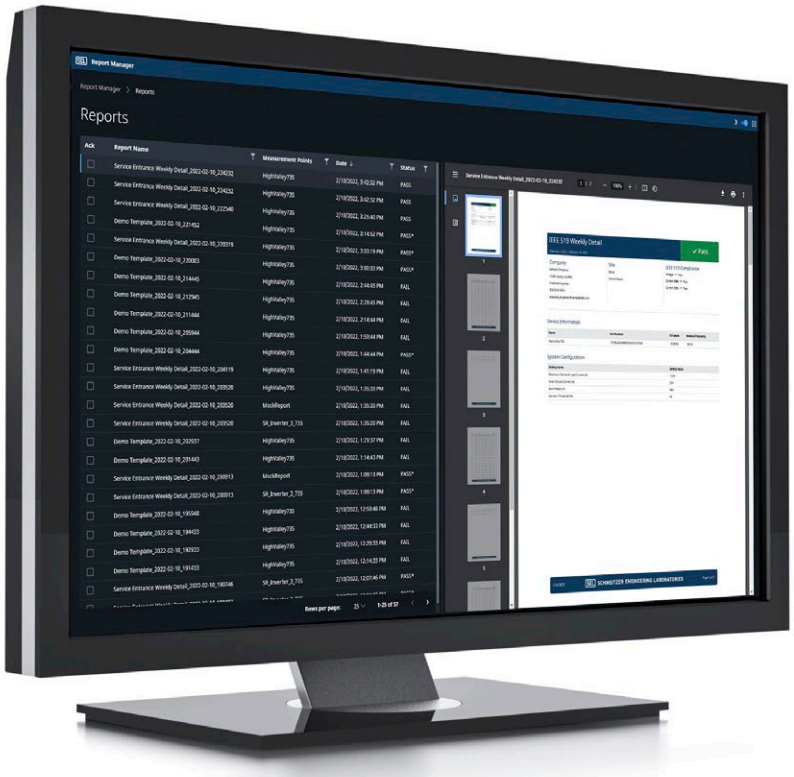
SEL-5705 Synchrowave® Reports



Analyze and report on historical power system data

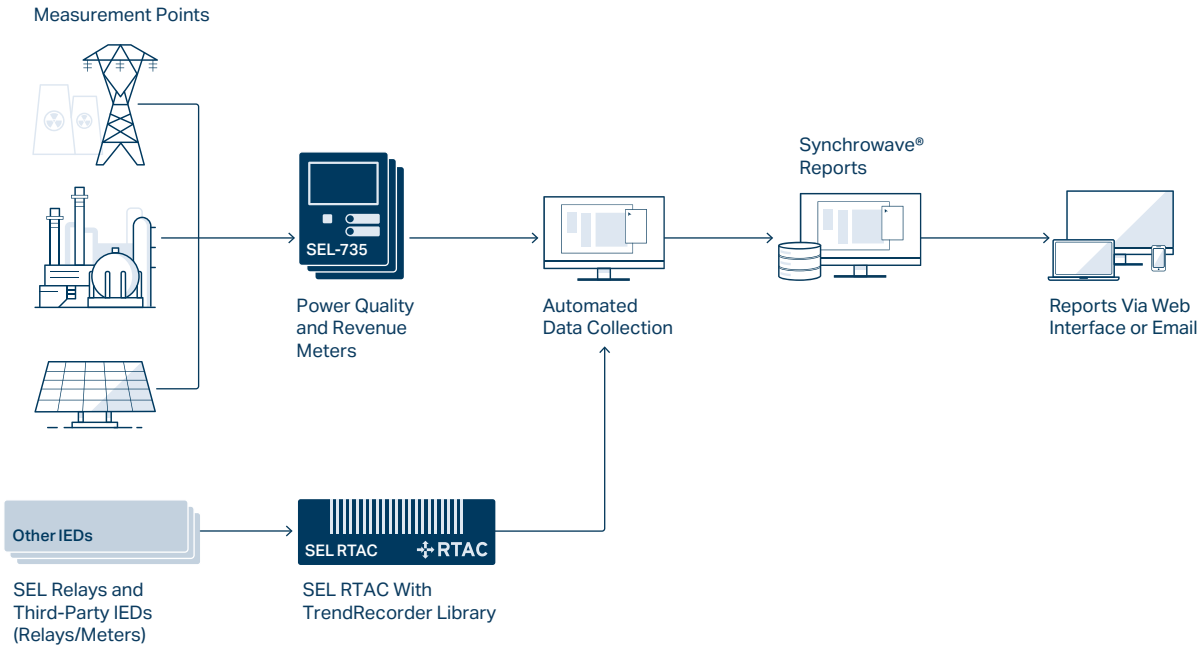
- Investigate historical data from IEDs to identify trends, inform planning, and reduce operational costs.
- Use interactive graphs to drill down and isolate data points or time periods of interest.
- Generate reports on your schedule and have them automatically delivered to your email inbox.
- Visualize and report on systemwide meter data, including VSSI, LDP, WAGES consumption, and SER data.
- Easily monitor power quality and confirm compliance with the IEEE 519 standard.

