



PRODUCT SHEET

# Electrification X

## Power Resource Management

Bringing operational transparency and managing multiple industrial, PV and hybrid plants  
[siemens.com/electrificationx](https://www.siemens.com/electrificationx)

**SIEMENS**

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# Overview

Power Resource Management is a feature set that empowers industrial plants and other microgrid operators and renewable operators efficiently manage the operational status of their power resources. With visualization of the power resources in flexible dashboards, users can efficiently manage multiple microgrid and PV locations centrally. This feature set provides real-time insights and analytics, helping operators to promptly address issues, reduce downtime, cost savings and seamless scalability across multiple microgrid and PV locations.

## Benefits of Power Resource Management



Real-time monitoring of microgrids and PV plants from a single dashboard. Faster decision-making due to centralized data access and easy comparison of different power resources



Early detection of faults or anomalies across microgrids locations. Analyze load balance and energy distribution during peak load



Insights into energy consumption patterns across sites. Identification of inefficiencies and opportunities for cost reduction



Easily add or remove multiple plants in one homogenous system without any disruption

# Features

The feature set Electrification X Power Resource Management can be purchased on a modular subscription-based model composed by a minimum subscription package:

Electrification X Base Package (once per Electrification X tenant)

+

Power Resource Monitoring (once per MW of managed capacity)

and optional

Power Resource Control (once per location)

Electrification X Power Resource Management is designed to fit to customers' requirements and monitoring strategies.

# Feature

## Power Resource Monitoring

Power Resource Monitoring gives the visibility and operational transparency of power resources. The following views are provided as part of this feature and are described in more detail below.

### Location Plant

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

### Multi-Location Representation Dashboard

Displays power resources from multiple locations based on near real-time generation and consumption. Users can view the highest-generating assets for each resource type at the top, with others arranged chronologically.

### Location Dashboard

The location dashboard provides a unified interface for managing power resources in a location. It classifies both renewable and non-renewable energy sources. The dashboard visualizes the operating mode of the plant while connected to the grid. Real-time data show total power being supplied and consumed. A pie chart visualizes the mix of power sources including PV, battery energy storage, and generators. Load distribution is categorized into renewables, energy storage, and conventional sources.

The monitoring includes operation mode, capacity, and power flow direction. The power resources actively supplying or consuming energy are continuously updated.

It is designed to enhance operational transparency and decision-making across microgrids.

### Modes

- Control Mode: Auto or Manual
  - Auto → Startup priority decided by microgrid controller
  - Manual → Assets need to be started by the user
- Grid Connection Mode: Indicates whether the microgrid is connected or disconnected from the grid
- Operation Mode: Displays the microgrid operation mode
  - Economical
  - Green
  - Reliable

**Power Source Insights**

- Sum of on-premise generation
- Power Resource Mix: Contribution of different energy resources for microgrid location
- Power Monitoring Widget: Shows the status of each asset and how multiple resources contribute to power exchange
- Electrical Load Distribution: Indicates which energy resource contributes to load consumption

**Weather Information**

This feature set integrates Weather X service to get the weather data for any geo location. It supports day ahead forecasting of global horizontal irradiance with resolution of 15 minutes and near real time weather data.

**Irradiance Comparison**

The widget compares the present solar irradiance with the forecasted irradiance at the specified location. Users can identify forecast deviations and correlate them with cloud-cover data for validation.

**Power Output correlation**

The widget correlates the active power and solar irradiance at the specified location. This feature enables users to assess whether the plant's output is consistent with irradiance variation.

**Power exchange comparison**

The widget compares the PV plant output against the sum of output of all inverters. This feature enables users to quickly identify and assess losses occurring in the PV plant-

**Dashboard PV Plant**

The PV Plant dashboard for monitoring power resources within a microgrid – or only for a PV plant – offers a structured view of PV plants. The dashboard highlights which components are currently online and actively contributing to the microgrid. It gives users the input about which control settings (set points) are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power participation are visualized, depicting how much a PV plant can contribute on top of present consumption in the microgrid. Real-time power metrics show how much power is generated. The circuit breaker position shows whether the plant is in active operation. Displays of each central inverter or data concentrator of each string are also visualized. The layout is designed to support quick decision-making and operational transparency.

