



Load management for EV charging

EcoStruxure™ EV Charging Expert



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EcoStruxure™ EV Charging Expert

Monitor, control, and maximize EV charging capacity based on the power availability, peak demand, and tariffs.

Installing charging stations in an existing electrical distribution installation can have a significant impact on cost, efficiency, and service continuity. The additional power required by electrical vehicles could significantly increase the electrical bill.

Furthermore, increasing peak demand can lead to potential discontinuity in the building's load supply by exceeding the maximum power allowed by electrical distribution protection.

EcoStruxure™ EV Charging Expert helps building owners avoid extra costs, optimize their EV infrastructure efficiency, and enhance the service continuity by adapting to each building's energy contract and power constraints.



EcoStruxure EV Charging Expert is a Solar Impulse Efficient solution.



[Find out more](#)

EcoStruxure EV Charging Expert

EV Charging Expert is the ideal solution for fleets, company cars, car parks, and commercial, industrial, and residential buildings to enjoy enhanced EV charging services.



Optimal comfort and charging for EV drivers in residential buildings



Scalable solution for car parks and tertiary sites



Supports the transition to EV fleets without compromising business continuity



Key benefits



Peace of mind

Maximize continuity of service while providing fair and controlled EV charging services.



Cost effective

Minimum infrastructure upgrade are required and on-peak/off-peak tariff functionality can be set.



Scalable offer

Adapt to evolving EV charging needs by simply upgrading your initial license to a higher number of charging stations or adding optional features¹.



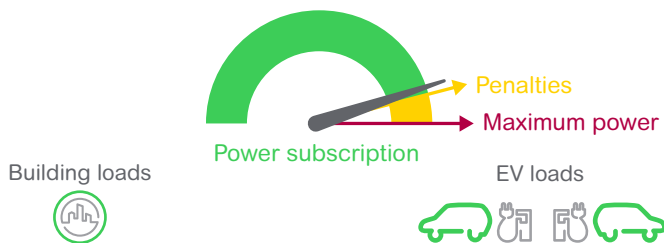
Local or connected offer

This open solution is compatible with Charging Point Operator supervision systems. It can also be integrated with a BMS or used for local supervision of the EV infrastructure.

¹. See details on page 8.

How it works

EcoStruxure EV Charging Expert limits the impact of EV charging infrastructure implementation on the electrical installation by using static or dynamic energy management principles.



No black-out

No penalties

Same subscription



Two possible energy management modes: static or dynamic

Static load management

The maximum power value is equal to the subscribed demand or any fixed value. EV Charging Expert dynamically distributes the energy below that fixed value among the chargers based on energy demand and defined system settings.

+ Minimum energy level is guaranteed for EV

- Not optimized: unused available energy

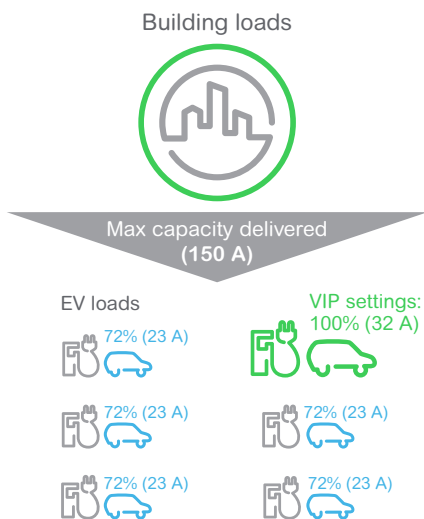
Dynamic load management

The remaining energy at the building is allocated to EV infrastructure in real time based on energy demand and defined system settings.

+ Optimized energy allocation

- Low available energy for EV when the building's usual loads are high

Load reduction and load shedding



Load reduction enables optimal EV charging for the entire EV infrastructure with equal percentage or priority charging (VIP feature).

