

SEL-2240 Axion®

Digital Fault Recorder (DFR) System



A high-density DFR solution designed for split-core CT installation



Key Benefits

- Achieve full-substation, high-density DFR coverage with a single DFR system.
- Reduce installation time by integrating substation CT currents into the Axion by using split-core CTs.
- Capture fault data sampled at 24 kHz in 24-bit resolution automatically formatted in COMTRADE.
- Deploy a modular DFR that scales over time.

High-Density DFR Capabilities

Capture up to 192 analog channels on a single Axion DFR to reduce DFR count and cabinet space. Optimize Axion measurement density by selecting modules that align with the substation topology.

Faster Installation

Install the DFR system using split-core CTs for minimal outage time. Automated split-core CT calibration streamlines commissioning and reduces engineering effort. Split-core CTs are well suited for retrofit and expansion projects and may minimize DFR wiring during greenfield installations.

Streamlined Data Integration

Deploy triggered or triggerless recording to capture power system events, and export COMTRADE-formatted event reports. The Axion supports a wide range of industry protocols for SCADA and system integration.

Multifunctional Device

The Axion records Sequence of Events (SOE) logs, dynamic disturbance data, and 3 ksps continuous streaming data, providing a comprehensive, time-synchronized record of power system events.

Scalable Platform

Expand DFR capacity over time by adding modules to a single Axion or by connecting multiple Axion nodes into a DFR system. Connect the Axion to an SEL Real-Time Automation Controller (RTAC) for up to 8 TB of storage for record retention.

Rugged Hardware

The Axion is engineered and tested to operate in the harshest environments. It has an operating temperature range of -40° to +85°C (-40° to +185°F), has no moving parts, and is backed by a worldwide, ten-year warranty with no-cost technical support for the lifetime of the product.



Learn more about
the lower-impact DFR.
selinc.com/Axion-LEA

Specifications

Analog Input Modules*	SEL-2245-431 8 LEA/4 PT Analog Input Module 8 LEA inputs, 0.033–10.0 V rms (split-core CT-compatible) 4 PT inputs, 6.7–300.0 V rms SEL-2245-432 12 LEA Analog Input Module 12 LEA inputs, 0.033–10.0 V rms (split-core CT-compatible) SEL-2245-42—AC Protection Module 3 CT inputs, 0.1–20.0 A rms 3 PT inputs, 6.7–300.0 V rms					
Digital Input Modules	SEL-2244-2—Digital Input Module 24 digital inputs 24, 48, 110, 125, 220, or 250 Vac/Vdc SEL-2244-4—Digital Input Module 32 digital inputs 24, 48 Vdc, 110 Vac/Vdc, 125 Vac/Vdc					
Fault Recording	Sampling rates: 1, 2, 4, 8, and 24 kHz; software-selectable Transient Fault Record Length Pre-fault time: 0.05 s (max. event length 0.05 s) Individual records as long as: <table><tr><td>24 s for 24 kHz</td></tr><tr><td>72 s for 8 kHz</td></tr><tr><td>144 s for 4 kHz</td></tr><tr><td>288 s for 2 kHz</td></tr><tr><td>576 s for 1 kHz</td></tr></table> Data format: IEEE C37.111-2013 COMTRADE File naming: IEEE C37.232 Common Format for Naming Time Sequence Data Files (COMNAME) Trigger options: Over- and undercurrent; over- and undervoltage; active, reactive, and apparent power; sequence component currents and voltages; total harmonic distortion; harmonics and interharmonics up to the 63rd harmonic.	24 s for 24 kHz	72 s for 8 kHz	144 s for 4 kHz	288 s for 2 kHz	576 s for 1 kHz
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SOE Recording	Store as many as 500,000 events with 1 ms resolution.					
Dynamic Disturbance Recording	Record currents, voltages, frequency, power and sequence components, and digital status inputs as fast as 120 times per second.					
Continuous Recording	Record continuous oscillography analog data at 3,000 samples per second.					
Synchrophasors	Conformance: IEEE C37.118.1-2011, as amended by IEEE C37.118.1a-2014, IEEE C37.118.2, and IEEE/IEC 60255-118-1 Measurement class: Software-selectable (P or M class) Message rates: 1 to 120 messages per second					
Storage	Up to 8 TB long-term storage when connected to an SEL RTAC functioning as a historian					
High-Accuracy Time Synchronization	IRIG-B with 500 ns accuracy Precision Time Protocol (PTP) SEL recommends an SEL-2488 Satellite-Synchronized Network Clock for high-accuracy time synchronization.					
Environmental	–40° to +85°C (–40° to +185°F) Optional conformal coating					

*For a full list of available Axion modules and detailed specifications, please reference the SEL website.