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Mobility Infrastructure Systems Marketing Division
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Mitsubishi Electric Corporation

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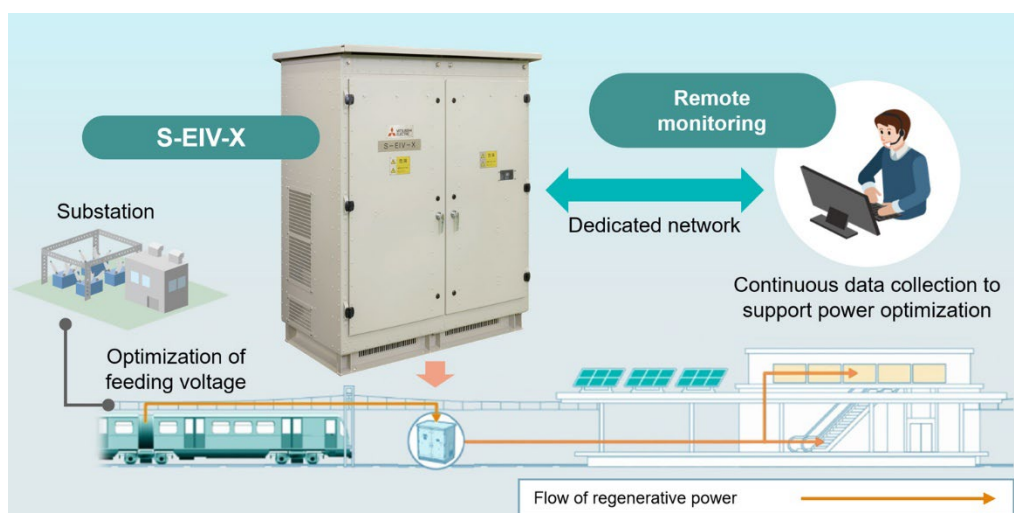
Mitsubishi Electric Corporation

rail.webmaster@nb.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/bu/transportation/

prd.gnews@nk.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/en/pr/

Mitsubishi Electric's New S-EIV-X Uses Remote Data to Optimize Energy Saving for Railway Operators

Analyzes operational data to maximize the use of surplus regenerative power



S-EIV-X and its functions

TOKYO, August 5, 2026 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today the launch of the S-EIV-X, a new model in its station energy saving inverter (S-EIV¹) series. The system supplies train station facilities with surplus regenerative power realized when railway cars apply their brakes. Offered as a subscription service to help minimize upfront installation costs, the S-EIV-X features remote data acquisition capabilities that continuously collect feeder voltage² and operating data of S-EIV-X.

As railway operators accelerate decarbonization initiatives, they are increasingly adopting technologies that make use of surplus regenerative power, including station energy saving inverters that supply electricity for station lighting, air conditioning, elevators and other equipment. The amount of surplus regenerative power available, however, varies according to fluctuations in feeder voltage caused by train operating conditions and changes in air-conditioning loads resulting from temperature differences between the inside and outside of the train. Maximizing the use of this energy therefore requires continuous monitoring of absorbed surplus

¹ A device that directly supplies station electrical equipment with surplus regenerative power that is generated when railway vehicles brake and which cannot be consumed by nearby running trains alone.

² Voltage supplied to trains.

regenerative power and feeder voltage fluctuations, and also maintaining optimal feeder voltage. Until now, collecting this data has required personnel to visit substations or station electrical rooms to manually operate the S-EIV monitoring panel, making continuous, timely monitoring difficult.

The new S-EIV-X overcomes these limitations by using a dedicated network to continuously and remotely collect feeder voltage values and operating data that enable the optimization of power utilization. In addition, if an abnormality occurs in the S-EIV-X unit itself, operational logs can be checked remotely, enabling faster initial diagnosis and response. Furthermore, the S-EIV-X incorporates high-voltage full-silicon carbide (SiC) power devices to realize a simplified power unit with fewer components, resulting in a more compact, lightweight design that improves both reliability and maintainability. In addition, by combining data collected by the S-EIV-X with simulation data for trains and substations on Mitsubishi Electric's Serendie™ digital platform and analyzing the data with the company's [railway energy management solution](#) (railway EMS³), Mitsubishi Electric will support railway operators in adopting more advanced energy-saving measures, including analysis of feeder voltage trends and optimization of substation output voltage.

Mitsubishi Electric expects the S-EIV-X to help railway operators strengthen their decarbonization efforts by enabling more advanced energy management and improving the effective use of surplus regenerative power.

