Electrification X

Network Fault Management

Feature: Substation Fault Management

For fast and efficient fault handling

SIEMENS

Contents

Overview 3

Feature: Substation Fault Management – Basic Asset Transparency of Protection Relay & Power Quality Devices, Protection Settings, Fault Localization including File Transfer 4

Subscription 14

Prerequisites 15

Ordering 16

Product Documentation 17

Topology 18

Overview

Substation Fault Management is a feature under Electrification X Network Fault Management that empowers power grid operators to efficiently check the operational status of their protection device and power quality (PQ) device. By retrieving fault records and logs, the application enables quick analysis of the protection faults and the optimization of maintenance activities, ensuring improved reliability and performance of the power grid. This application provides real-time insights and analytics, helping operators to promptly address issues, reduce downtime, and enhance overall grid stability.

Customer Benefits:

- Ensuring transparency in the operation of protection relays and power quality devices to maintain system integrity
- Implementing a comprehensive monitoring system that operates round-the-clock, providing immediate notifications to customers regarding any alarms or trips due to protection events
- Facilitating access to fault records and visualizations, enhancing the ease of fault management and analyzing processes
- Streamlining operations through efficient management of various logs, including event, trip, operational, and user-defined logs
- Fetching protection settings help user to quickly visualize protection parameters
- Providing improved access to continuous recording and trend analysis, making it more user-friendly and accessible
- Leveraging digitalization and effective data management to inform strategic decisions for grid upgrades and enhancements where necessary
- Offering valuable insights into power consumption and distribution patterns over time, aiding operators in optimizing system performance

As your trustworthy partner we provide ...

- Reliable IoT connectivity hardware forms the backbone of any IoT ecosystem, enabling seamless communication between devices and systems
- open and reliable IoT ecosystem Electrification X
- Electrification X Substation Fault Management provides a comprehensive solution for monitoring and managing the electrical faults in transmission and distribution electrical networks, enhancing transparency and reliability with the help of fault record transfer

