

Station  
Automation

# REB 100 Series

## High Performance

### Bus protection

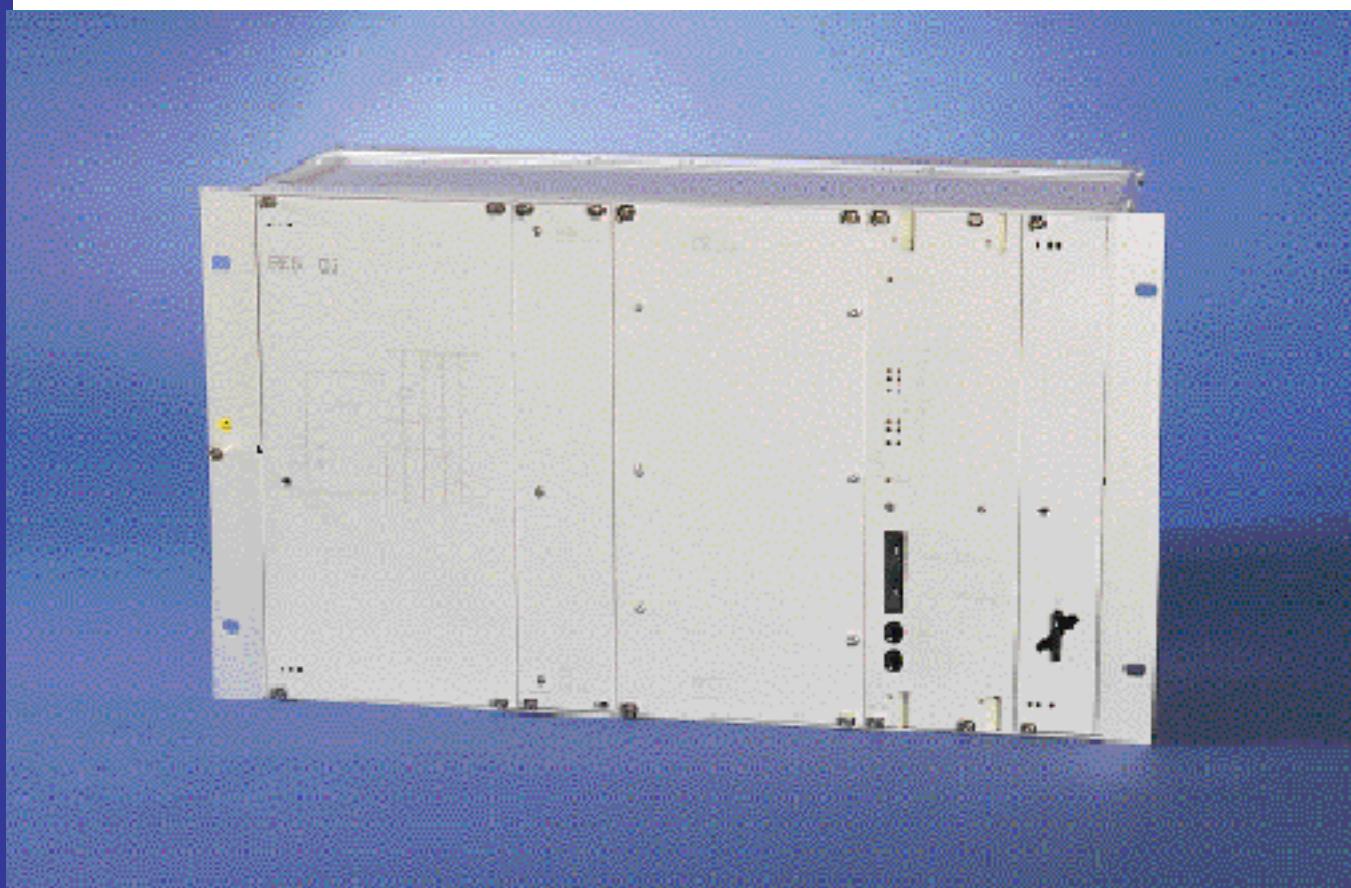


ABB Network Partner

**ABB**

# High Performance Bus Protection with microprocessor technology

The most important function of a bus protection is to maintain stability with external faults and CT saturation.

The logic circuitry must be designed to achieve optimum selectivity at internal faults.



## Excellent practical experience

7000 busbar differential relays of type RADSS have been supplied for 28 years to more than 60 countries around the world and are used from 20 kV to 800 kV. This relay has proven its excellent performance in almost all conceivable power systems and climatic conditions.

REB 103 is a further development of RADSS utilizing the same unique and well proven measuring principles in combination with microprocessor technology. REB 103 has been thoroughly tested to ensure fulfilment of all expected requirements. In addition to normal type tests it has successfully passed more than 120 shots of full scale heavy current testing.

