7SR5 – Reyrolle 5

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7SR5* – Feeder and Transformer Protection Relays

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7SR5* – Designed for Your Applications

Generation

Distribution

Industry & Infrastructure

7SR5* – Withdrawable Design

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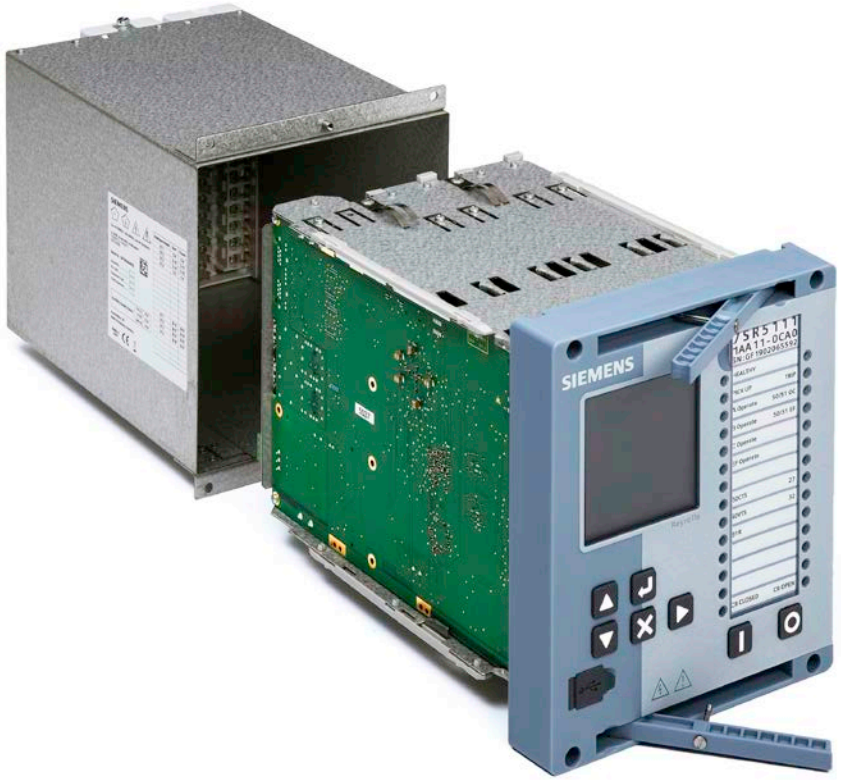
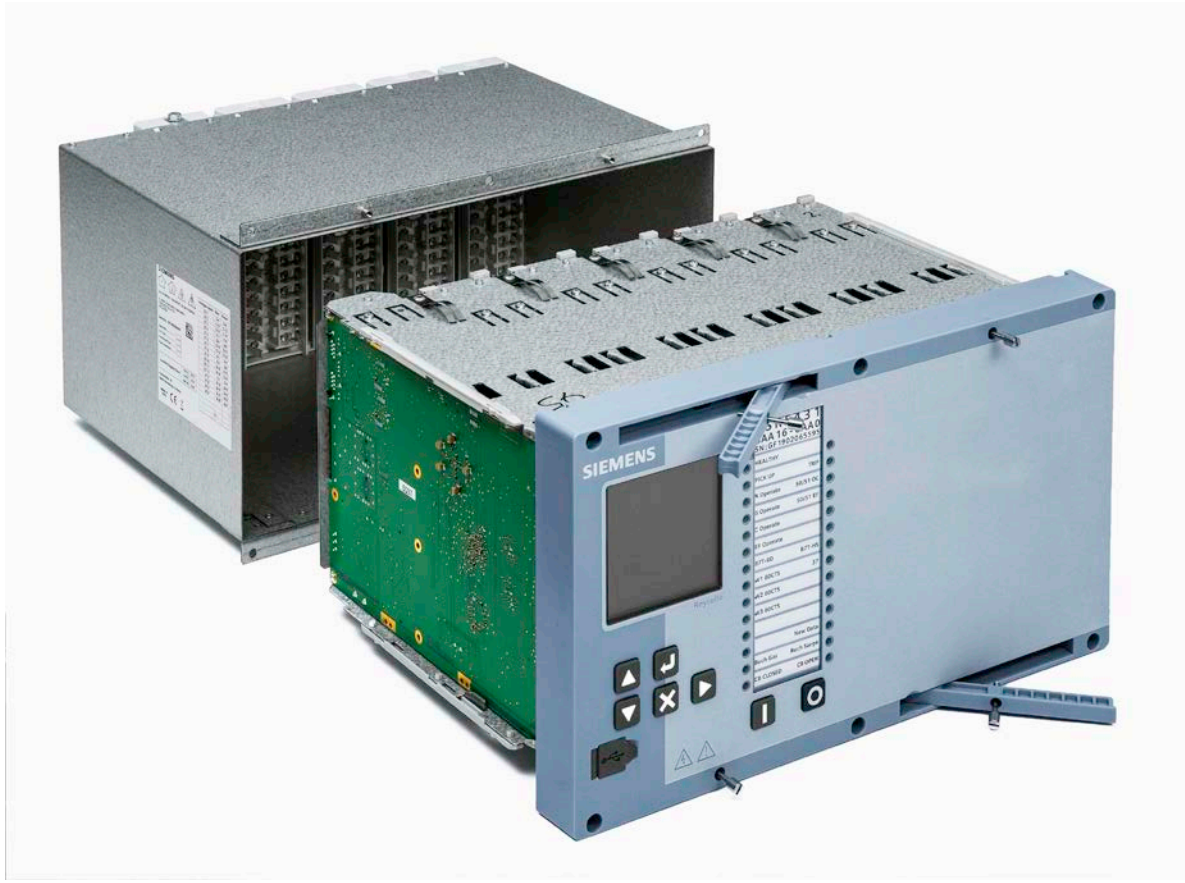
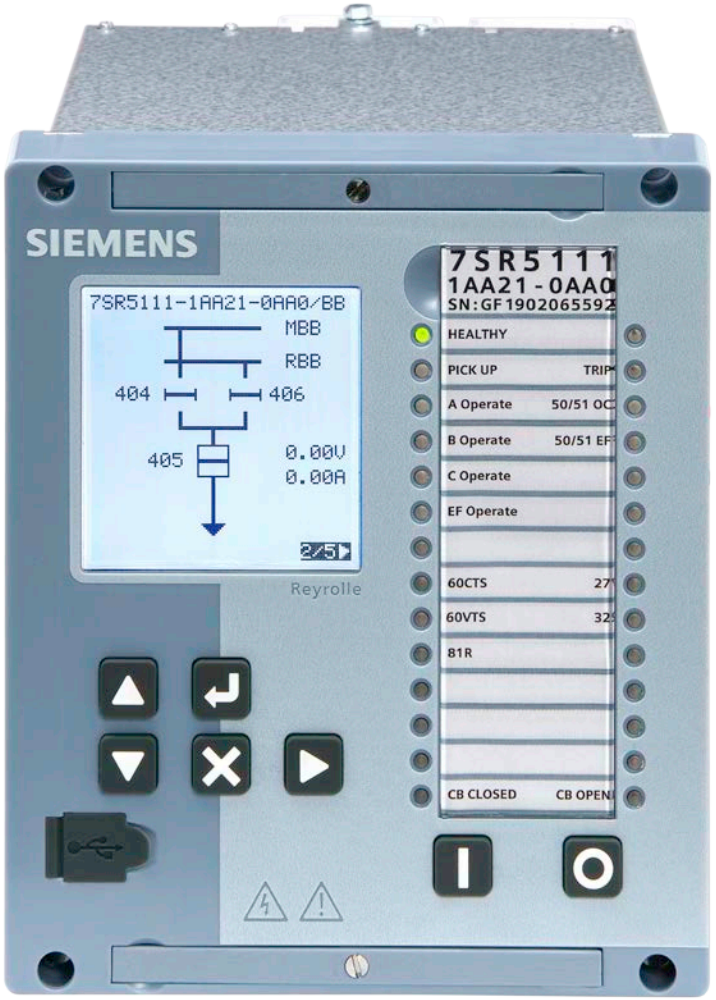