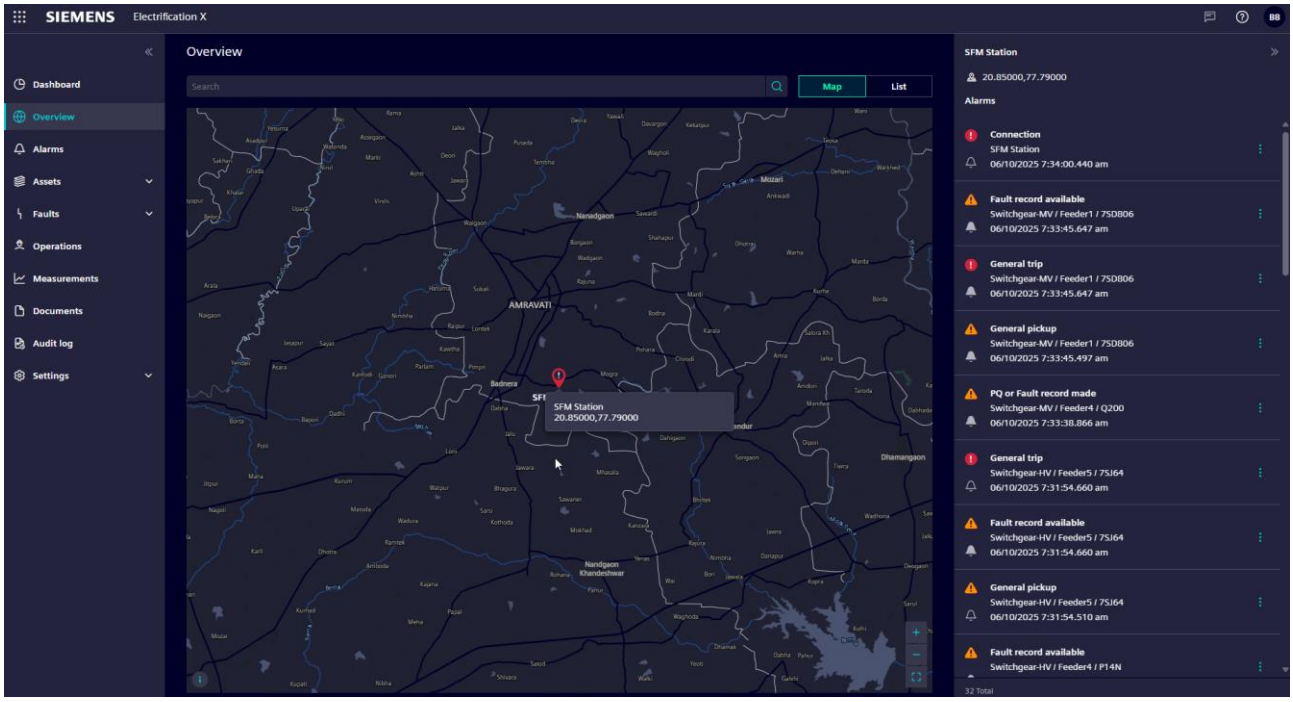
Unrestricted | © Siemens 2025

Feature: Substation Fault Management – Basic Asset Transparency of Protection Relay & Power Quality Devices, Protection Settings, Fault Localization including File Transfer

The Substation Fault Management feature allows you to check the operational status of your protection device and PQ device fleet. The fault analysis and notification processes are easy and convenient. The following views are provided as part of this application and are described in more detail below:

Fault Localization

Geographic view of fault localization and a color code showing the Transparency Index, alarms, and local time. Additionally, the latest unacknowledged alarms are shown in a list.



Electrification X – Network Fault Management: Map view on a Tablet

Unrestricted | © Siemens 2025

Basic Asset Transparency of Protection Relays and PQ Devices

The **PROTI5 App**, installed within the SICAM 8 Application, retrieves device-related information such as manufacturer details, device type, firmware versions, serial numbers, and product codes.

SIPROTEC 5 devices with any IEC 61850 on the integrated Ethernet port J or on an equipped Ethernet communication module, either in the base module (port E or port F) or for modular devices with communication extension module CB202 (port N or port P) can be used. PQ meters are connected to RJ45 port to retrieve above information.

Reyrolle 5 protection relay, through its integrated Ethernet interface, utilizes IEC 61850 protocol architecture retrieving Basic Asset Information.

PQ device, through its integrated Ethernet interface, utilizing IEC 61850 protocol architecture retrieving the Basic Asset Information.

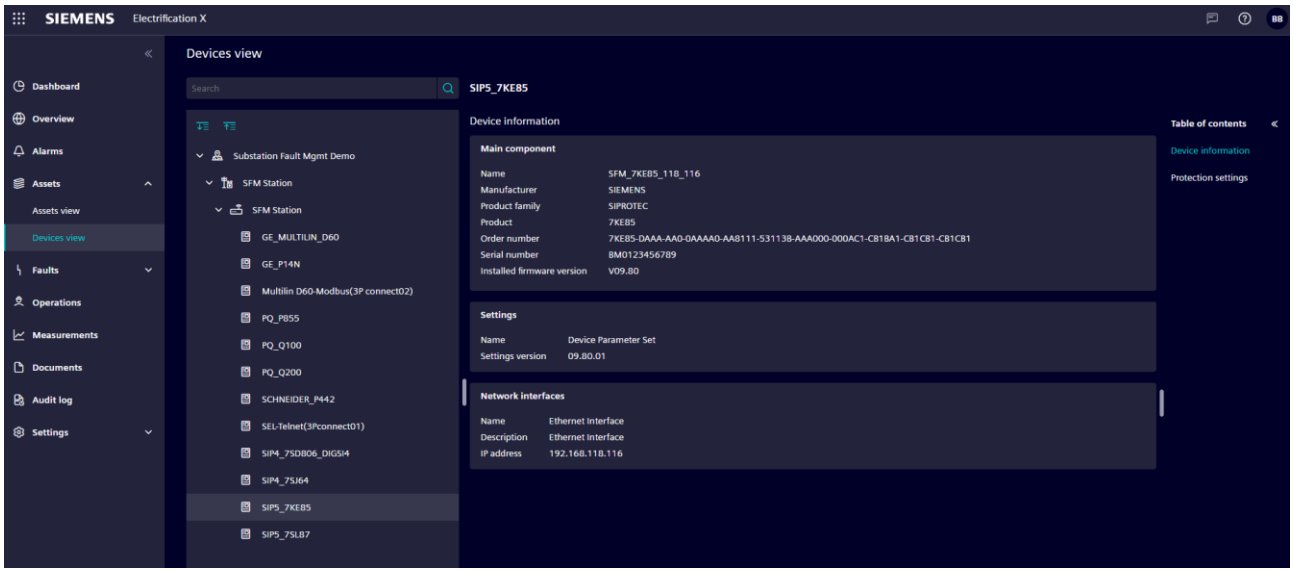
SIPROTEC 4 protection device, enhanced with EN100 communication module[*1], utilizes the IEC 61850 protocol to retrieve Basic Asset Information. The EN100 communication module supports the following versions: V04.26.01, V04.29.01, V04.33.01, and V04.40.01.