Product Overview

Visualize high-resolution power system data and generate reports using SEL-5705 Synchrowave Reports. This web-based software helps you better analyze, organize, and share the historical data you collect from SEL meters and other IEDs across your system. It supports you in making planning, operating, and accounting decisions to improve efficiency and reduce costs.

Synchrowave Reports is part of our next-generation solution for collecting and visualizing historical power system data. This solution uses ACSELERATOR TEAM® SEL-5045 Software to collect data from measurement points across a system.

The SEL Real-Time Automation Controller (RTAC) adds flexibility to this solution—allowing it to aggregate data from third-party meters in addition to SEL devices.



Key Benefits

Visualize and Analyze Power System Data

Drive more insights out of the historical data you collect from meters or other power system IEDs. Analyze long-term data trends or use interactive graphs to drill down and isolate events or time periods of interest. Examine data in the Synchrowave Reports web interface or export data for further analysis.

Retrieve Reports by Email or On Demand

Generate reports on demand or have them automatically delivered to your email inbox at 15-minute, hourly, daily, weekly, or monthly intervals. Choose between PDF or CSV file formats.

Simplify Access With Web-Based Software

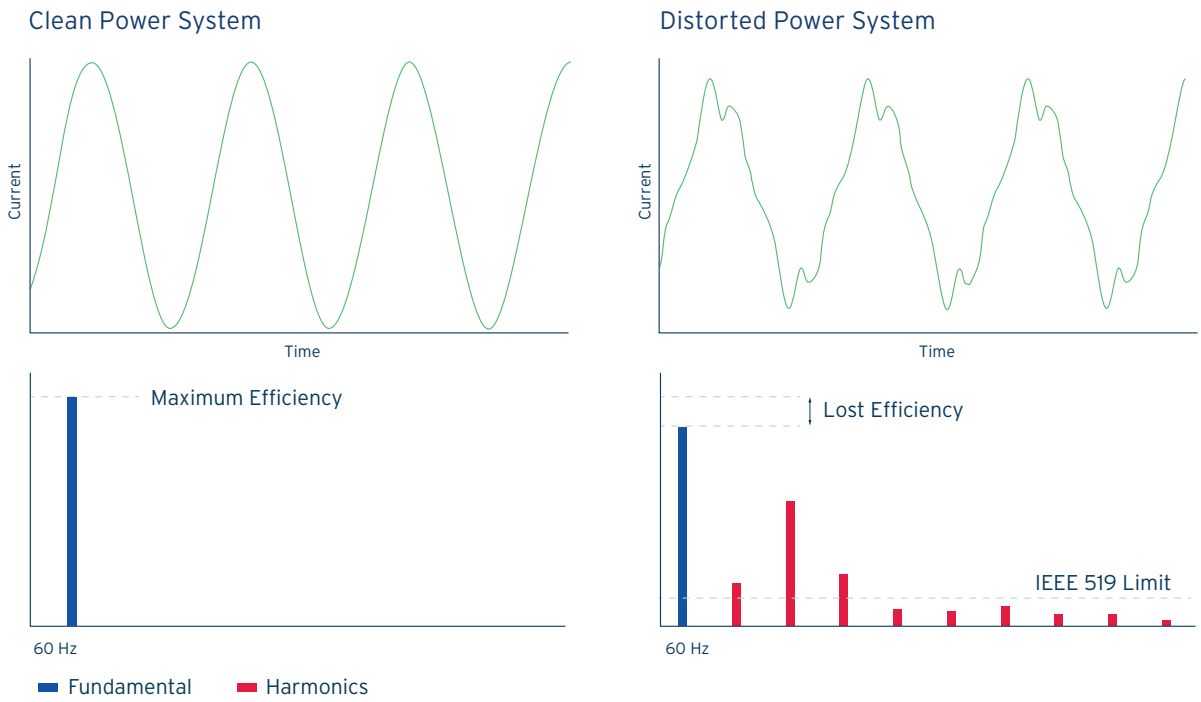
Access Synchrowave Reports from any location, and simplify software licensing and maintenance. Take advantage of security features that maintain data confidentiality, such as Transport Layer Security (TLS) encryption and Lightweight Directory Access Protocol (LDAP) authentication.