Full relay element can be withdrawn from the case, including communications

7SR5* – Common Features and Functions

- Case dimensions: 4U high, Size 6 or Size 12
- Combined 1A and 5A CT inputs with accuracy to provide SEF.
- Backlit 128 x 128 pixels LCD with text and graphical display capabilities, suitable for single line mimic diagrams
- 5 x menu navigation buttons and 2 Function Keys
- 27 x programmable tri-colour LEDs and 1 Protection Healthy LED
- USB front port and rear RS485 port
- 2 electrical (or 2 optical) Ethernet ports as standard
- IEC 60870-5-103, MODBUS-RTU, DNP 3.0
- IEC 61850 Edition 1 and 2 with HSR, PRP and RSTP operation
- Serial communications & IEC 61850 Ethernet operate simultaneously
- Threshold for Binary Inputs is configurable in the relay software
- IP rating: 54



7SR511 Feeder Protection Variants

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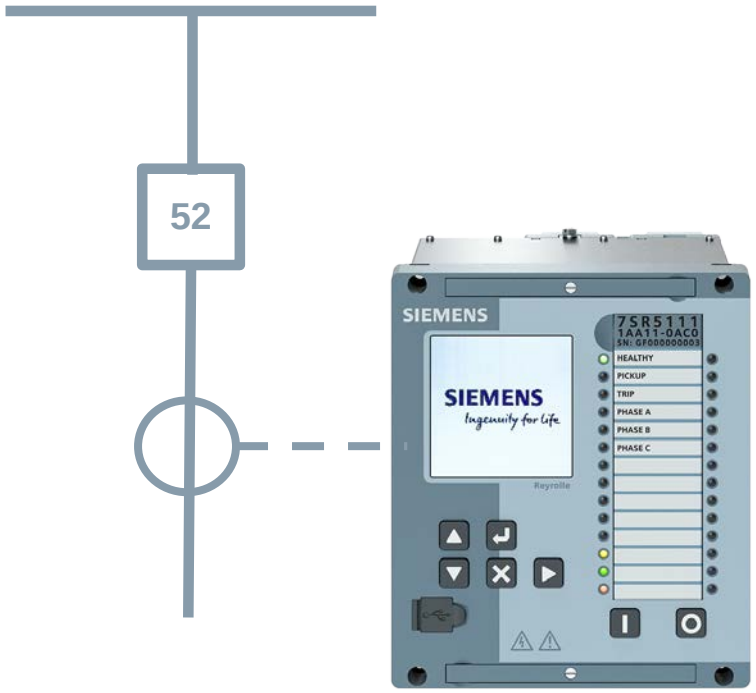
Standard variants

7SR5110-1	• Housing width 3/8 x 19" (size 6), height 4U • 8 binary inputs • 6 binary outputs (1 break, 2 c/o, 3 make)	• 4 CT's • Communication – USB, RS485, 2 x ethernet	
7SR5110-2	• Housing width 3/8 x 19" (size 6), height 4U • 13 binary inputs • 8 binary outputs (1 break, 2 c/o, 5 make)	• 4 CT's • Communication – USB, RS485, 2 x ethernet	
7SR5110-7	• Housing width 3/4 x 19" (size 12), height 4U • 38 binary inputs • 18 binary outputs (1 break, 2 c/o, 15 make)	• 4 CT's • Communication – USB, RS485, 2 x ethernet	
7SR5111-1	• Housing width 3/8 x 19" (size 6), height 4U • 9 binary inputs • 8 binary outputs (1 break, 2 c/o, 5 make)	• 4 CT's, 4 VT's • Communication – USB, RS485, 2 x ethernet	
7SR5111-2	• Housing width 3/4 x 19" (size 12), height 4U • 14 binary inputs • 10 binary outputs (1 break, 2 c/o, 7 make)	• 4 CT's, 4 VT's • Communication – USB, RS485, 2 x ethernet	
7SR5111-7	• Housing width 3/4 x 19" (size 12), height 4U • 39 binary inputs • 20 binary outputs (1 break, 2 c/o, 17 make)	• 4 CT's, 4 VT's • Communication – USB, RS485, 2 x ethernet	

Protection Functions - 7SR5110 Feeder Protection Non-Directional



Protection:

37/37G	Undercurrent protection
46	Negative sequence overcurrent protection
46BC	Broken conductor detection
49	Thermal overload protection
50/50N/50G	Instantaneous overcurrent
50AFD	Arc Flash Detection
50GS	Instantaneous SEF - measured
50SOTF	Switch onto fault
51/51N/51G	Time delayed overcurrent
51CL	Cold load overcurrent – phase
51GS	Time delayed SEF – measured
87GH	High-impedance REF protection

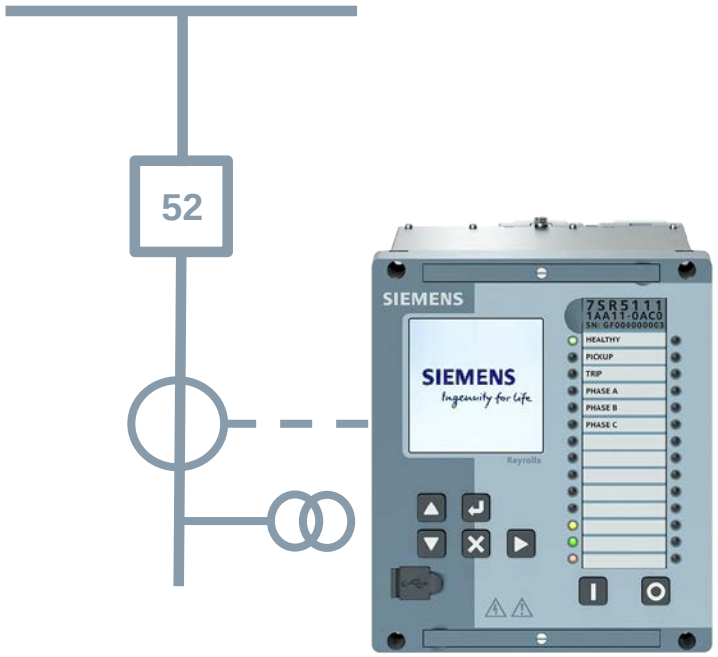
Supervision:

50BF	CB failure protection
60CTS	CT supervision
74CC	Close-circuit supervision
74TC	Trip –circuit supervision
81HB2	Inrush current detection

Control & Plant:

52	Circuit Breaker control
52	CB Counters Trip & Delta Trip
52	I2t Counter
79	Automatic reclosing
86	Lockout

Protection Functions - 7SR5111 Feeder Protection Directional



Additional Functionality:

67	Directional overcurrent	59N	Neutral voltage displacement
67G/67N	Directional earth fault	60VTS	VT supervision
27/59	Under/Over Voltage	21FL	Fault locator
32	Directional Power	21LB	Load blinder
55	Power Factor	81U/O	Frequency protection
51V	Voltage dependent OC	78VS	Voltage vector shift
47	Sequence OV protection	81R	ROCOF

7SR54 Transformer Protection Variants

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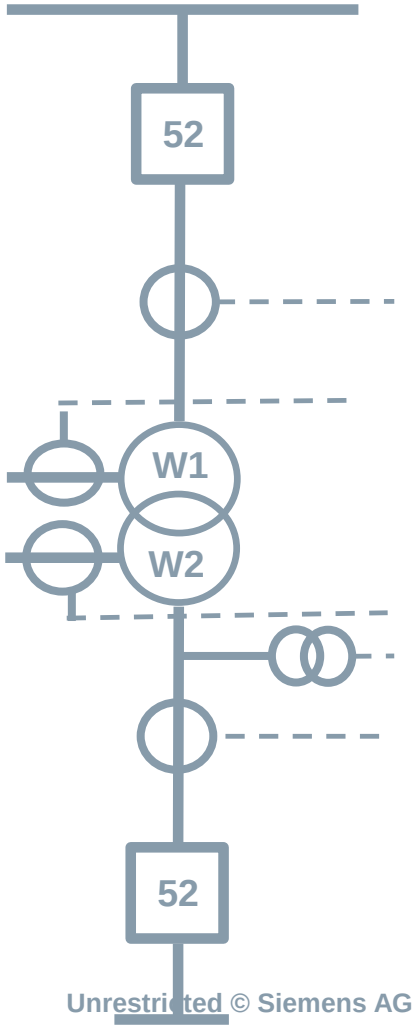
Standard variants