SIPROTEC 4 protection device, with DIGSI 4 interface (serial or Ethernet), utilizing **SIP4Client** installed in SICAM 8 application retrieves Basic Asset Information.

3rd Party Devices, PROTI5 App utilizing IEC61850 protocol retrieve Basic Asset Information from MiCOM (P14x, P44x), GE Multilin Series.

SEL protection device, with Telnet protocol (serial or Ethernet), utilizing **3PCONNECT01 installed** in SICAM 8 application retrieves Basic Asset Information.

[*1] Any other versions of EN100 communication module shall be discussed with the Product Team



Electrification X – Network Fault Mgmt (Substation Fault Management): Devices Transparency

Fault Records (COMTRADE Files), Visualization and Download

Electrification X shows a filterable list of all records in COMTRADE format from the grid. These records can be visualized and downloaded. These records come from protection relays and PQ devices which communicate over IEC 61850 protocol to the IoT Gateway. The **PROTI5** App installed in the SICAM 8 application, retrieves these records.

SIPROTEC 5 devices with any IEC 61850 on the integrated Ethernet port J or on an equipped Ethernet communication module, either in the base module (port E or port F) or for modular devices with communication extension module CB202 (port N or port P) can be used for retrieving the Fault records

Reyrolle 5 protection relay, through its integrated Ethernet interface, utilizes IEC 61850 protocol architecture retrieving the Fault records.

PQ device, through its integrated Ethernet interface, utilizing IEC 61850 protocol architecture retrieving the Waveform records, MCS records and Transient Records.

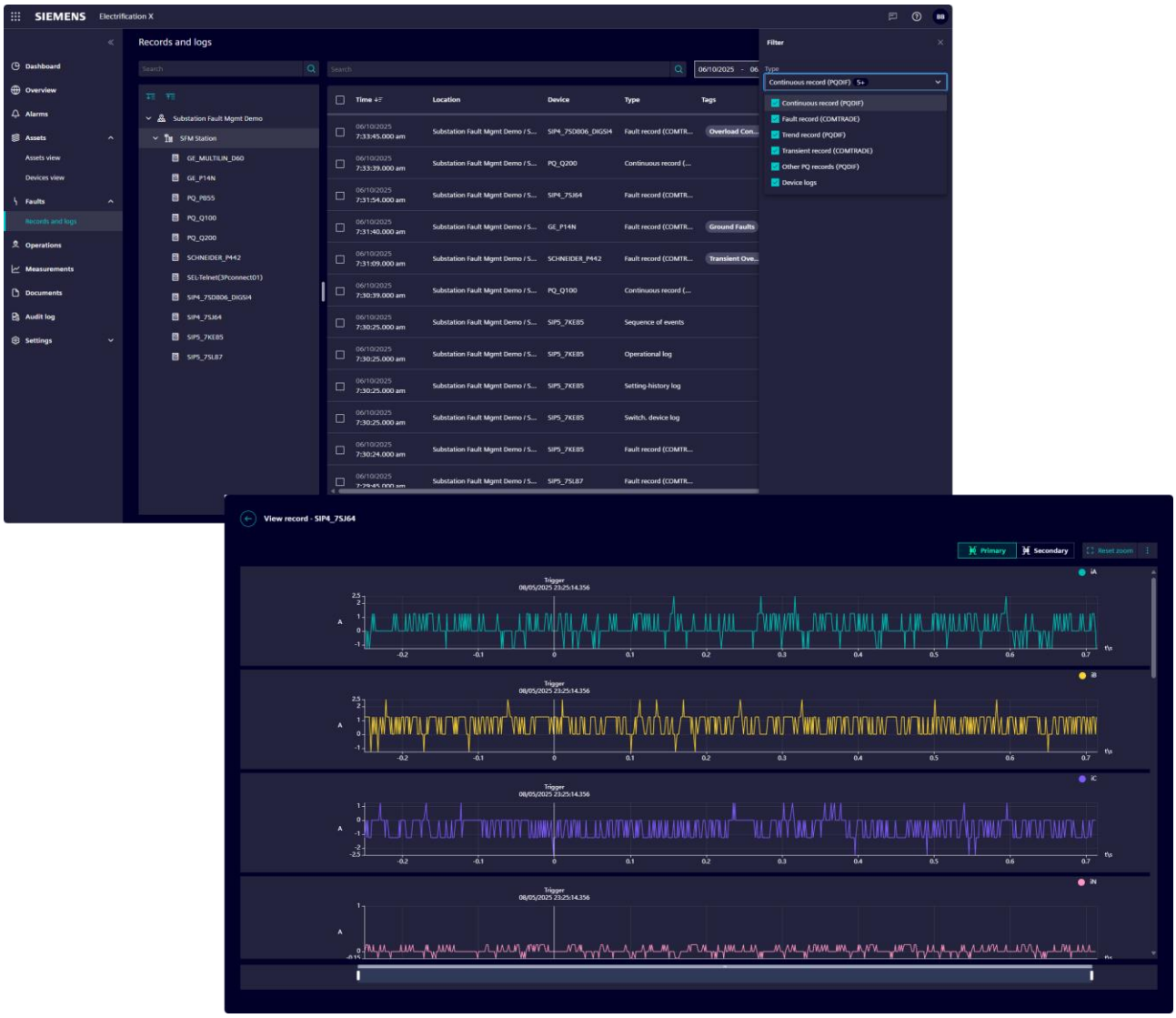
SIPROTEC 4 protection device, enhanced with EN100 communication module[*2], utilizing the IEC 61850 protocol to retrieve Fault Records. The EN100 communication module supports the following versions: V04.26.01, V04.29.01, V04.33.01, and V04.40.01.