Optimize Your System with Meter Data Reports

Visualize and report on system-wide meter data, including voltage sag, swell, and interruption (VSSI) data; Load Data Profile (LDP) information; Sequential Events Recorder (SER) data; and water, air, gas, electricity, and steam (WAGES) consumption details. Use meter data to validate usage patterns and identify areas for improvement, such as opportunities to avoid peak demand charges by moving overlapping electric processes to off-peak hours. ITI (CBEMA) curves and detailed voltage event tables help you recognize power disturbance issues before they affect equipment.

Monitor Power Quality and Confirm Compliance

Easily monitor power quality and confirm compliance with IEEE Std 519, *Standard for Harmonic Control in Electric Power Systems*. Innovations in ac/dc and dc/ac power conversion have led to growing adoption of technologies that increase harmonic distortion on distribution and transmission lines, which negatively affects neighboring loads and generation sources. With Synchrowave Reports, you can monitor a single point or an entire power system to support compliance activities and help detect distortions that cause excess heat, efficiency loss, system capacity reduction, and other issues.



Report Types

Device Overview Report

Visualize device status and measurement point names, locations, time zones, time offsets, and more.

Device Overview Report

6/20/2024 | 7:13:20 AM

Devices

Metering Point	Status	Device Name	Status	Location	Time Zone	UTC Offset
Lewiston_LEW_735	✓ Enabled	LEW_735	● Online	/Lewiston/	US/Pacific	-07:00:00
Lewiston_LEW2_735	✓ Enabled	LEW2_735	● Online	/Lewiston/	US/Pacific	-07:00:00
New Campus Meters_Charlotte_SEL735-Charlotte-01	✓ Enabled	SEL735-Charlotte-01	● Online	/Charlotte/	US/Pacific	-04:00:00
New Campus Meters_Lake Zurich_SEL735-LakeZurich-01	✓ Enabled	SEL735-LakeZurich-01	● Online	/Lake Zurich/	US/Pacific	-05:00:00
New Campus Meters_Lake Zurich_SEL735-LakeZurich-02	✓ Enabled	SEL735-LakeZurich-02	● Online	/Lake Zurich/	US/Pacific	-05:00:00
New Campus Meters_Lewiston_SEL735-LewistonWBC-01	✓ Enabled	SEL735-LewistonWBC-01	● Online	/Lewiston/	US/Pacific	-07:00:00

SER Report

Quickly identify the exact time of power loss events, settings changes, voltage disturbances, digital state changes, and meter access in a precision time-stamped report of device and system events.