7SR5420-2A	• Housing width 3/4 x 19" (size 12), height 4U • 16 binary inputs • 8 binary outputs (1 break, 2 c/o, 5 make)	• 8 CT's • Communication – USB, RS485, 2 x ethernet	
7SR5421-1A	• Housing width 3/4 x 19" (size 12), height 4U • 12 binary inputs • 8 binary outputs (1 break, 2 c/o, 5 make)	• 8 CT's, 4VT's • Communication – USB, RS485, 2 x ethernet	
7SR5421-6A	• Housing width 3/4 x 19" (size 12), height 4U • 37 binary inputs • 18 binary outputs (1 break, 2 c/o, 15 make)	• 8 CT's, 4VT's • Communication – USB, RS485, 2 x ethernet	
7SR5430-3A	• Housing width 3/4 x 19" (size 12), height 4U • 24 binary inputs • 10 binary outputs (1 break, 2 c/o, 7 make)	• 12 CT's • Communication – USB, RS485, 2 x ethernet	
7SR5431-5A	• Housing width 3/4 x 19" (size 12), height 4U • 35 binary inputs • 16 binary outputs (1 break, 2 c/o, 13 make)	• 12 CT's, 4 VT's • Communication – USB, RS485, 2 x ethernet	

Protection Functions - 7SR542 Transformer Protection
Two Winding



Protection:

24 Overexcitation protection
27 Undervoltage protection – 3 phase
27Vx Undervoltage protection – Vx
37 Undercurrent protection – phase
37G Undercurrent earth fault – measured
46 Negative sequence overcurrent protection
46BC Broken conductor detection
47 Sequence overvoltage protection
49 Thermal overload protection
87T-BD Transformer differential protection – biased
50 Instantaneous overcurrent – phase
87T-HS Transformer differential protection – highest
50G Instantaneous earth fault – measured
50N Instantaneous earth fault – calculated
51 Time delayed overcurrent – phase
51CL Time delayed cold load
51G Time delayed earth fault – measured
51N Time delayed earth fault – calculated
52 Circuit-breaker control
59 Overvoltage protection – 3 phase
59N Neutral voltage displacement
59Vx Overvoltage protection – Vx
81 Frequency protection – "f>" or "f<"
87GH Restricted earth fault protection
87T-BD HB5 Overfluxing detection

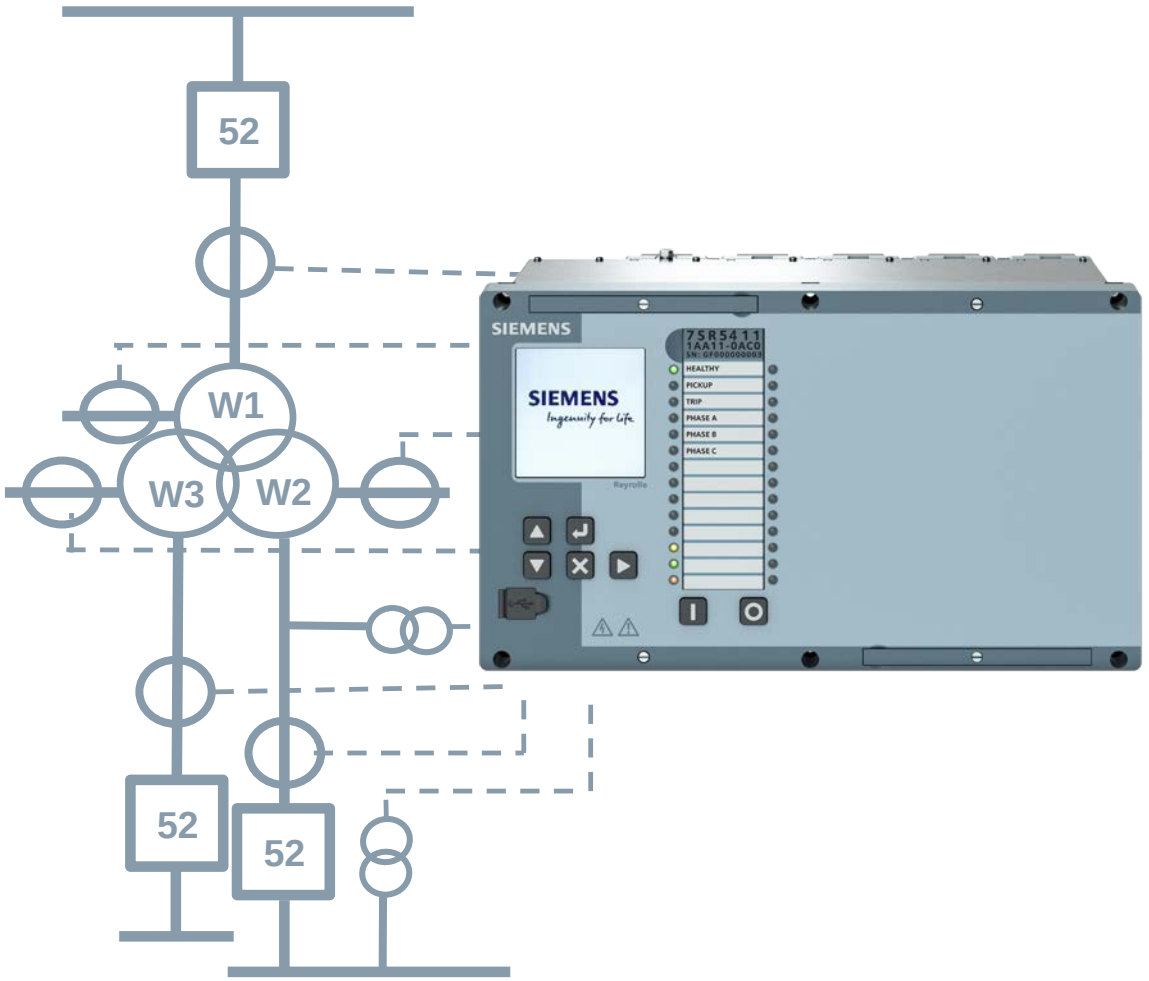
Supervision:

