V. 09/21

Digi ConnectCore 8 Family

Module Choices, Compatibility and Easy Scalability

Embedded developers today have a range of choices for developing secure, connected IoT and M2M applications. The Digi ConnectCore® family of system-on-modules (SOMs) is an excellent choice for developers building advanced applications across a range of industries, including medical, industrial, transportation and agriculture. These highly integrated modules enable sophisticated, next-generation capabilities in Human Machine Interface (HMI), equipment monitoring, audio/voice, edge compute, machine learning, artificial intelligence and cybersecurity.

This guide describes key features of the Digi ConnectCore 8 family, as well as compatibility between the modules, to help you choose the right solution for your needs.

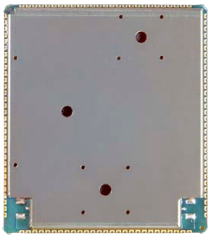
You can start prototyping and development with any SOM in the ConnectCore 8 family and migrate to any other module, or integrate another module into your design, without starting over with your design process. Digi provides software tools to support seamless migration and scalability across the product line.

Digi ConnectCore 8X and 8M Family: A Brief Overview

The ConnectCore 8 product family is built on the NXP i.MX8 processor. As an NXP Early Access Partner and NXP Gold Partner, Digi offers a suite of solutions to support the range of developer needs, with development tools and libraries, and integrated security, memory, power management, pre-certified wireless connectivity, and a choice of operating systems — Android or Linux based on the Yocto Project.

Here are some key features of the Digi ConnectCore family that set this development platform apart:

- **Flexible wireless connectivity:** Seamless integration and pre-certified wireless connectivity options including Digi XBee® (LTE-M, NB-IoT, and 2.4 GHz), Bluetooth and Wi-Fi
- **Sophisticated features built on top of the NXP Linux and Android Board Support Packages (BSPs):** Superior BSPs with extensive testing, development tools and hardware interface APIs
- **Better support:** Global product support, best-in-class sales engineering, documentation and development tools
- **Built-in security tools:** Embedded security without having to design features from scratch



Digi ConnectCore 8X

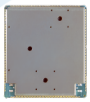
Digi ConnectCore 8M Nano/8M Mini

Digi ConnectCore 8X and 8M Expand the Digi SOM Family

The Digi ConnectCore family includes system-on-modules based on a range of NXP i.MX processors, including the i.MX 8X, i.MX 8M Nano and i.MX 8M Mini. Together this family provides a full suite to meet the range of application requirements.

Digi ConnectCore 8X/8M Comparison at a Glance

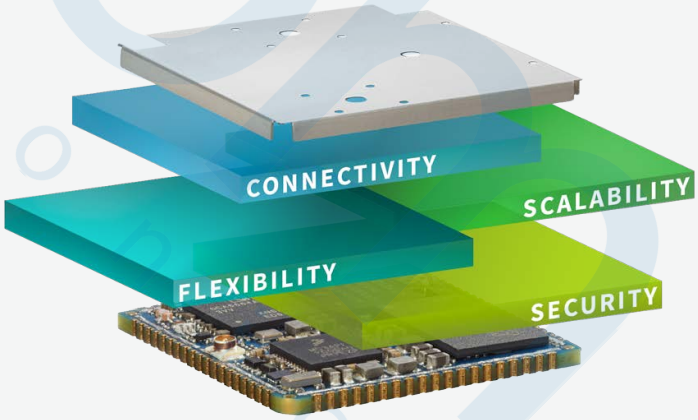
The following graphic provides a brief summary of some of the differentiators between the Digi ConnectCore 8X, Digi ConnectCore 8M Mini and Digi ConnectCore 8M Nano.