SER (Sequential Events Recorder) Report

11/22/2022 | 11:42:18 AM

Data Source & Settings

Metering Point: HighValley_735
Device Name: DeskMeter
Device ID: 236
Terminal ID: STATION A
Firmware ID: R207

Start Time: 2022-10-01 11:36:00.000
End Time: 2022-10-08 11:36:00.000
Time Zone: US/Mountain
UTC Offset: -06:00:00
Time Zone DST: True

Events

Date	Element	Status
2022-10-01 12:34:57.525	SSI_EVE	● Deasserted
2022-10-01 12:34:57.724	SSI_EVE	● Asserted
2022-10-01 13:35:01.038	SSI_EVE	● Deasserted
2022-10-01 13:35:01.238	SSI_EVE	● Asserted
2022-10-01 14:35:04.554	SSI_EVE	● Deasserted
2022-10-01 14:35:04.754	SSI_EVE	● Asserted
2022-10-01 17:35:14.901	SSI_EVE	● Deasserted
2022-10-01 17:35:15.101	SSI_EVE	● Asserted
2022-10-01 18:35:18.418	SSI_EVE	● Deasserted

VSSI Reports

VSSI Summary Report

View event summaries, including ITI categorization.

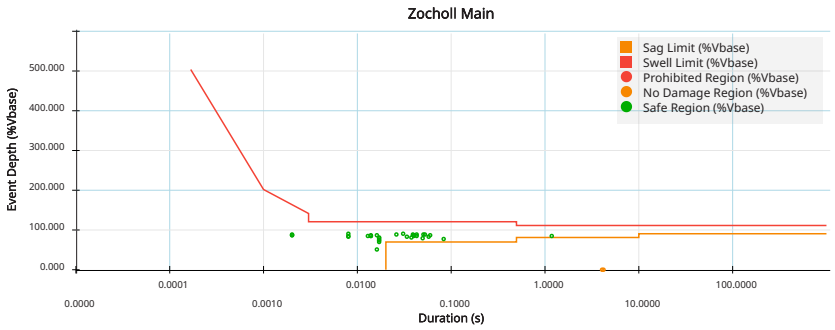
VSSI Summary Report

9/5/2023 | 2:46:18 PM

Data Source & Settings

Metering Point: Pullman_Zocholl_Zocholl_M_735
Device Name: Zocholl_M_735
Device ID: ZOCHOLL MAIN SEL-735
Terminal ID: SEL-735
Firmware ID: SEL-735-R118-V0-Z011008-D20171103

Start Time: 2023-06-05 15:35:00.000
End Time: 2023-09-05 15:35:00.000
Time Zone: US/Pacific
UTC Offset: -07:00:00
Time Zone DST: True



VSSI Detail Report

Analyze events with detailed VSSI data (using variable sampling rate records) in tabular format. Identify points of interest with 4 ms resolution. Interactive charts help determine the time, duration, severity, and location of power quality disturbances.