50BF Circuit-breaker failure protection – 3 pole
60CTS CT supervision
60VTS VT Supervision
74CC Close-circuit supervision
74TC Trip –circuit supervision
81HB2 Inrush current detection

Control & Plant:

52 Circuit Breaker control
52 CB Counters Trip & Delta Trip
52 I2t Counter
86 Lockout

Protection Functions - 7SR543 Transformer Protection Three Winding



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Software – Reydisp Manager 2.0

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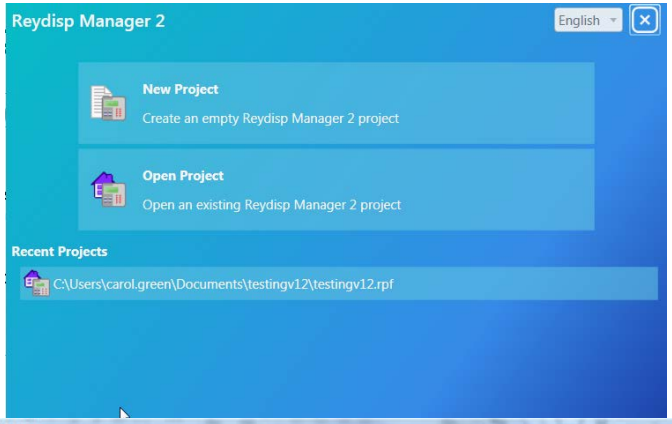
Reydisp Manager 2 (RM2) is a PC based engineering tool that allows the user to:

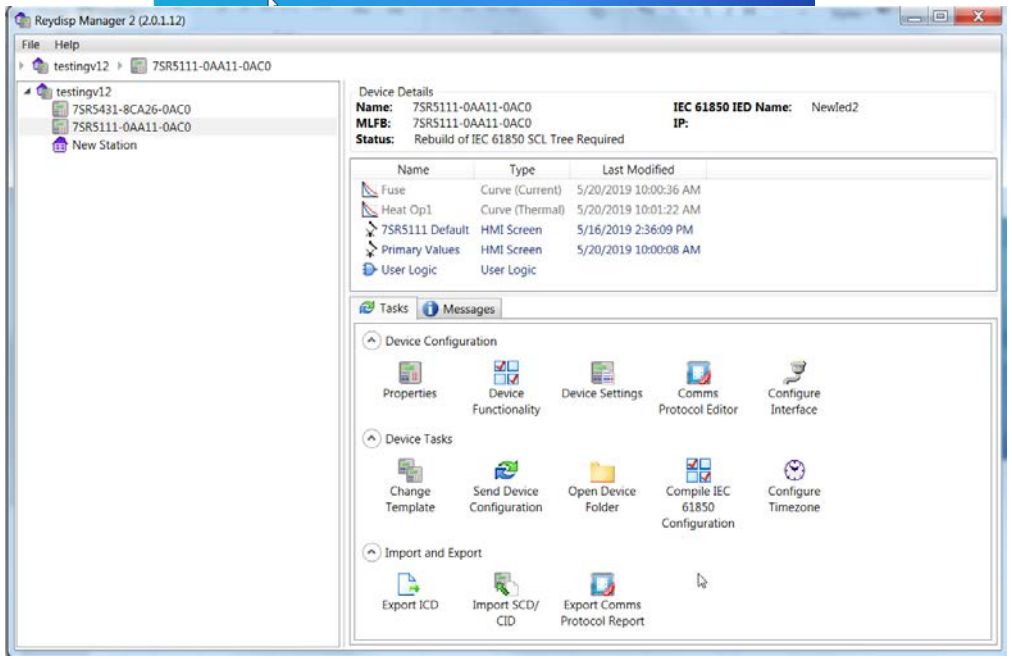
- apply and interrogate settings
- create logic
- retrieve event, fault and waveform records
- undertake project management of multiple devices in same session

Curve Editor - to create Current & Voltage curves

For system configuration engineering of IEC61850 projects, the DIGSI 5 system configurator must also be installed.

Available to download (free of charge)





Reydisp Manager 2.0 – Data Storage

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Fault Data Records

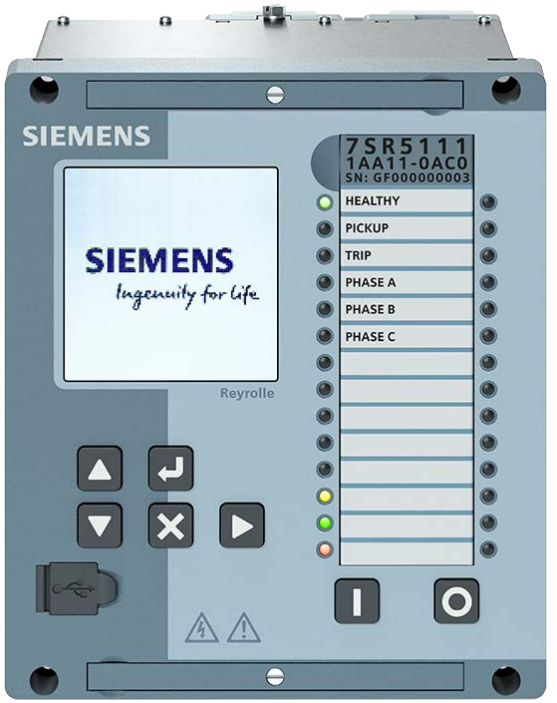
- 100 fault records with time/date of trip, measured quantities and type of fault

Event Records

- Up to 5000 events are stored and time stamped to 1ms resolution.

Waveform Records

- Up to 20 waveform records of 1, 2, 5 or 10 second durations
- Waveform sampling rate - 32 samples per cycle
- Waveforms contain all digital and analogue signals – to ensure comprehensive fault analysis



Reydisp Manager 2.0 – Mimic Creator

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Mimic Control

The CB is controllable via the mimic interface

The Disconnectors and Earth Switches are also controllable

Mimic Display

The following can be displayed:

- CB position
- Basic ‘busbar/line’ connection
- Selected instruments
- Disconnector position
- Earth Switch position
- User-configurable primary connection between these plant items
- Up to 5 Mimic diagrams can be stored in the relay

7SR5* - Cyber Security

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Secured Communication

- Secured channel between Reyrolle 5 and Reydisp Manager
- Mutual authentication

Operational Security

- Signed software/firmware
- ProductCERT – Vulnerability handling

Role Based Access Control

- Connection password authentication
- Local fascia access with User ID

Configuration Change Management

- Separation of Protection and Ethernet Communication firmware
- Patch management

Future Readiness

- Security monitoring & advanced logging

Contact Information

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