

Smarter Connections



The Role of High-Speed Connectors in Smart Device Development
Hirose Electric Americas | **SERIES 1**



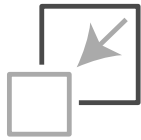
HIROSE ELECTRIC AMERICAS

HRS

Introduction:

Meeting the Demand for Smarter Connectivity

Smart technology is evolving rapidly, pushing industries to create smaller, faster, and smarter devices.



Smaller Devices



Faster Devices



Smarter Devices

Engineers and designers are at the **forefront of this innovation**, transforming challenges into opportunities to meet **ever-evolving performance demands**. With trends like miniaturization, sustainability, and the adoption of advanced protocols such as USB4 and PCIe 5.0, **the demand for connectors capable of managing high-speed data transfer, reliability in confined spaces, and power integration has never been greater.**

In this series, we explore how Hirose Electric's **High-Speed Connectors** address these critical needs, empowering designers and engineers to bring **smarter, faster, and more reliable products to market.**



Understanding the Challenge – Compact, High-Speed, and Reliable

The modern tech landscape demands compact, high-speed, and reliable devices across various industries. As devices become more compact, they must accommodate high-speed **data transfer, power integration, and durability** without compromising performance. From consumer electronics to industrial IoT-enabled systems, advanced connector solutions are key to maintaining **quality and efficiency in high-stakes designs**.

The integration of 5G and IoT technologies is accelerating the need for connectors that can seamlessly **handle complex data streams and power requirements**. As these technologies become universal across industries, the role of **reliable high-speed connectors has never been more critical**.

Case Study: Enhancing Connectivity in a Compact Consumer Router

A LEADING CONSUMER ELECTRONICS COMPANY APPROACHED HIROSE WITH A CHALLENGE: developing a next-generation small office/home office router capable of **high-speed data transmission and power integration** within a compact form. This router had to support **data-intensive IoT environments, ensuring signal integrity, managing heat, and optimizing assembly efficiency**. Collaborating closely with Hirose, the company's design team sought a connector solution that could deliver the high-speed performance, efficiency, and durability required by their unique design constraints.

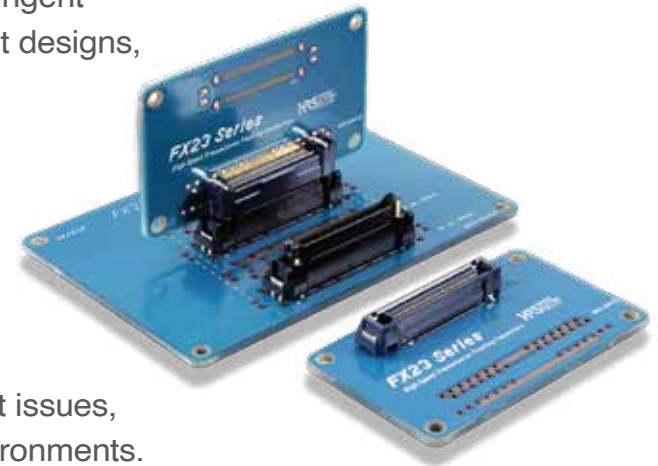


The Hirose Solution – High-Speed Connectors for Complex Demands

Introducing the FX23 Series: A Compact, High-Speed Connector Solution

Hirose proposed the **FX23 Series**, a hybrid connector designed to meet the router's stringent requirements. Engineered to deliver seamless data & power connectivity within compact designs, the **FX23 Series** is an ideal fit for high-performance applications across industries.

- **Speed and Data Integrity:** Supporting PCI 3.0 standards at speeds up to 8 Gbps, the FX23 ensures high-speed data transmission while minimizing signal loss and interference.
- **Compact Design with Power Integration:** The FX23's hybrid design combines data and power contacts into a single connector, enhancing heat management and airflow in tight spaces by reducing the need for multiple connections.
- **Floating Connector Technology:** The FX23's floating mechanism absorbs alignment issues, improving assembly reliability and operational performance even in high-vibration environments.



The Hirose Solution –

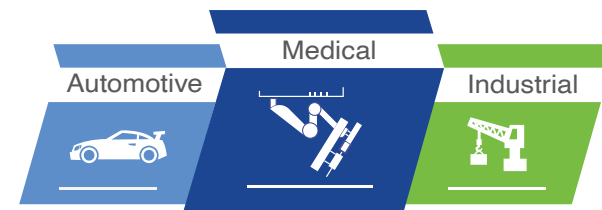
High-Speed Connectors for Complex Demands



Through its adaptable design, the **FX23** enabled the customer to create a more **efficient, high-performance** router capable of meeting the connectivity demands of today's IoT-enabled products.