SIPROTEC 4 protection device, with DIGSI 4 interface (serial or Ethernet), utilizing **SIP4Client** installed in SICAM 8 application, retrieve Fault Records. (COMTRADE - 1997).

3rd Party Devices, PROTI5 App utilizing IEC61850 protocol retrieve Fault Records from MiCOM (P14x, P44x), GE Multilin Series.

SEL protection device, with Telnet protocol (serial or Ethernet), utilizing **3PCONNECT01 installed** in SICAM 8 application retrieves Fault Records.

[*2] Any other versions of EN100 communication module shall be discussed with the Product Team



Electrification X – Network Fault Mgmt (Substation Fault Management): Fault Records Visualization and Lists

Fault Logs & Trip Logs (COMFEDE Files), Visualization and Download

The Log files show a filterable list of all available log files of the SIPROTEC 5 device with minimum firmware version V7. 90[*3] which is supported by IEC 61850 in the Ethernet module and port J of SIPROTEC 5. The available log file types like fault, ground-fault, operational, setting-history, user defined log are depending on the SIPROTEC 5 configuration and availability of the log file as COMFEDE format via IEC 61850. The PROTI5 App installed in the SICAM 8 application retrieves these files.

Electrification X – Network Fault Mgmt (Substation Fault Management): View of Fault Logs & Trip Logs

[*3] COMFEDE in SIPROTEC 5 is available from V07.90 for IEC61850.

Continuous Records (PQDIF File), Download

Fault Recorder 7KE85 and PQ device supports continuous recording of files. These files generate Trend records and Measurement records in PQDIF format. The PROTI5 App installed in the SICAM 8 application, retrieves these records. These devices should be connected to the ethernet interface and IEC 61850.

Unrestricted | © Siemens 2025

Records with Large File Size

Supporting the large files of up to 25MB with continuous records in terms of COMTRADE File and PQDIF file from Fault Recorder 7KE85 and PQ devices.

