



Hitachi Energy delivers a comprehensive range of rail and urban transport infrastructure solutions for automation & communication systems that ensure safe, reliable power delivery to all essential rail assets.

HITACHI

Inspire the Next



Relion® 670 series

Railway solutions

Relion® the power of one solution

For protection and control

Hitachi Energy grid automation delivers essential substation automation, high-voltage protection, control and monitoring solutions for today’s power networks, ensuring they are ready for tomorrow’s challenges.

The Relion series of protection and control intelligent electronic devices (IEDs) have provided the power industry with protection, automation and control solutions for over 10 years. Now this successful portfolio is extended with comprehensive support for railway application.

Relion RER670 provides an easy-to-use and future-proof solution for 16.7, 50 and 60 Hz railway applications to safeguard your valuable assets.

Hitachi Energy’s portfolio of reliable, innovative products is based on more than a century of practical, real-world experience in the electricity sector.

Rapid urbanization plus the urgent need to reduce carbon dioxide emissions are driving substantial new interest and investment in the transportation sector. Because of their specialized nature, traction power protection and control systems can be challenging.

With the Relion RER670, Hitachi Energy offers a single solution encompassing the entire scope of railway power delivery; transmission, transformation and delivery. In a single device it supports single and two phase systems in isolated, compensated or solidly earthed networks.

Relion RER670 applications include protection, control and monitoring of AT and BT catenary systems, single and double phase power transformers, single and double phase transmission lines, and incorporate control and communication functionality based on IEC 61850 edition 2.

With over 150,000 Relion devices installed globally, RER670 has a robust family history and is a testament of the trust that has enabled numerous users to secure their power infrastructure.

Line protection

Line protection is covered by the distance protection function with quadrilateral or circular starting characteristics. The six zones have fully independent measurements and settings from each other which gives high flexibility for all types of lines. Load encroachment and adaptive reach compensation are included. Communication to remote ends can be used for even more selective protection, via traditional teleprotection equipment or through direct IED to IED communication.

Backup functions like directional earth fault or overcurrent as well as breaker failure protection are available, as well as autoreclose and synchrocheck functions. A line fault locator for up to 10 line segment supports efficient remedial actions after faults on the transmission line.

Transformer protection

The transformer differential protection function covers different traction power transformer configurations and a wide range of current and voltage backup functions are available, including restricted earth fault protection. A very fast transformer tank protection helps to avoid damages in case of short circuits to the transformer tank.

Catenary protection

Catenary distance protection package is similar to the line protection package, but is used as a distance protection for catenary feeders, which supply the moving locomotive through a pantograph. The function is applicable for single-phase booster transformer (BT) railway supply systems and can be used as a simplified distance protection for auto transformer (AT) catenary systems.

Control and interlocking

This IED can also be provided with full bay control and interlocking functionality. The autorecloser includes priority features for multi breaker arrangements. It co-operates with the synchrocheck function with high-speed or delayed reclosing.

Communication

RER670 provides extensive IEC 61850 support, and incorporates such functions as MMS, GOOSE, SV, PTP, HSR and PRP, as well as IEC 60870-5-103 communication. Binary signals can be exchanged with the Line Data Communication Module (LDCM). Communication between IEDs in different substations is supported using the IEEE C37.94 standard.

Software options

	Transformer protection A51	Line protection B60	Catenary protection B70	Back-up protection C61	Transformer tank overcurrent protection - C70	Apparatus control H37/H38	Auto-reclose H52	Synchro-check H51	Transformer energization control H55	Tap changer control H53/H54	Harmonic monitoring M27	I/U vector shift supervision
Transformer protection	X			X	X	Optional		Optional		Optional		X
Line protection		X		X	X			Optional				X
Catenary protection			X	X	X			Optional				X
Control				Optional	Optional	X			Optional			X
Multiple options can be selected per physical device												

Applications

RER670 can be ordered with these functional packages:

- The A51 package is intended for transformer protection. It includes transformer under impedance, differential, restricted earth fault and tank overcurrent protection functionality.
- The B60 package is intended for line protection. It includes distance and switch onto fault protection, scheme communication and multi section fault location functionality.
- The B70 package is intended for catenary protection. It includes catenary distance and switch onto fault protection, scheme communication and multi section fault location functionality.

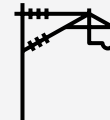
- The A51, B60 and B70 packages all include back-up protection, consisting of (residual) overcurrent, thermal overload, breaker failure, (residual) under and overvoltage, and under frequency protection.
- The H37 and H38 packages offer apparatus control for 10 (1 circuit breaker) or 15 (2 circuit breakers) switching objects respectively. The backup protection package can be optionally added to these control packages.

Further options include transformer energization control, transformer tap changer control, and current and voltage harmonic monitoring.

The number and type of analog inputs and binary inputs and outputs as well as mA input and communication modules can be selected when ordering.



Transformer protection for reliable, high-performance and flexible applications



Simplified distance protection for your catenary infrastructure



Fast and reliable line protection for all types of power system grounding



Control functions for optimized control and reliable operation of the devices in your switchyard

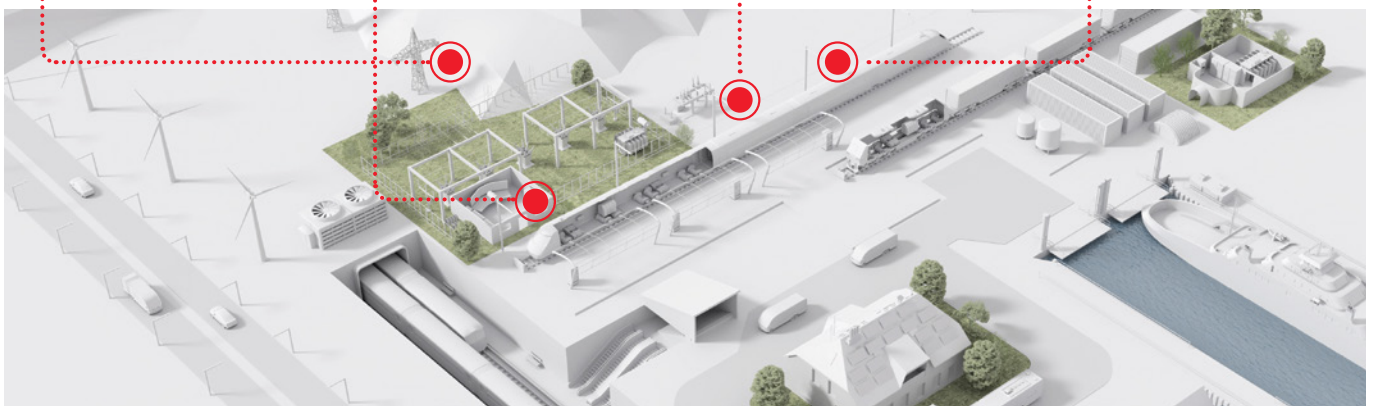


- Line distance protection
- Scheme communication
- Fault location
- Backup protection
- Synchrocheck and auto-reclose

- Catenary distance protection for 2 catenaries
- Scheme communication
- Fault location
- Back-up protection
- Synchrocheck and auto-reclose

- Transformer differential protection
- Transformer under impedance protection
- Restricted earth fault protection
- Transformer tank overcurrent protection
- Transformer energization control (16.7 Hz)
- Back-up protection
- Synchrocheck
- Monitoring of power system harmonics

- Control for up to 15 apparatuses
- Tap changer control and supervision
- Circuit breaker monitoring



Hitachi Energy
marketing-update@hitachienergy.com
hitachienergy.com