- **PV Power Deviation**  
The widget compares the present PV plant output with the forecasted plant output at the specified location. PV plant output measured in Active Power. This enables users to detect PV generation deviations from forecasts and schedule maintenance activities based on the associated alarms.
- **PV Forecast**  
The feature set integrates Forecasting X , which is a service that delivers high-accuracy forecasts for PV generation.  
Forecasting X predicts the active power (typically, in kilowatts) generated by photovoltaic (PV) panels.  
An essential component of PV forecasting involves the incorporation of external covariates such as global horizontal irradiance (GHI) forecasts, which are crucial for predicting accurate PV generation.  
The feature set supports day ahead PV generation forecasting with a resolution of 15 minutes.
- **Power Forecast vs Actual**  
The widget shows PV generation forecasting. It offers day-ahead PV generation insights in 15 minute interval both in terms of power and energy., empowering operators to plan and operate with confidence. User can download the forecast as a .csv, .png and .jpeg file.

### **Dashboard Battery Energy Storage System**

The Battery Energy Storage System (BESS) dashboard for monitoring power resources within a microgrid offers a structured view of BESS plants. The interface highlights which components are currently online and actively contributing to the microgrid. It gives users information about which control settings (set points) are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power participation are clearly defined, supporting how much maximum the BESS can contribute on top of present consumption. Real-time power metrics show how much power is being supplied and consumed by the BESS. The system status is reinforced by displaying the circuit breaker being in the "On" position, indicating active operation. The layout is designed to support quick decision-making and operational transparency.

### **Dashboard Generator**

The Generators dashboard, especially diesel generator, for monitoring power resources within a microgrid or hybrid energy system. It offers a structured view of diesel generators. The interface highlights which components are currently online and actively contributing to the system. It gives users the information which control settings are configured for automated operation, ensuring efficient and balanced energy flow. Set points for active and reactive power are clearly defined, supporting how much maximum it can contribute on top of present consumption. Real-time power metrics show how much power is generated. Additionally, the breaker position is shown.

### Dashboard Point of Common Coupling (PCC)

This is the exchange point of the microgrid with the power grid and measures whether power is consumed from the grid or individual PV plant or exported into the grid. Key parameters are voltage, current, frequency and power factor. The power exchange with the grid shows the direction of power flow for efficient and balanced energy.

### Grid Performance

The widget represents correlation between Reactive Power and Voltage. Users can evaluate plant performance and system stability.

### Dashboard Load

The dashboard gives insights into operational transparency for each measured load within the microgrid.

### Analyze Measurement without Grid

The Analyze Measurements visualize endless values of microgrid assets. It helps operators to reduce demand charges. If grid import power is for example more than 500KW, then EX raises an alarm. You can find this in the alarm list. Every single asset or asset combination in the microgrid can be tracked by this measurements feature. P\_Total for example shows all internal microgrid assets like: PV, BESS, Gensets, Loads but not with Grid connection.

### Analyze Measurement with Grid

The comparison between P\_Total and P at PCC highlights how internal resource utilization versus grid dependency affects peak demand. Higher peaks at PCC lead to increased demand charges, emphasizing the importance of optimizing microgrid resources (PV, DG, Battery) to minimize costs.

### Limit Supervision for PCC with Utility

Electrification X allows the user to conveniently configure the operational set points for active power control and reactive power control remotely for each individual microgrid. These set points are submitted to the control devices onsite.

Additional functions for monitoring individual customer requirements possible like:

- Historical 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

# Feature

## Power Resource Operations

### Active and Reactive Power Control

Electrification X allows the user to conveniently configure the operational set points for active power control and reactive power control remotely for each individual microgrid or only for PV plant. These set points are submitted to the control devices onsite.

#### Location: Microgrid

Active Power Controls are P control

Peak shaving control

Reactive power controls are Q control

Power factor control ( $\cos \varphi$ )

#### Location: PV plant

Active Power Controls are P control

MPPT control

Reactive power controls are Q control

Power factor control ( $\cos \varphi$ )

Power factor control ( $\tan \varphi$ )

# Subscription

Standard subscription plan	Electrification X - Power Resource Management
Functions	All
Subscription metric	<ul style="list-style-type: none"> <li>Feature Power Resource Monitoring: per MW per month</li> <li>Feature Power Resource Operations: per location per month</li> </ul>
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 Power Resource Management feature set under Electrification X 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 effectively 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, effectively with the end of the current subscription term.