Aggregated Information of Fault

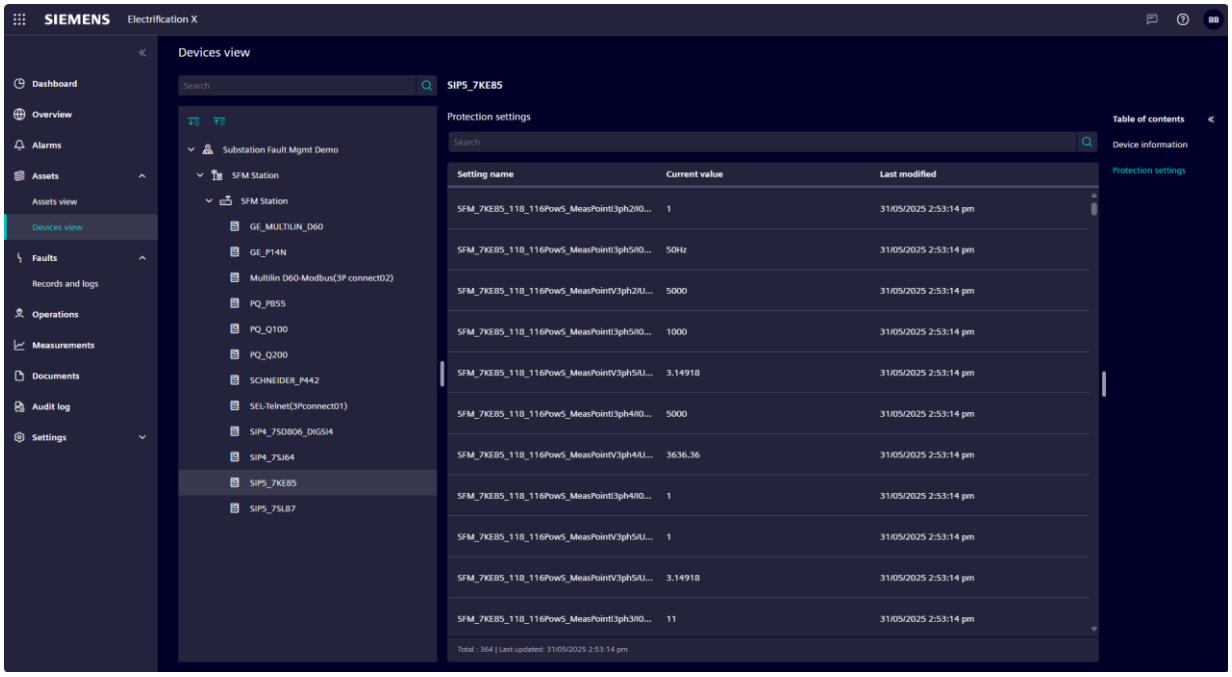
With the assistance of Related Information of Protection Trip events, users are directed to all fault information including fault records, logs, alarms of within +/- 10sec combined across AOR's level.

Electrification X – Network Fault Mgmt (Substation Fault Management): Aggregated information during fault

