Christian Pinzon, ABB Power Grids

The power of one solution for distributed busbar protection

What’s new in Relion® REB500 version 8?
The power of one

Presenter

Christian Pinzon
Global Product Manager Relion® REB500
Agenda
The power of one solution for distributed busbar protection

1. Relion® busbar protection portfolio
2. Relion® REB500 4th evolution
3. Tools
4. New features
5. System deployment
6. Summary
Relion® REB500 4th evolution
Protection busbar portfolio

High impedance differential protection

High impedance busbar protection
Relion® REB650

Centralized busbar protection
Relion® REB670

Low impedance differential protection

Distributed busbar protection
Relion® REB500
Relion® REB500 4th evolution
Distributed busbar protection

Features

- Distributed concept
- One central unit
- Field oriented bay units
Relion® REB500 4th evolution
Version 8

1st Generation
Modular

2000

2nd Generation
Standardized

2005

3rd Generation
Common look & feel
Configurator order code
IEC 61850-8-1 Edition 1

1995

4th Generation
Relion®
Enabling communication
IEC 61850-8-1 Edition 2

2015
Relion® REB500 4th evolution
What’s new?

Features

- Sub cycle busbar protection
- Breaker failure protection
- End fault protection
- Disturbance recorder
- Line backup protection
- IEC 61850-8-1 GOOSE
- WebHMI

June 30, 2016
Relion® REB500 4th evolution
Product portfolio – central and bay units
## Relion® REB500 4th evolution

Product portfolio – Bay unit

### Product Specifications

<table>
<thead>
<tr>
<th>Size</th>
<th>6U ½ 19&quot;</th>
<th>6U ½ 19&quot;</th>
<th>6U ½ 19&quot;</th>
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</thead>
<tbody>
<tr>
<td>CT / VT</td>
<td>4 / 0</td>
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<td>5 / 5</td>
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<td>I/O default</td>
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<td>21 / 19</td>
<td>21 / 19</td>
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<td>Bay Protection</td>
<td>-</td>
<td>-</td>
<td>●</td>
</tr>
<tr>
<td>GOOSE</td>
<td>●</td>
<td>●</td>
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</table>

*June 30, 2016*
## Relion® REB500 4th evolution

### Tools

<table>
<thead>
<tr>
<th>Product</th>
<th>SDM600</th>
<th>PCM600</th>
<th>HMI500</th>
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<tbody>
<tr>
<td><strong>Use case</strong></td>
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<td>-</td>
<td>Operate</td>
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<tr>
<td>User access management</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Monitor event list</td>
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<td>●</td>
<td></td>
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<tr>
<td>Monitor disturbance recorder</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Read / Write set file</td>
<td>–</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Online test</td>
<td>–</td>
<td>–</td>
<td>●</td>
</tr>
<tr>
<td>Online single line</td>
<td>–</td>
<td>–</td>
<td>●</td>
</tr>
<tr>
<td>Parameter setting</td>
<td>–</td>
<td>–</td>
<td>● ●</td>
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<tr>
<td>I/O configuration</td>
<td>–</td>
<td>–</td>
<td>● ●</td>
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<tr>
<td>Create report</td>
<td>–</td>
<td>–</td>
<td>● ●</td>
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<tr>
<td>Application configuration</td>
<td>–</td>
<td>–</td>
<td>● ●</td>
</tr>
</tbody>
</table>

* PCM600 2.7 or higher
** ConnPack via Update Manager
*** HMI500 via ABB Software Library - [Link](#)
Relion® REB500 4th evolution
PCM600 ConnPack tool

*PCM600 2.7 or higher
Relion® REB500 4th evolution
PCM600 tool

*PCM600 2.7 or higher
Relion® REB500 4th evolution
HMI500 single line diagram tool
Relion® REB500 4th evolution features
WebHMI

User access control
Relion® REB500 4th evolution features
WebHMI

Protection monitoring

- Remotely gain insight into your operations via standard internet browser

Extensive WebHMI
Relion® REB500 4th evolution features

WebHMI

- Feature
  - Single line diagram
  - Event list
  - Differential current

- Benefit
  - Easy access
  - Usable on tablet
Relion® REB500 4th evolution features