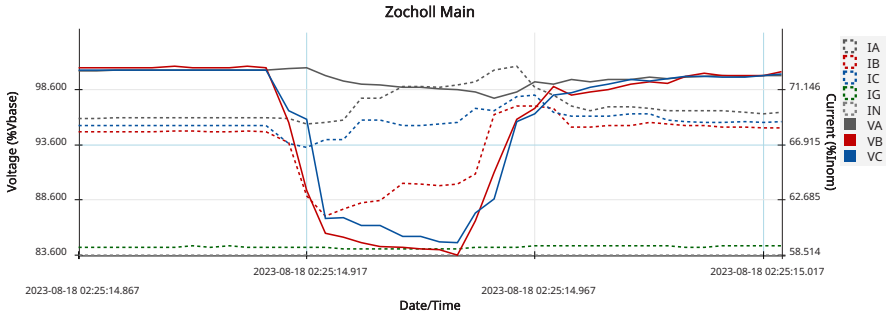
VSSI Detail Report

9/7/2023 | 1:57:24 PM

Data Source & Settings

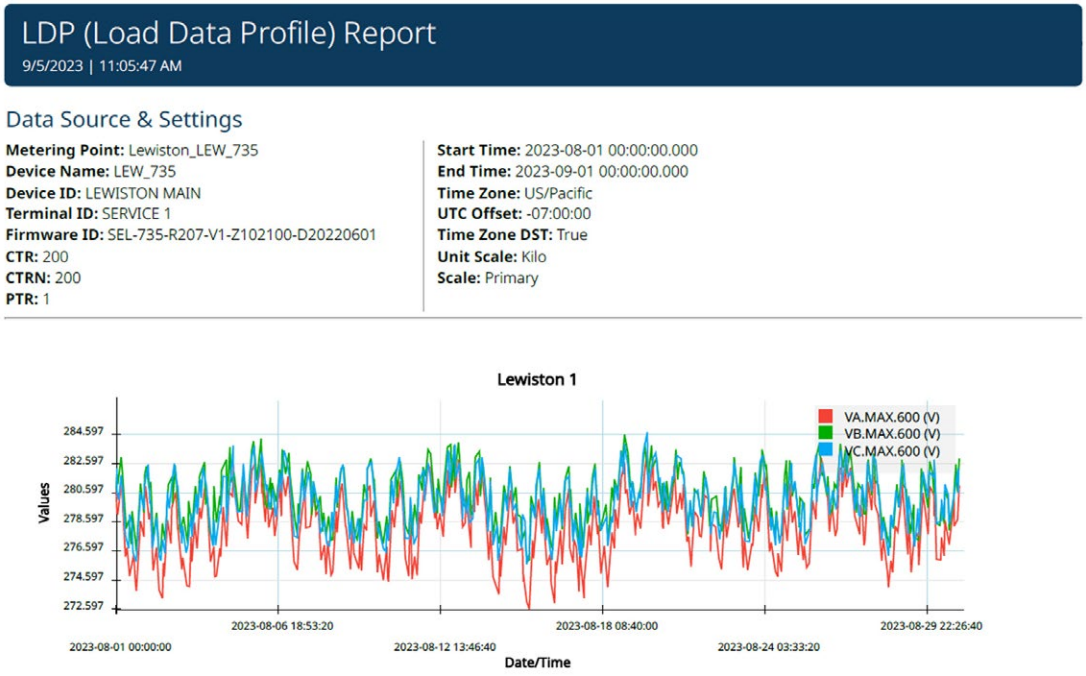
Metering Point: Pullman_Zocholl_Zocholl_M_735
Device Name: Zocholl_M_735
Device ID: ZOCHOLL MAIN SEL-735
Terminal ID: SEL-735
Firmware ID: SEL-735-R118-V0-Z011008-D20171103

Start Time: 2023-08-18 02:25:14.867
End Time: 2023-08-18 02:25:15.025
Time Zone: US/Pacific
UTC Offset: -07:00:00
Time Zone DST: True



LDP Report

Aggregate LDP data from one or more measurement points, up to 16 distinct channels, including timed interval quantities like current, voltage, frequency, and power. Refine data selection with an interactive graph that displays metering data for a specified time period. Analyze trends and inspect records with tabular views of LDP information from a metering point, device, or group that you select.