When load shedding is triggered (meaning there is not enough power to continue all charging sessions simultaneously), energy distribution is based on:

The amount of energy already consumed

The system pauses charging for vehicles that have obtained the highest amount of kWh favoring recently arrived vehicles.

The connection time

The system pauses charging for vehicles that have been charged the longest, favoring the most recent arrivals.

In both cases, the system rechecks and updates the situation every 15 minutes.

EcoStruxure EV Charging Expert



Characteristics

- PLC type: Harmony iPC IIoT Edge Box Core
- Operating system: Linux Yocto
- Supply voltage: 12 – 24 V DC
- Inrush current: 0.43 A
- Consumption: 16 W
- Dimensions: 150 x 46 x 157 mm
- Protection class: IP40
- Standards/directives:
 - 2014/30/EU (electromagnetic compatibility)
 - 2014/35/EU (low voltage directive)
 - Class A EN 55022 (electromagnetic compatibility, conducted and radiated emissions)
- Connections: 2 x USB 2.0, 1 x HDMI, 2 x Ethernet (10/100/1000 Mb/s), 1 x COM RS-232 (default), RS-232/422/485 (non-isolated), 1 ground
- Connection: 1 x GPIO, 1 power supply connector 24 V DC

Connection to the charging stations

- Directly to the Ethernet LAN via a switch

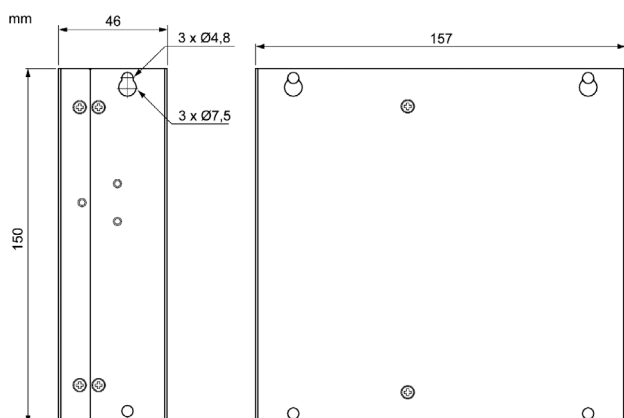
External network connection

- Directly to the Ethernet LAN or remotely via external 3G or 4G modem
- Communication under OCPP 1.6 JSON

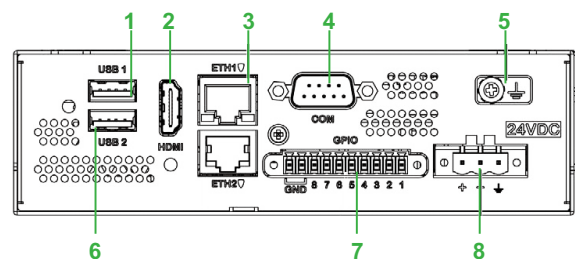
Functions

- Calculates the power allocated to the charging stations
- Centralization and availability of data for each charging station

Dimensions



Rear view



- 1 - USB1 (USB 2.0)
- 2 - HDMI port
- 3 - ETH1 (10/100/1000 Mbits/s)
- 4 - COM port RS-232/422/485

- 5 - Ground connection pin
- 6 - USB2 (USB 2.0)
- 7 - GPIO
- 8 - DC power connector

An intuitive user interface to monitor the EV infrastructure

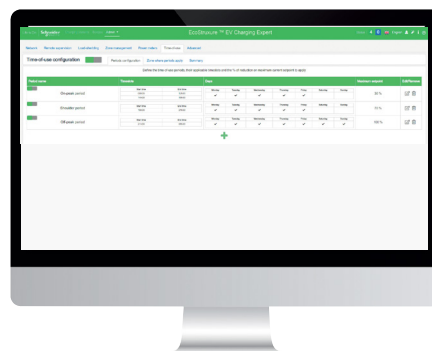
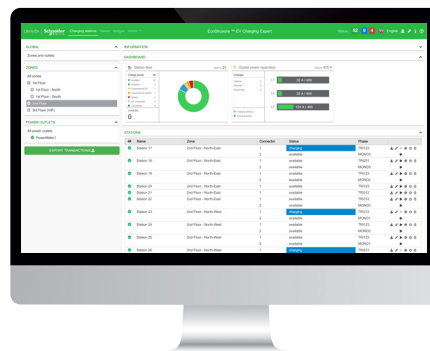


The monitoring is local with no cloud subscription required.