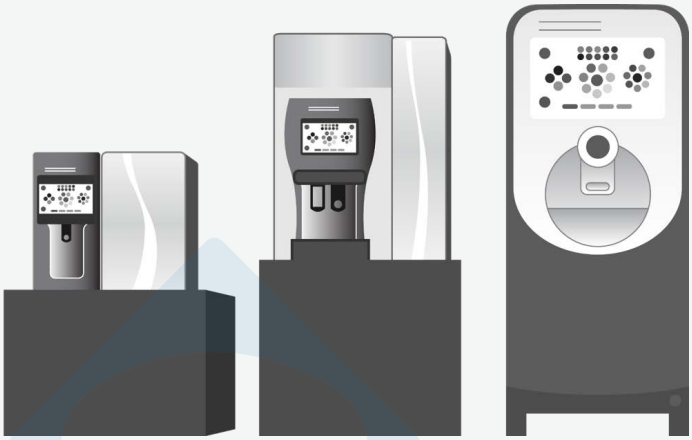
SOM	Processing Core	Memory	Operating System	Wireless Connectivity	Ethernet	Graphics/ Display	Connectivity
 ConnectCore 8X	x4 A35, M4	16GB eMMC, 2GB+ LPDDR4	Linux, Android	Wi-Fi 5, Bluetooth	2x 1000	GPU, VPU, HD x2	PCI Express, USB SuperSpeed+ 10Gbps, CAN FD
 NEW ConnectCore 8M Mini	x4 A53, M4	8GB eMMC, 2GB+ LPDDR4	Linux, Android	Wi-Fi 5, Bluetooth	1000	GPU, VPU, HD	PCI Express, USB SuperSpeed+ 10Gbps
 ConnectCore 8M Nano	x4 A53, M7	8GB eMMC, 1GB+ LPDDR4	Linux	Wi-Fi 5, Bluetooth	1000	GPU, HD	USB SuperSpeed+ 10Gbps

Scalability: Meeting the Range of Application Needs

Developers today are designing for multiple applications or performance tiers. Companies want to launch entire product families at the same time. This is due to a number of different factors — most commonly time-to-market pressures and limited resources. For example, development teams are often shared across multiple development projects, or can only be devoted to a given project for a short time.

Optimizing time by building out a product line all at once is imperative. Development teams need to be able to scale up or down to hit varied price and performance targets.





VALUE

- Basic or no display
- No connectivity
- Simple I/O
- Cost sensitive

MID TIER

- Simple graphics
- Basic connectivity
- Advanced I/O

PREMIUM

- HD video streaming
- Advanced wireless
- Cloud connectivity
- Machine learning

The scalabiliity example shows a beverage dispenser product line in three models, with scaling levels of functionality, to illustrate how one OEM may need multiple embedded modules to support their product lines.

The Digi ConnectCore 8 product line supports this multi-tier development in critical ways:

- ConnectCore 8 family SOMs are pin-to-pin compatible. The Digi SMT Plus form factor supports both edge castellation and LGA mounting options across the product line.
- Digi ConnectCore 8 includes software that is compatible across all SOM variants; this includes BSPs, Digi TrustFence®, and code libraries, as well as Digi Embedded Yocto and Android.
- Digi provides software tools for compatibility to optimize product development. This means your team's development work supports all tiers, without the need to "start from scratch" for subsequent variants.

Software Compatibility Tools for the Digi ConnectCore 8 Family

To support compatibility and scalability across the Digi ConnectCore 8X/8M product line, Digi developed the Digi ConnectCore Smart IOmux tool. The tool supports two objectives:

- The IOmux tool helps expedite development by simplifying the complex task of configuring the pinout of a microprocessor. Developers can use the graphical interface to mock up configuration options, resulting in full pin assignment and device tree snippets that match the desired functionality.
- Additionally, the tool enables developers to build designs for compatibility across hardware platforms. Digi ConnectCore 8 platforms share form factors and pad mapping for most interfaces, allowing common hardware to be compatible with multiple ConnectCore SOMs.

Although the SOMs are not 100% drop-in compatible, a lot of primary functionality is pin-to-pin compatible between platforms. Creating designs with compatible pinouts through the Smart IOmux tool enables developers to create cross-platform designs for multiple ConnectCore platforms, without worrying about the MUX configuration that should be assigned to each pad to keep that compatibility. The developer chooses the interfaces needed for the design, and Digi Smart IOmux automatically chooses the corresponding MUX to keep the designs compatible.

See the Smart IOmux video tutorial and the Create a Cross-Platform Design documentation for more information.

INSTALL SMART IOMUX FOR WINDOWS

Follow the steps below to download and install the application.

1. Visit www.digi.com/cc8X.
2. Click **Product Support.**
3. Under **Software**, click the **Digi ConnectCore Smart IOmux Installer** link.
4. When the download is complete, run the executable file and follow the steps in the **Smart IOmux Setup Wizard.**