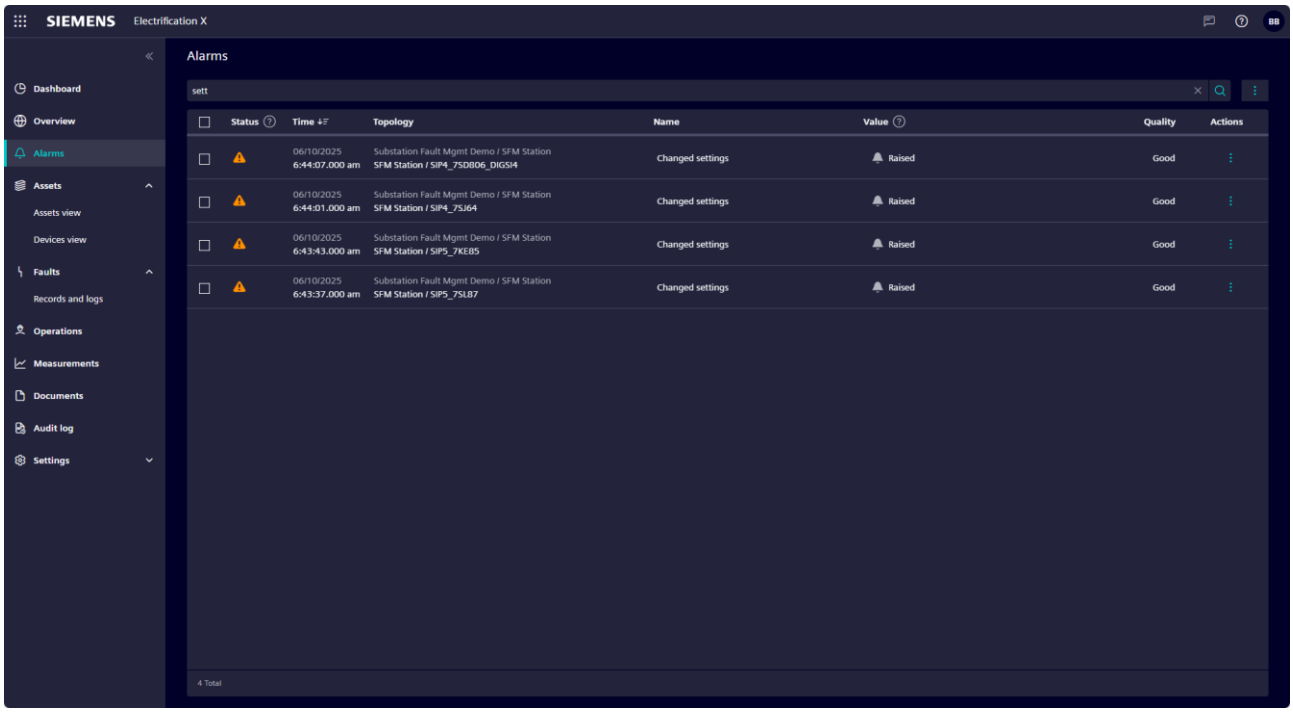
Protection Settings and Changes

PROTI5 App; fetch the current protection settings from the SIPROTEC 5 relays and display in tabular format of Device View. If user changes any settings, notification will appear as an event.

SIP4Client App; fetch the current protection settings from SIPROTEC 4 relays from DIGSI 4 port and display in tabular format of Device View. If user changes any settings, notification will appear as an event.



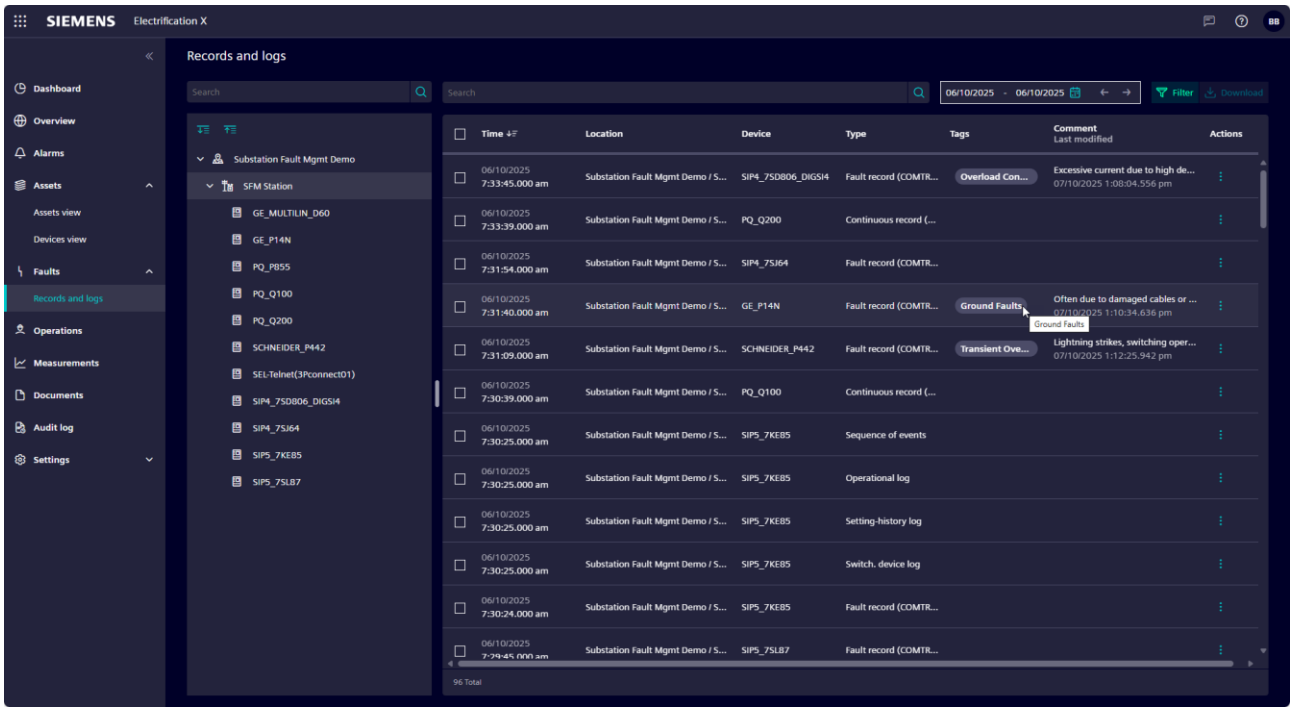
Electrification X – Network Fault Mgmt (Substation Fault Management): Protection Settings



Electrification X – Network Fault Mgmt (Substation Fault Management): Detection of any change in Protection Settings

Add Analysis to Files

Users can now add analysis/comments to fault records and PQDIF files, making it easy to trace analysis data for each file whenever needed. Analysis comments are editable, allowing users to update the analysis further. Adding and editing comments against records are tracked in the Audit log for transparency.