EcoStruxure EV Charging Expert centralizes the data from all chargers with an intuitive and ergonomic user interface (web server) to:

- Visualize real-time status of each charger
- Reset or reboot a charging station
- Remote start/stop a charging session
- Manage badges (local addition, import, export) and user rights
- Monitor and download transactions history per charging station by badge or aggregated for the infrastructure
- Consult, download, and export maintenance data
- Connect to one or multiple remote supervisions
- Set parameters: Add/remove chargers, update and change their configuration
- Save and restore commissioned configuration
- With an administrator profile, access and modify all system settings

Utilize a holistic view of charging stations, status, and transactions. Control each independently with the dashboard.



Automatically optimize power allocation by decreasing charge during peak hours and increasing during low tariff periods.

Make the most of EcoStruxure EV Charging Expert.



Easy installation, commissioning, and maintenance

- Configuration assistant that guides the installer through the different steps to configure the system
- Automatic scan and configuration of charging stations
- Easy firmware updates, with notifications and firmware releases on se.com
- Register and download maintenance log records
- Save, restore, and export configuration



Flexible, simple, cost-effective solution

- Intuitive operation dashboard to manage the entire installation
- Compatible with the open protocol OCPP 1.6 JSON, facilitating integration as a proxy for one or multiple CPO backend supervision on one site



Multiple functionalities for efficient operation

- Facilitate integration with one or multiple CPO back end supervision with open protocol OCPP 1.6 JSON

Adapted to building needs:



Commercial and industrial building functionalities

- Manages 5 to 100 charging stations
- Upgradeable from one license to another to adapt to evolving EV charging needs
- Manage user badges locally without a supervision system
- Load shedding for VIP user badges and charging stations during emergency
- Register and download of EV charging transactions for analytics, cost allocation, or invoicing
- Integration capabilities via API to Building Energy Management System (BEMS)¹
- PV production integration into the total available power



Tailored for residential buildings application

- Manages 1 to 30 charging stations

1. May require specific development.

EcoStruxure EV Charging Expert commercial references

CORE references per application and number of charging stations

Application	Residential buildings	Commercial and industrial	Commercial and industrial	Commercial and industrial	Commercial and industrial
EcoStruxure EV Charging Expert references	HMIBSCEA53D1EM30 ¹	HMIBSCEA53D1EDB	HMIBSCEA53D1EDS	HMIBSCEA53D1EDM	HMIBSCEA53D1EDL
Schneider Electric charging station compatibility	Schneider Charge Pro	EVlink Pro AC EVlink Pro DC 60 EVlink Pro DC 180	EVlink Pro AC EVlink Pro DC 60 EVlink Pro DC 180	EVlink Pro AC EVlink Pro DC 60 EVlink Pro DC 180	EVlink Pro AC EVlink Pro DC 60 EVlink Pro DC 180
Max number of charging stations	30	5	15	50	100
Max number of zones	5	20	20	20	20
Max number of zones levels	3	4	4	4	4
Dynamic load management	✓	✓	✓	✓	✓
Reduce zone setpoint via time of use table	✓	✓	✓	✓	✓
Reduce zone setpoint via digital input	✓	✓	✓	✓	✓
PV production integration	Via license upgrade	✓	✓	✓	✓
API for integration in BEMS (Building Energy Management System)		✓	✓	✓	✓
Service and access to transaction logs via authentication with RFID badges	Via license upgrade	✓	✓	✓	✓
Charging prioritization (VIP service) for selected badges and/or EV chargers	Via license upgrade	✓	✓	✓	✓
Upgrade of charging station capacity ²		Via license upgrade	Via license upgrade	Via license upgrade	Via license upgrade

1 This table applies to EcoStruxure EV Charging Expert version 6.3 and later.

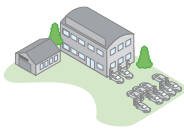
2 To upgrade from a current commercial reference to a upper-level one, consult the UPGRADES Software references below.

