+49-2154-88967-0
Germany toll free 0800-7453938
www.silextechnology.com
sales@silexeurope.com

China
silex technology China, Inc.
+86-10-64403958/57
support@silex.com.cn

Corporate Headquarters
silex technology, Inc.
+81-774-98-3781
www.silex.jp
support@silex.jp