Signals Report

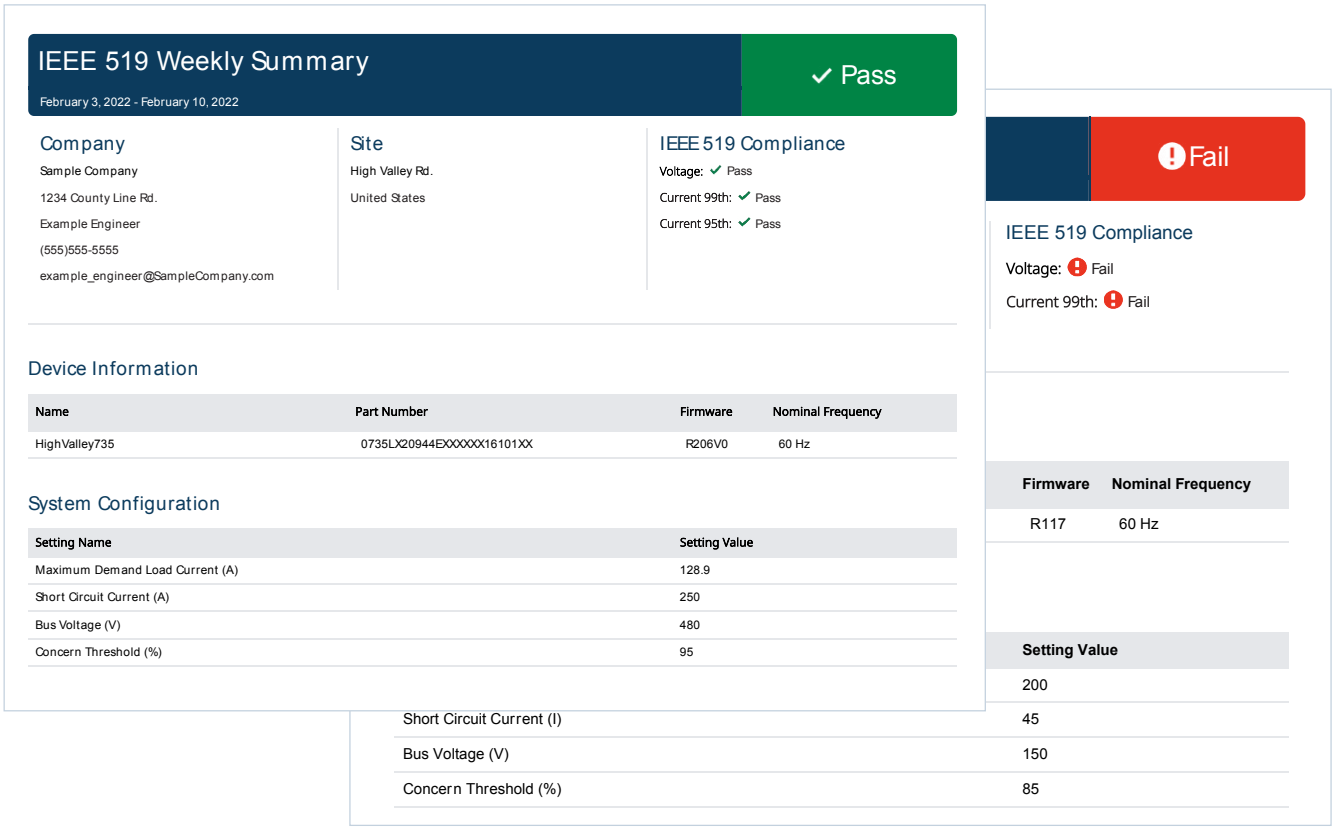
Combine water, air, gas, electricity, and steam (WAGES) consumption from third-party pulse-output meters and convert pulses to engineering units using the scaling features of the Signals Report. Interactive charts and tabular reports help you thoroughly analyze system-wide resource consumption.

IEEE 519 Compliance Reports

Identify distortion at the point of common coupling that produces undesirable harmonics on the power system. Easily confirm compliance with IEEE 519.

Summary Report

One-page summary reports document pass or fail information for voltage and current. Summary reports also provide site information, including location, device type, and system configuration, to support asset management.



IEEE 519 Weekly Summary

✓ Pass

February 3, 2022 - February 10, 2022

Company

Sample Company
1234 County Line Rd.
Example Engineer
(555)555-5555
example_engineer@SampleCompany.com

Site

High Valley Rd.
United States

IEEE 519 Compliance

Voltage: ✓ Pass
Current 99th: ✓ Pass
Current 95th: ✓ Pass

Device Information

Name	Part Number	Firmware	Nominal Frequency
HighValley735	0735LX20944EXXXXXX16101XX	R206V0	60 Hz

System Configuration

Setting Name	Setting Value
Maximum Demand Load Current (A)	128.9
Short Circuit Current (A)	250
Bus Voltage (V)	480
Concern Threshold (%)	95

Fail

IEEE 519 Compliance

Voltage: Fail
Current 99th: Fail

Firmware	Nominal Frequency
R117	60 Hz

Setting Value
200
45
150
85

Detail Report

Combine summary report information with individual voltage and current harmonic values for each metering point, up to the 50th harmonic. This granularity helps identify exact frequency ranges that cause harmonic distortion.