For Engineers & Designers:

Hirose's innovative approach to high-speed connectivity tackles the diverse needs of modern tech applications. Our design approach **emphasizes versatile solutions** that can be tailored to meet the demands of diverse projects. Whether your design prioritizes speed, power efficiency, or durability, Hirose's high-speed connector solutions provide the flexibility to adapt to evolving requirements. The **FX23 Series** is one example of our versatile designs, with additional solutions across our product range that cater to **varying data, power, and space constraints**.





Expanding Solutions – EMI Shielding in Handheld POS Devices

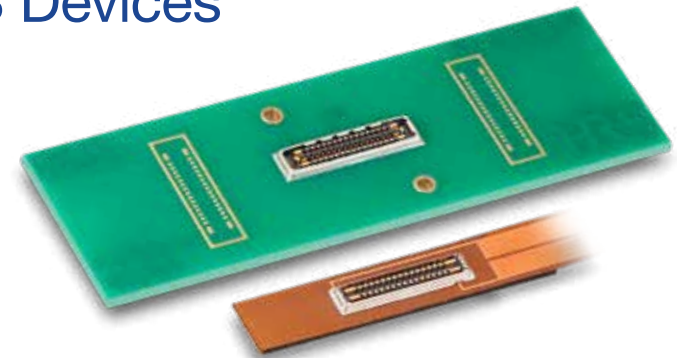


Beyond consumer routers, Hirose's high-speed connectors provide solutions for complex EMI (electromagnetic interference) challenges in handheld devices.

Handheld POS (point-of-sale) devices, for example, require **robust EMI protection** within compact, feature-rich environments. The **BK35 Series**, with integrated EMI shielding, is ideal for applications where **stable, interference-free connections** are essential.

THE BK35 SERIES: ADVANCED EMI SHIELDING IN A MINIATURE FORM FACTOR.

The **BK35** offers 360-degree metal shielding, effectively managing high-frequency noise generated by multiple integrated radios within the POS device. This shielded structure **safeguards data integrity**, while the compact design allows it to handle both **data and power in limited spaces**, critical for POS device performance.



For Engineers & Designers:

Hirose's connector solutions, like the **BK35 Series**, reflect our commitment to addressing specific industry challenges, from EMI shielding to **durability in high-vibration and compact environments**. We design our connectors with flexibility in mind, knowing that each application has unique requirements. Our product range includes connectors with features like **specialized shielding, floating contact technology, and integrated locking mechanisms** tailored to automotive, medical, & industrial applications.



Proven Results & the Future of High-Speed Connectivity

High-speed connectivity is reshaping industries such as automotive, medical, and industrial applications.

Engineers must tackle challenges including maintaining **signal integrity** at increasing data rates, ensuring **reliability** in demanding environments, and integrating compact designs within constrained spaces.

To address these evolving demands, Hirose develops connectors designed with high data transmission capabilities, robust EMI protection, and long-term reliability at their core. In a consumer router project, for example, the **FX23 connector** enabled seamless data transfer and streamlined the assembly process, overcoming constraints in size and performance. Similarly, the **BK35 connector's** integrated EMI shielding and compact form factor ensured stable operation in a high-frequency handheld POS device.

EMI Protection

Seamless Data Transfer

Connectivity Innovation

Next Wave of Advancements



High Data Transmission Capabilities

Robust EMI Protection

By addressing practical design challenges, **Hirose's solutions** are tailored to meet the needs of **modern technology**. Designed with flexibility and compatibility in mind, Hirose connectors **empower engineers to create future-proof designs** that adapt to evolving standards. Whether adapting to next-generation protocols or ensuring performance in extreme conditions, these **connectors exemplify the critical role of connectivity innovation** in driving the **next wave of advancements** in product development.



Conclusion:

Design Smarter with Hirose's High-Speed Connectors



Smarter



Faster



Reliable

Engineering the future demands **smarter, faster, and more reliable connectivity** solutions. Hirose's high-speed connectors are designed not only to meet **today's challenges** but also to **anticipate tomorrow's needs**. From managing the complexities of miniaturization to supporting emerging protocols and harsh environments, Hirose collaborates with engineers & designers to create custom **solutions that empower the next wave of innovation**.

Take the next step in your design journey with Hirose's proven solutions. From high-speed connectivity to EMI protection, our connectors are engineered to **drive your designs forward and unlock new possibilities**. Explore our portfolio and bring your ideas to life with Hirose—**Connecting the Future**.

“ **Hirose is committed to evolving its *High-Speed Connectors*, anticipating customer needs, and empowering product designers worldwide to create the next generation of smart products.** ”

HIROSE ELECTRIC AMERICAS

■■■■■ CONNECTING THE FUTURE