SEL Solutions for NERC PRC-028 and U.S. Regional Compliance

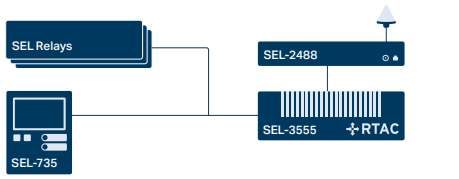
The rapid growth of inverter-based resources (IBRs) has shifted regulatory requirements for recording, retaining, and reporting fault records. Successfully navigating these changes requires pragmatic, cost-effective solutions that achieve and maintain compliance.

SEL offers several digital fault recorder (DFR) solutions that meet NERC compliance requirements and address regional standards and guidelines from organizations such as Electric Reliability Council of Texas (ERCOT), PJM Interconnection, or California Independent System Operator (CAISO).

Integrated Solution

Aggregate fault data recorded by existing protective relays and other devices into an SEL Real-Time Automation Controller (RTAC), and use an SEL-2488 Satellite-Synchronized Network Clock for time synchronization. The SEL RTAC automatically collects event records and offers up to 8 TB of storage for record retention.

This solution is well suited for smaller substations and distributed DFR architecture.

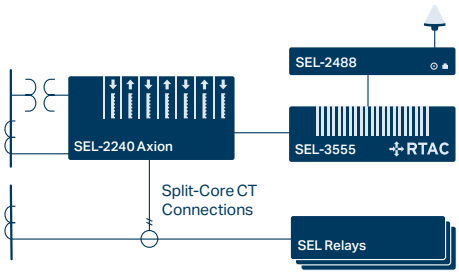


Integrated Solution

Direct Measurement Solution

Pair the SEL RTAC with the SEL-2240 Axion® for a DFR system that captures event reports with 24-bit resolution and supports up to 192 analog channels. Record Sequence of Events logs, dynamic disturbance data, and 3 ksps continuous event data. Collect current measurements through conventional CTs or split-core CTs to reduce installation time.

This solution is well suited for greenfield and brownfield applications.

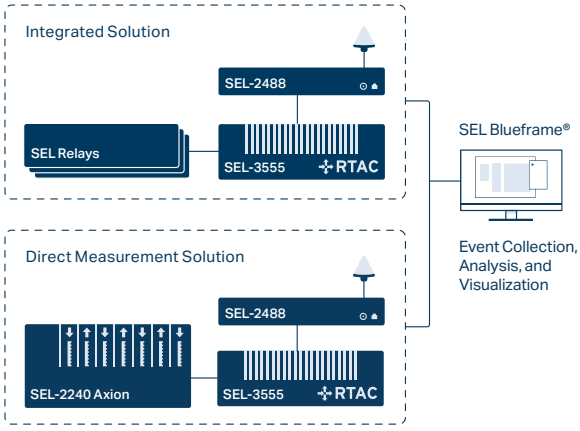


Direct Measurement Solution

Centralized Solution

Capture data from multiple substations, and use SEL software for advanced automation and analytics. The SEL Blueframe® software platform collects fault and disturbance records for system-wide aggregated storage.

This solution uses centralized software to support advanced system monitoring.



Centralized Solution

Turnkey Solution

SEL Engineering Services can customize, design, deliver, test, and commission systems that provide the precise functionality you need.

"We actually design to exceed standards and test beyond that to prove the designs."

Dr. Edmund O. Schweitzer, III

PRC-002-5	Regulatory Requirement	SEL-2240 Axion	SEL-400 Series Relays[a]	SEL-735 Meter
Fault recording (FR) rate (samples per cycle)	≥16	400	133.33	512
FR length (seconds)	≥ 0.5	24	6	5
Dynamic Disturbance Recording (DDR) sampling rate (samples per second)	≥960	24,000	8,000	30,720
DDR measurement rate (samples per second)	≥30	120	60	60
Data formatting (FR and DDR)	COMTRADE with COMNAME	Yes	Yes	Yes
Data formatting (Sequential Events Recorder [SER])	CSV	Yes	Yes	Yes
Time synchronization to UTC (microseconds)	2,000	<1	<1	<1
PRC-028-1				
FR rate (samples per cycle)	≥64	400	133.33	512
FR length (seconds)	≥2	24	6	5
DDR sampling rate (samples per second)	≥960	24,000	8,000	30,720
DDR measurement rate (samples per second)	≥60	120	60	60
Data formatting (FR and DDR)	COMTRADE or CSV	Yes	Yes	Yes
Time synchronization to UTC (microseconds)	1,000	<1	<1	<1
ERCOT Section 6				
FR rate (samples per cycle)	64 (IBR), 16 (non-IBR)	400	133.33	512
FR length (seconds)	≥1	24	6	5
DDR sampling rate (samples per second)	≥960	24,000	8,000	30,720
DDR measurement rate (samples per second)	≥30	120	60	60
Data formatting (fault records)	COMTRADE or CSV	Yes	Yes	Yes
Data formatting (DDR)	COMTRADE	Yes	Yes	Yes
Data formatting (SER)	CSV	Yes	Yes	Yes
Time synchronization to UTC (microseconds)	1,000	<1	<1	<1

[a]SEL also offers solutions for other SEL relay series. For more information, please contact your local sales representative.

Learn more at
selinc.com/DFR-PRC028

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LM00587-01 | 20260519