The subscription plan can be purchased in packages per MW managed capacity for Power Resource Monitoring and per location for Power Resource Operations.

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.

# 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 Power Resource Management – Monitoring per MW and Power Resource Management – Operations per location 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

Google Chrome and Microsoft Edge browsers have been tested and are recommended to be used to access the cloud service. Other modern standard web browsers will likely be compatible. A screen resolution of 1920 x 1080 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.

# 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 A8000 CP-8031/CP-8050

## Ordering

For order information, customer may contact its local sales representative.

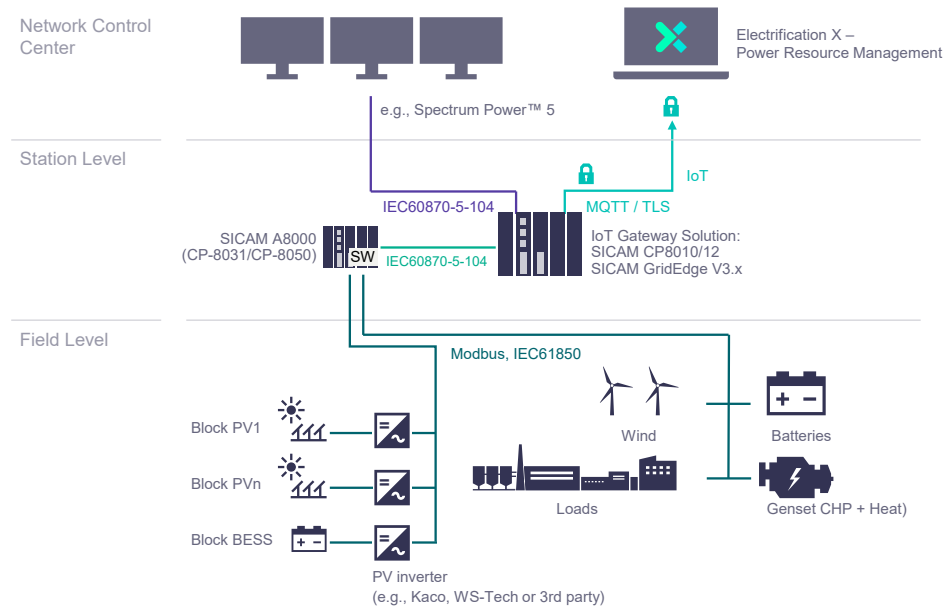
# Product documentation

Technical documents	Document ID	Document ID German	Document ID English
Building X – Accounts User Guide	A6V12050070		
Building X – Devices User Guide	A6V12050067		
Building X – Data Setup User Guide	A6V12481797		
Building X – Connect X200/300 Installation Guide	A6V13057554		
Building X – Connect Hub User Guide	A6V13471544		
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 – Power Resource Manage- ment Operating Manual		E50417-H7500-C212-A1	E50417-H7540-C212-A1
Electrification X – Security Manual		E50417-H7500-C204-A6	E50417-H7540-C204-A6

[↗ Technical documents can be downloaded here](#)

# Topology

## End-to-end cybersecurity



Data communication between the connected devices on premise and the cloud service requires internet connectivity (to be provided by the customer)

## Key benefits



Precise monitoring of all renewable resources



Instant, easy, remote access to any location any time



Insights into the power grid's utilization, the load of critical grid components



Control setpoints for Active Power and Reactive Power, and circuit breaker operations for loads

# Customer support

Siemens offers helpdesk support.

Customer may contact its local Siemens representative for support requests.

<https://isp.portal.siemens.com/>

Email: [support.ea.si@siemens.com](mailto:support.ea.si@siemens.com)

Germany / Austria / United Kingdom Phone: +49 9131 1743072

China Phone: +86 400 150 6060

Brazil Phone: +55 0800 011 9484

India Phone: +91 1 800 266 7480

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