HIROSE ELECTRIC CO., LTD.

New Technologies

[To the press] [July 30, 2025]

[World's First] Hirose Launches "FX31" Series Connectors Combining High Current Capacity with Vibration-Resistant Design

— Supporting Miniaturization, Weight Reduction, and Assembly Efficiency in Automotive Equipment —

As the EV and HEV markets continue to grow rapidly, automotive equipment is under increasing pressure to support high currents—often tens of amperes—while withstanding harsh vibration environments. In response, Hirose Electric has introduced the world's first board-to-board connector series, the FX31, which combines high current capability with a rugged, vibration-resistant design. In addition to passing rigorous vibration tests, the FX31 helps enable the miniaturization, weight reduction, and streamlined assembly of next-generation automotive devices.

● Powertrain Innovation: Unlocking New Possibilities with High-Current Connectors

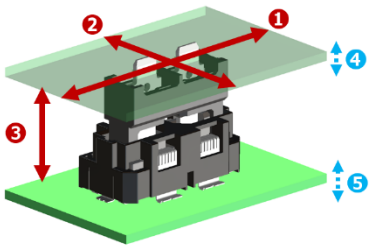
In EVs and HEVs, powertrain systems require high current. Traditionally, busbars with screw-fastening methods have been used to ensure vibration resistance. However, this approach introduces challenges such as large component size, limited design flexibility, and complex assembly.

Hirose Electric applied its proven expertise in vibration-resistant signal connectors to power connectors, leading to the development of the FX31—the world's first board-to-board connector to support both high current and vibration resistance. By replacing conventional busbars with a connector-based solution, the FX31 enables miniaturization, reduces weight, and supports assembly automation. It also helps simplify processes and reduce labor, contributing to greater manufacturing efficiency.

When combined with the FX26 Series for signal transmission, the FX31 supports hybrid power and signal connections in a compact form factor. This contributes to high-density mounting, reduced overall size, and significant cost savings.

▼Vibration-Resistant Structure

Vibration Resistance
Designed to absorb board movement in the Z direction (connector mating direction) under vibration conditions.



Board Misalignment Absorption
·X and Y Directions: ±0.5mm Floating Range
·Z Direction: ±1.5mm Effective Mating Length

Board Misalignment Absorption
❶X Direction: ±0.5mm
❷Y Direction: ±0.5mm
❸Z Direction: ±1.5mm

Board Amplitude Absorption
❹❺Vibration Absorption ⊿Z: 0.05mm

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● Unique Features of the FX31 Series

World's First: High Current + Vibration-Resistant Structure

・Proprietary floating design absorbs vibration and shock while safely delivering high current: 25A per contact

*Depending on ambient temperature and PCB trace width, the connector can support up to approximately 40A per contact (2 pos. configuration).

Floating Design for Greater Assembly Flexibility and Labor Savings

・Eliminates the need for screw fastening, enabling seamless integration into automated assembly lines, including robotic systems.

Compact and Lightweight

・Smaller and lighter than traditional busbars, offering greater design flexibility for PCB layouts.

Hybrid Connection with FX26 Series

・When combined with the FX26 Series for signal lines, it supports high-density mounting and contributes to total cost reduction.

The FX31 Series is designed to support powertrain system integration and meet the high-current demands of next-generation high-end IVI (In-Vehicle Infotainment) automotive computers, contributing to continued market expansion.

● Under Development

Plans are in place to expand the FX31 Series lineup with the following variations:

・Currently in Mass Production
  Positions: 2pos.
  Height: 20mm

・Planned for Development (based on customer demand)
  Positions: 3 and 4pos.
  Heights: 25mm, 30mm

● Company Overview, Related Information

■Company Overview
https://www.hirose.com/corporate/en/about/corporate_data/

■Product Series Page
https://www.hirose.com/en/product/series/FX31/

■Product Image
https://prd-4s-public.s3.ap-northeast-1.amazonaws.com/sys-master/public/h6f/hb9/9652486668318/FX31_2525_rgb.png

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