Product Features

- 1) *Remote data acquisition improves data collection efficiency and accelerates initial response to abnormalities***
 - The data—including feeder voltage and operating data of S-EIV-X, such as the amount of surplus regenerative power absorbed—which previously required manual collection at substations or station electrical rooms, can now be monitored continuously through the unit's remote communication capability.
 - If an abnormality occurs in the S-EIV-X, operators can remotely review operational logs to monitor system behaviors and anticipate likely causes, prepare countermeasures, and shorten recovery time through faster initial response.
- 2) *High-voltage full-SiC technology improves reliability, compactness, lightweight design, and maintainability***
 - The power unit uses high-voltage full-SiC devices and a DC1,500V two-level inverter configuration, replacing the previous combination of a high-frequency insulated inverter⁴ and two-level inverter.⁵ This architecture reduces the number of components, lowering failure risk while improving reliability. The smaller, lighter power unit also reduces the overall height of the S-EIV-X, making maintenance easier.
- 3) *Proprietary voltage waveform analysis improves energy utilization***
 - For regenerative judgment used to determine when to begin absorbing surplus regenerative power, the S-EIV-X adopts Mitsubishi Electric's proprietary Ripple Judgment Method,⁶ which analyzes differences in voltage waveforms between periods when surplus regenerative power is present and when it is not.

³ A new solution that builds on railway business energy solutions and extends to areas along railway lines and even urban development.

⁴ Inverter that converts to high-frequency power and uses a transformer to electrically isolate DC input side from AC output side.

⁵ Conventional inverter that controls output voltage in two stages.

⁶ Method of determining surplus regenerative power by detecting reductions in pulsating voltage in substation output voltage (harmonic voltage contained in DC voltage during diode rectification).

- Conventional voltage-threshold judgement methods require relatively high regenerative judgment thresholds⁷ to avoid false detections caused by voltage spikes from sources such as incoming power fluctuations. As a result, some surplus regenerative power cannot be captured. However, the Ripple Judgment Method enables the utilization of surplus regenerative power that had previously been missed because it did not reach the judgment threshold, contributing to improved energy utilization efficiency.

4) Analysis combining data acquired by S-EIV-X with train and substation simulation data expands regenerative power transfer utilization

- Data collected by the S-EIV-X can be analyzed together with train and substation simulation data on Mitsubishi Electric's Serendie digital platform. This enables railway operators to identify feeder voltage trends and determine optimal substation output voltages, increasing both the amount of surplus regenerative power absorbed and the amount transferred to other operating trains.

Future Plans and Prospects

Mitsubishi Electric will promote the use of the S-EIV-X worldwide while providing data-driven solutions that optimize railway energy utilization, helping to reduce energy costs and further advance decarbonization. In the future, Mitsubishi Electric will strengthen integration with other railway equipment and develop energy management solutions for entire railway networks. The company also plans to promote regional energy sharing through collaboration with local governments and other companies, contributing to more sustainable railway operations and greater resilience for the communities they serve.

Main Specifications

Rated Capacity	200kW – 30 seconds of energization & 2 minutes 30 seconds of pause (repeats every 3 minutes)
Input Voltage	DC1,500V
Output Voltage	Three-phase AC210V/ 400V, 50/60Hz
Main Circuit System	Two-level inverter
Cooling System	Natural cooling
Size	W1,500mm × D1,170mm × H1,771mm
Weight	1,500kg
Regeneration Judgment Method	Ripple Judgment Method

“Serendie” is a registered trademark or a trademark of Mitsubishi Electric Corporation in Japan and/or other countries.

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⁷ Voltage threshold at which S-EIV starts regenerative operation.

About Mitsubishi Electric Corporation

Guided by its [corporate philosophy](#), Mitsubishi Electric Corporation (TOKYO: 6503) places sustainability at the core of its operations and values stakeholder trust—encompassing society, customers, shareholders and employees. In pursuing profitability, capital efficiency and growth, Mitsubishi Electric works closely alongside customers to develop value-added solutions that address today's complex challenges while enhancing the company's sustainable corporate value.

Founded in 1921, Mitsubishi Electric has over a century of experience in delivering reliable, high-quality products and solutions. With over 200 group companies and approximately 150,000 employees worldwide, the company is a recognized global leader in manufacturing, marketing and selling electrical and electronic equipment and systems across a broad range of sectors, including public utility systems, energy systems, defense and space systems, factory automation systems, automotive equipment, building systems, air conditioning systems & home products, digital innovations, and semiconductor & devices.

Mitsubishi Electric recorded consolidated revenue of 5,894.7 billion yen (U.S.\$ 36.8 billion*) in the fiscal year that ended on March 31, 2026. For more information, please visit www.MitsubishiElectric.com

*JPY 160=USD 1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2026