## Decision before saturation

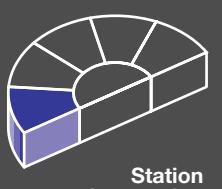
Extremely rapid fault detection, within 1 ms, and thus much faster than the speed with which any current transformer can enter into saturation. This ensures maximum reliability for internal faults. Due to the rapid discrimination between an internal and an external fault, the relay is totally independent of later increases in the power system fault level. Neither a CT that enters into saturation or a short-circuit current passing the bus of any amplitude or DC-component can influence the behaviour of the differential relay.

The extremely rapid differential circuitry enables the use of current transformers with very low knee point voltage, e.g. down to 10 V for a CT with 5 A secondary rating.

## Station Automation

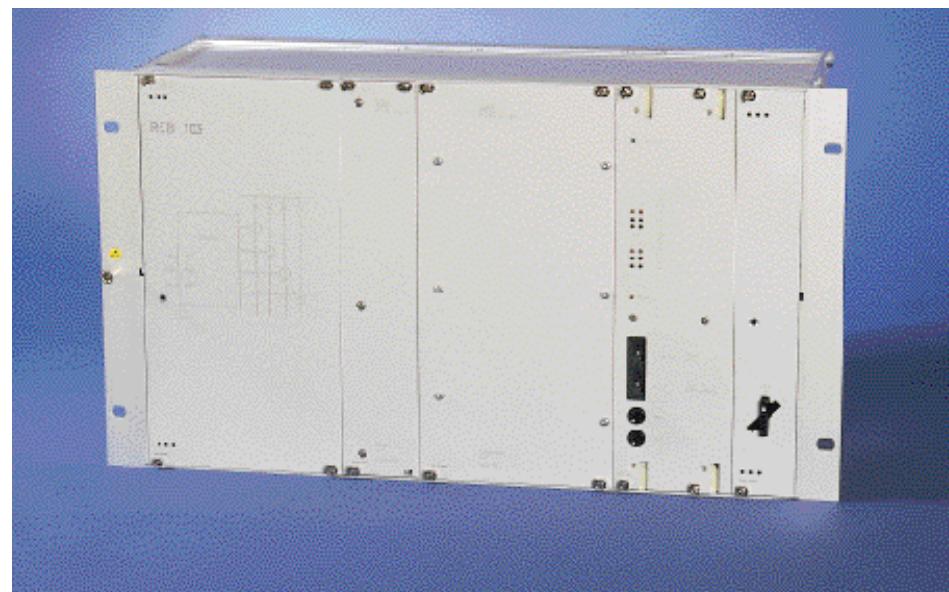
Station Automation includes control, monitoring, and protection for power plant, transmission, distribution, and industry applications. Solutions range from single function units to fully integrated, comprehensive, high-performance substation automation systems.

REB 100 Series is part of the PANORAMA Concept.



# REB 100 — The optimum alternative

REB 103  
Three phase  
differential relay.



## Reliable design

The differential relay has a very reliable design, characterized by simplicity. The internal logic is microprocessor-based with two measuring criteria. Both the differential detector and the overcurrent start detector must have operated to allow a trip. The detection time is within 1 ms and the trip impulse is sent out from REB 103 within 6-9 ms.

The differential relay has an alarm detector reacting for an open CT circuit, resulting in an alarm and blocking of the relay. It also has built-in test facilities and self-supervision of the electronic circuits.

The differential relay has low requirements on the current transformers. It allows different CT ratios, a shared CT core with other relay protection plus long CT leads.

This implies universal application of REB 103.

The differential relay has a local MMI unit for differential-, start-, and trip impulse, block signals, and a simple “one-time-only” setting. The settings are totally independent of any future increase of the short-circuit current in the network.

The operating logic for different busbar configurations is built up using conventional and reliable throw-over relays, easily forming different logics and achieving selectivity at busbar faults.

The reliability and simplicity of the design make REB 103 and REB 101 the optimum alternatives for any normal bus configuration.

## REB 101

### Differential relay with summation auxiliary transformer

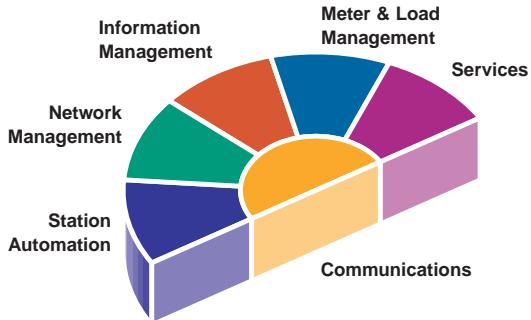
REB 101 is a low cost alternative based upon one common differential relay measuring a summation of the three phases by using summation transformers.

## REB 103

### Three-phase differential relay

REB 103 is a three-phase version with totally independent measurement circuits for each phase.

The sensitivity of the differential detector is as low as 1 % of the overall CT rating and the percentage stability line is around 50 percent. As the relay has totally independent measurement circuits for each phase, the operating values are also on an identical level for all the three phases.



**Panorama is the standard for a comprehensive range of integrated solutions for the efficient and reliable management of power networks. Using innovative information technology, Panorama delivers total control of the power process, from generation to consumption. The Panorama standard covers six application areas, each offering specific solutions.**



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