Electrification X – Network Fault Mgmt (Substation Fault Management): Add analysis to fault records

Additional Functions

- Historical feeder power consumption and asset utilization (based on rated capacity)
- List of feeders of the assets with individual alarm visualization and status
- Customizable SVG uploads for detailed substation Single Line Diagrams, enhancing operational visibility
- Advanced monitoring of individual feeders, presenting real-time operational data and component status for informed decision-making

Unrestricted | © Siemens 2025

Subscription

Standard Subscription Plan	Electrification X Network Fault Management
Functions	All
Subscription metric	Feature Substation Fault Management – Basic Asset Transparency of Protection Relay & Power Quality device, Protection Settings, Fault Localization including File Transfer per relay per month
Subscription term	Annually, auto-renewal
Billing term	Annually, payment in advance
Upscale	Effective immediately, pro-rated billing
Downscale/Cancellation	Effective with end of subscription term
Connected Devices	To be purchased separately
Permitted Users	Unlimited, Extended Use

The Substation Fault Management feature under Electrification X - Network Fault Management feature set subscription plan is the regular, scalable Offering for this Cloud Service. The subscription term is twelve (12) months with automatic renewal; the Cloud Service fee is paid in advance. The subscription plan can be upscaled at any time and Cloud Service fees for upscales are calculated on a pro-rated basis. The Customer can also scale down the Cloud Service effective with the end of the current subscription term. The subscription fee will be adjusted for the upcoming billing term. The Cloud Service can be cancelled any time, effective with the end of the current subscription term.

The subscription plan can be purchased in packages per charging station and per charger or feeder. The subscription plan assumes a charging station refers to one unique postal address or geo coordinates.

Extended Use entitles the Customer to authorize its Affiliates and third parties to access and use the Cloud Services in accordance with the rights set out in the Terms and Conditions.

Unrestricted | © Siemens 2025

Prerequisites

Electrification X Tenant	The Electrification feature set is operated on an Electrification X Tenant. Therefore, a tenant with an Electrification X Base Package is required. The Electrification X Base Package has a subscription term of 12 month and must be purchased together with the Substation Fault Management – Basic Asset Transparency of Protection Relay & Power Quality device, Protection Settings, Fault Localization including File Transfer per relay per month , if not otherwise already available and in operation
Supported Connected Devices	The Cloud Service is currently compatible with commercially available Connected Devices from Siemens. A description of the available Connected Devices is provided below. A Connected Device must be purchased and installed on premises at a site specified by the Customer as agreed between the Customer and Siemens to use the Cloud Service. The customer is responsible for installing the Connected Device at the site and any associated costs to perform said Cloud Service in accordance with related Documentation for the Connected Device. List of supported Connected Devices: **SICAM CP-8031/CP-8050.** For order information, Customer may contact its local sales representative.
Web browser and viewing devices	Chrome is recommended to use the Cloud Service, but other standard browsers might also serve this function. Screen resolution of 1920x1080 pixels or higher is recommended for best user experience
Internet Connection	The bandwidth of Customer's internet connection determines the performance of the Cloud Service.