Line back up protection

Various current function

- Distance protection
  - Based on REL316*4

Table 2: Bay protection functions of line variant L-V2 (optional)

<table>
<thead>
<tr>
<th>Main functionality</th>
<th>IEEE</th>
<th>REB500</th>
<th>IEC 61850</th>
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<tbody>
<tr>
<td>Distance protection</td>
<td>21</td>
<td>DIST</td>
<td>PDIS</td>
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<tr>
<td>Definite time over and undercurrent protection</td>
<td>51</td>
<td>OCDT</td>
<td>PTAC</td>
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<tr>
<td>Inverse time overcurrent protection</td>
<td>51</td>
<td>OCINV</td>
<td>PTOC</td>
</tr>
<tr>
<td>Directional overcurrent definite time protection</td>
<td>67</td>
<td>DIROC DT</td>
<td>PTAC</td>
</tr>
<tr>
<td>Directional overcurrent inverse time protection</td>
<td>67</td>
<td>DIROCINV</td>
<td>PTOC</td>
</tr>
<tr>
<td>Inverse time earth fault overcurrent protection</td>
<td>51N</td>
<td>IDINV</td>
<td>PTOC</td>
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<tr>
<td>Peak value over and undercurrent protection</td>
<td>50</td>
<td>OCINST</td>
<td>PTOC</td>
</tr>
<tr>
<td>Definite time over and undervoltage protection</td>
<td>50/27</td>
<td>OVDT</td>
<td>PTOV</td>
</tr>
<tr>
<td>Three phase current plausibility</td>
<td>46</td>
<td>CHKI3PH</td>
<td>PTOC</td>
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<tr>
<td>Three phase voltage plausibility</td>
<td>47</td>
<td>CHKU3PH</td>
<td>PTOV</td>
</tr>
</tbody>
</table>
Relion® REB500 4th evolution features
Line back up protection details

- Feature
  - Zone 1 - 4
  - Power swing blocking
  - Switch-onto-fault
  - Voltage circuit supervision
  - PUTT, POTT

- Benefit
  - Multi object
  - Reduced investment
Relion® REB500 4th evolution features
Differential disturbance recorder

- Feature
  - Differential current per phase
  - Restraint current per phase

- Benefit
  - Easy access
  - No manual data merging
Relion® REB500 4th evolution features
GOOSE

- Feature
  - Receive Start for BFP
  - I/O configuration based on SCD

- Benefit
  - Reduced binary input
  - Reduced copper wiring
  - No addition communication
  - Efficient input assignment
Relion® REB500 4th evolution features
Local display

- **Feature**
  - Direct interaction with IEDs without tools
  - Local language support
  - Status indication LEDs
  - Measurements
  - Hot Pluggable

- **Benefit**
  - Effective interaction
  - No restart of IED
Relion® REB500 4th evolution
System deployment

- Station communication
  - Optical Ethernet
  - IEC 61850-8-1 Ed.1/Ed.2
  - PRP
  - IEC 60870-5-103
  - Remote HMIs

- Central Unit <> Bay Unit
  - Optical Ethernet
  - Up to 2000 meter
  - Separate network
  - ABB AFS677 switch
Relion® REB500 4th evolution
Protection busbar portfolio

<table>
<thead>
<tr>
<th>Model</th>
<th>High impedance</th>
<th>Low impedance</th>
</tr>
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<tbody>
<tr>
<td>REB650</td>
<td></td>
<td></td>
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<tr>
<td>REB670</td>
<td></td>
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<tr>
<td>REB500</td>
<td></td>
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<tr>
<td>REB500sys</td>
<td></td>
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</tbody>
</table>

Centralized: Busbar protection
Distributed: Station protection
The power of one solution for distributed busbar protection. Relion® REB500

- Presentation and recordings will be available on www.abb.com/protection-control
- For more information please contact your local ABB Sales Team via www.abb.com/protection-control

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