When it **Absolutely Must** Connect

SX-PCEAX-LP

High-Performance and Power-Efficient

Tri-Band Wi-Fi 6/6E & Bluetooth® Combo Module

Reliable and versatile wireless connectivity for industrial applications

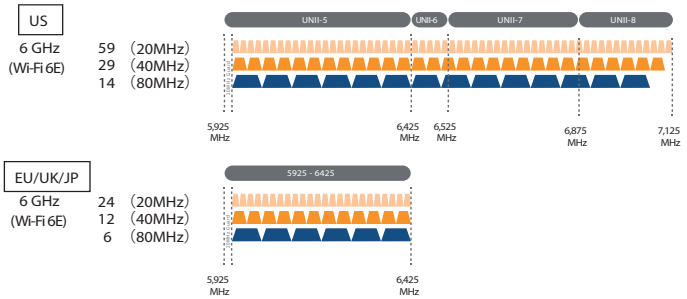
Overview

The Silex's SX-PCEAX-LP features NXP's IW693 SoC, delivering a 2x2 dual-band (5-7 GHz), 1x1 (2.4 GHz) concurrent Wi-Fi 6/6E and Bluetooth Combo Solution. Its three antenna configuration enables the full capabilities of the IW693 including 2x2 2.4 GHz + Bluetooth operation, as well as 2x2 (5-7 GHz) and 1x1 (2.4 GHz) with Bluetooth. The PCI express host interface is ideal for Wi-Fi applications requiring high-data throughput and/or low-latency data exchange through its full-duplex communication capability. The SX-PCEAX-LP is an ideal wireless connectivity solution for NXP's i.MX platforms with PCI express interfaces, as well as Layerscape platforms requiring long-product lifecycle management.

Features

Wi-Fi 6E 6 GHz band support

The SX-PCEAX-LP supports tri-band operation, including 6 GHz band in both LPI (Low Power Indoor) and VLP (Very Low Power) categories. It enables embedded devices equipped with the SX-PCEAX-LP to operate in cleaner, less congested frequency band compared to the 2.4 GHz and 5 GHz bands.



Concurrent Dual Wireless (CDW)

The SX-PCEAX-LP 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 while maintaining lower latency through the PCI Express host interface compared to an SDIO host interface.

- 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-PCEAX-LP 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 SDIO modules

The SX-PCEAX-LP is based on a common architecture shared with the SX-SDMAX6E-DW 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-PCEAX-LP 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-PCEAX-LP is a TAA-compliant Wi-Fi 6E PCI Express 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.

High-Performance and Power-Efficient Tri-Band Wi-Fi 6/6E & Bluetooth® Combo Module SX-PCEAX-LP

Specifications

Model Name	SX-PCEAX-LP (LGA Surface Mount Module) SX-PCEAX-LP-M2 (22mm x 30mm M.2 module)
Chipset	IW693P
Wireless LAN Interface	WLAN: PCI Express Gen1 1-lane 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-PCEAX-LP: RF pads (2 for Wi-Fi, 1 for BT) SX-PCEAX-LP-M2: u.FL (MHF-1) x 3
Power Supply	SX-PCEAX-LP: Main Power Supply: 3.3V and 1.8V IO Power Supply: 3.3V or 1.8V SX-PCEAX-LP-M2: Main Power Supply: 3.3V
Operating Conditions	Temperature：-40 ～+85℃ Humidity：15 ～95%RH (No condensation)
Storage Conditions	Temperature：-40 ～+90℃ Humidity：10 ～95%RH (No condensation)
Dimensions	SX-PCEAX-LP: 17mm x 18mm x 2.65mm SX-PCEAX-LP-M2: 22mm x 30mm x 4.45mm
Form Factor	SX-PCEAX-LP: 49-pin LGA (Direct Solder) SX-PCEAX-LP-M2: M.2 Card Type 2230-S3-E
Driver Support	Linux
Regions	FCC/ISED/ETSI/Ofcom/MIC
Evaluation Platform	FRDM-IMX95

Product Lineup

SX-PCEAX-LP
(Surface Mount)

SX-PCEAX-LP-M2
(M.2 Key-E Connector Type)

Ordering Information

Product Name	Form-factor	MoQ / Lot	Packaging
SX-PCEAX-LP	LGA surface mount	500 pcs	Reel
SX-PCEAX-LP-M2	M.2 2230-S3-E	100 pcs	Tray
SX-PCEAX-LP-SP	LGA surface mount	1 pcs	Cut-tape
SX-PCEAX-LP-M2-SP	M.2 2230-S3-E	1 pcs	Box including 2 antennas

Quality & Longevity

Designed, developed, and manufactured in Japan at Silex's Keihanna headquarters, the SX-PCEAX-LP 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

NXP Gold Partner

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.

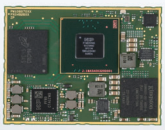
To accelerate your evaluation process, Silex offers:

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

Related Products

IW693 Wi-Fi 6E SDIO Module
SX-SDMAX6E-DW-2530S
SX-SDMAX6E-DW-M2

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



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

Industrial-grade i.MX95 SoM with PCI Express Wi-Fi host interface.

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