Unrestricted | © Siemens 2025

Ordering

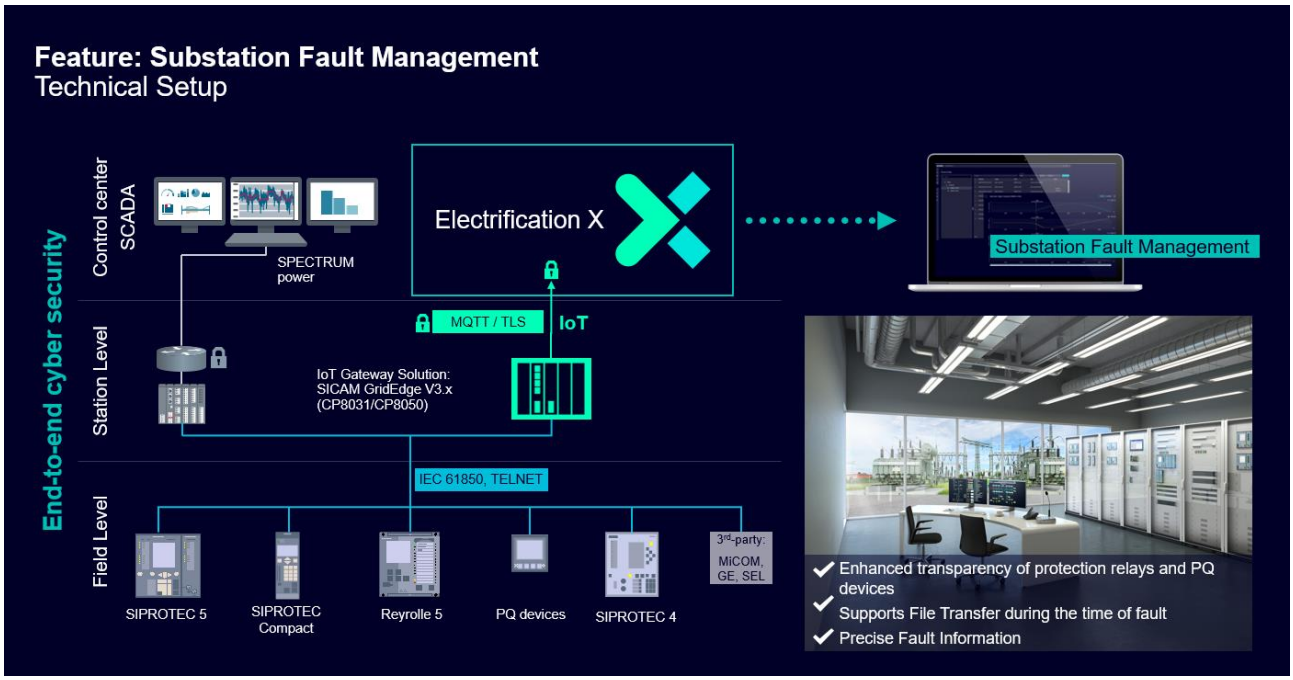
Ordering Process for the Subscription	To order the Cloud Service for the first time, Customer must request a quote from its Siemens sales representative. Depending on the offering either with Services, then customer will receive a link to his tenant, or without services, then the Customer will receive a link to the shopping cart. In this case Customer needs to (i) choose the payment options and (ii) accept the Terms and Conditions to start using the Cloud Service. The "Terms and Conditions" consist of the "Supplemental Terms Electrification & Automation", the Base Terms and the General Software and Cloud Supplemental Terms, the Acceptable Use Policy, the Siemens Data Processing Terms, this Product and Service Data Sheet and any other Supplemental Terms which may be referenced in either of the mentioned documents. Customer may upgrade, downgrade, and cancel the Cloud Services directly in the Subscription Manager store https://subscribe.siemens.com
Ordering Connected Devices	To order Connected Devices the Customer may request a quote from its Siemens sales representative
Connected Device	**SIEMENS: SICAM CP-8031/CP-8050**
Ordering	For order information, Customer may contact its local sales representative

Product Documentation

Technical Documents	Document ID	Document ID German	Document ID English
Building X – Accounts User Guide	A6V12050070		
Building X – Devices User Guide	A6V12050067		
Electrification X – Base Package Operating Manual		E50417-H7500-C200-A6	E50417-H7540-C200-A6
Electrification X – Engineering Guide		E50417-H7500-C203-A6	E50417-H7540-C203-A6
Electrification X – Network Fault Management Operating Manual		E50417-H7500-C202-A5	E50417-H7540-C202-A5
Electrification X – Security Manual		E50417-H7500-C204-A6	E50417-H7540-C204-A6

Technical Documents can be downloaded here:
https://support.industry.siemens.com/

Topology



Data communication between the Connected Devices on premise and the Cloud Service requires internet connectivity (to be provided by the Customer).

Customer Support

Siemens offers helpdesk support. Customer may contact its local Siemens representative for support requests.

Unrestricted | © Siemens 2025

Published by
Siemens AG

Smart Infrastructure
Electrification & Automation
Mozartstraße 31C
91052 Erlangen, Germany

For more information, please contact Customer Support:
siemens.com/energy-automation-support-contact

For the U.S. published by
Siemens Industry Inc.

3617 Parkway Lane
Peachtree Corners, GA 30092
United States

© Siemens AG 2025.
Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.