Distributed busbar protection
Relion® REB500 Ver. 8.3

The IEC 61850 enabled REB500 Intelligent Electronic Device (IED) is designed to support different protection philosophies. You can create a distributed protection solution by assigning bay units into dedicated bay cubicles. In this distributed solution, the bay protection is assigned to separate bay units. Alternatively, you can integrate all necessary functionality into one or several centralized cubicles.

Main features
- Low-impedance busbar protection
- Sub cycle performance
- High functional reliability with
  - Stabilized differential current
  - Directional current comparison
- Low CT performance requirements
- High through-fault stability even in case of CT saturation
- Neutral current measurement for impedance-grounded networks
- No switching of CT circuits
- Flexible solutions at system extension
- Breaker failure protection
- Integrated bay protection
  - Distance protection
  - Overcurrent protection
  - Synchro check
  - Autorecloser
- Extensive self-supervision
- Web HMI
- Cyber security to support
  - User Access Management
  - User Activity Logging
  - Centralized Account Management

Scalability
- Up to 60 feeders (bay units)
- 32 differential zones

Installation
- Distributed protection solution with IEDs close to the feeders, with short connections to CTs, isolators, circuit breakers, etc.
- Centralized protection solution with IEDs in one cubicle
- Fiber-optic connections between central unit and bay unit
- Interference-proof data transfer with up to 2000m length

Most important back-up protection functions
- End fault protection
- Breaker-pole discrepancy
- Current release criteria
- Voltage release criteria

Communication
- Breaker failure initialize via GOOSE
- Trip and back up trip via GOOSE
## Technical Data

### Logic
Binary logic and timer in the bay unit

### Monitoring
- Event recorder with a sampling rate of 1 ms
- Fault recorder with a sampling rate of 4000 Hz

### Measurements
- Relevant analog measured values
  - current
  - voltage
  - differential current
- Currents in all bays
- Busbar through-going currents

### Communication
- IEC 60870-5-103
- IEC 61850-8-1 Edition 1
- IEC 61850-8-1 Edition 2
- IEC 62439-3 Parallel Redundancy Protocol

### Tool
- HMI500 Operator
- HMI500 Configurator
- PCM600 2.7 or newer
- Web HMI

### Hardware
- 1 A and 5 A rated current transformers
- Supply voltages between 48 V DC and 250 V DC
- Nominal frequencies of 50 Hz, 60 Hz
- Redundant power supply for Central Unit

Technical details are available in the REB500 Product Guide.