Harmonic Voltage Compliance

= Fail = Warn

Harmonic	VA Limit	VA Measured	VB Limit	VB Measured	VC Limit	VC Measured
THD	12%	8.66%	12%	8.49%	12%	8.66%
2	7.5%	4.86%	7.5%	4.69%	7.5%	4.86%
3	7.5%	5.38%	7.5%	5.21%	7.5%	5.38%
4	7.5%	5.9%	7.5%	5.73%	7.5%	5.9%
5	7.5%	6.42%	7.5%	6.24%	7.5%	6.42%
6	7.5%	6.93% ⚠	7.5%	6.76% ⚠	7.5%	6.93% ⚠
7	7.5%	7.45% ⚠	7.5%	7.28% ⚠	7.5%	7.45% ⚠
8	7.5%	7.97% ❗	7.5%	7.8% ❗	7.5%	7.97% ❗
9	7.5%	8.49% ❗	7.5%	8.31% ❗	7.5%	8.49% ❗
10	7.5%	4.69%	7.5%	4.52%	7.5%	4.69%
11	7.5%	5.21%	7.5%	5.04%	7.5%	5.21%
12	7.5%	5.73%	7.5%	5.55%	7.5%	5.73%
13	7.5%	6.24%	7.5%	6.07%	7.5%	6.24%
14	7.5%	6.76% ⚠	7.5%	6.59%	7.5%	6.76% ⚠
15	7.5%	7.28% ⚠	7.5%	7.11% ⚠	7.5%	7.28% ⚠
16	7.5%	7.8% ❗	7.5%	7.62% ❗	7.5%	7.8% ❗
17	7.5%	8.31% ❗	7.5%	8.14% ❗	7.5%	8.31% ❗
18	7.5%	4.52%	7.5%	8.66% ❗	7.5%	4.52%
19	7.5%	5.04%	7.5%	4.86%	7.5%	5.04%
20	7.5%	5.55%	7.5%	5.38%	7.5%	5.55%
21	7.5%	6.07%	7.5%	5.9%	7.5%	6.07%
22	7.5%	6.59%	7.5%	6.42%	7.5%	6.59%

Configurable alerts warn of noncompliance.

Fail indicates frequency and amount above IEEE 519 threshold.

Software Options

Synchrowave Reports can be licensed with a Meter Data option or a Power Quality option. Meter Data offers report types that support data analysis through tables, static graphs, and dynamic charts. Power Quality offers all Meter Data reports and adds IEEE 519 compliance reports. Both the Meter Data and Power Quality options can be bundled with SEL software for automated data collection.

	Meter Data	Power Quality
Reports		
Device Overview	✓	✓
Sequential Events Recorder (SER)	✓	✓
Load Data Profile (LDP)	✓	✓
Voltage Sag, Swell, and Interruption (VSSI)	✓	✓
Signals or WAGES	✓	✓
IEEE 519 Compliance		✓

Specifications

General	
System Overview	Synchrowave Reports is a web-based data analysis application. View reports and sort by file name, device name, date/time, or compliance status.
Available Reports	Device Overview, LDP, SER, VSSI (summary and detail), and daily and weekly compliance reports per IEEE 519 (summary and detail)
IEEE 519 Compliance Limits	Apply compliance limits as defined by IEEE 519.
Report Scheduling	Automate report generation from 15-minute to monthly intervals.
Report Generation and Distribution	View, print, and email reports in PDF, with automated or manual email delivery of reports in PDF or CSV format.
Source Data	The Meter Data software report displays data stored in the TEAM Profile database. IEEE 519 reports use three-second aggregated harmonic values up to the 50th order from the SEL-735 Power Quality and Revenue Meter. An LDP setting preset is available in ACSELERATOR QuickSet® SEL-5030 Software. Reports will generate on full or partial source datasets.
Supported Devices	Meter Data reports support the SEL-734, SEL-735, SEL-751A, SEL RTAC TrendRecorder, and other SEL devices that TEAM polls. IEEE 519 reports support SEL-735, firmware version R201 and above, equipped with 1 GB memory and the advanced power quality and recording option.
File System	Local drive or external network file system
Web Browsers	Google Chrome, version 84.0 or newer; Microsoft Edge, version 84.0 or newer
Server	2.1 GHz processor with 16+ cores, 16 GB RAM, and 100 Mb network card See the instruction manual for minimum and high-performance recommendations.
Operating Systems	Microsoft Windows 10 or 11 Enterprise, Windows Server 2016, 2019, or 2022
Network	1 Gbps network recommended; 100 Mbps network minimum

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