UPGRADE references

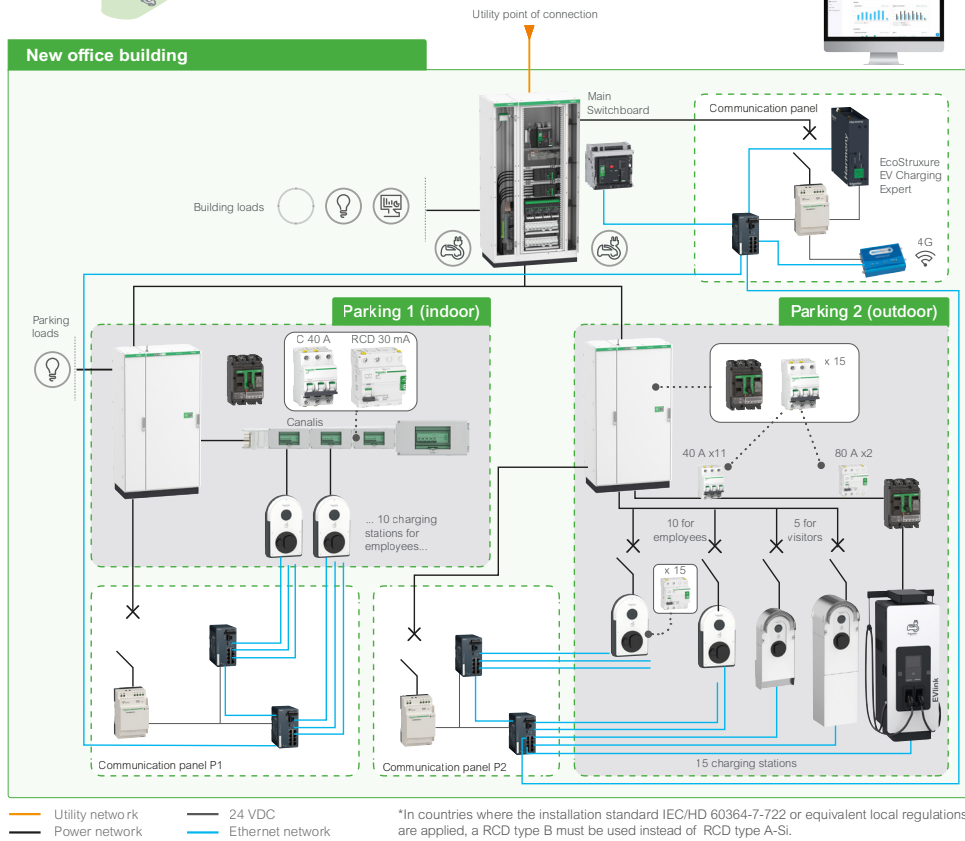
Upgrade from core offer to advanced levels if the number of charging stations increases.

Reference	Description
EVLMSedb2EDS	Upgrade EV Charging Expert dynamic from 5 to 15 charging stations
EVLMSedb2EDM	Upgrade EV Charging Expert dynamic from 5 to 50 charging stations
EVLMSedb2EDL	Upgrade EV Charging Expert dynamic from 5 to 100 charging stations
EVLMSeds2EDM	Upgrade EV Charging Expert 15 CS from static to dynamic
EVLMSess2ESM	Upgrade EV Charging Expert dynamic from 15 to 50 charging stations
EVLMSeds2EDL	Upgrade EV Charging Expert dynamic from 15 to 100 charging stations
EVLMSedm2EDL	Upgrade EV Charging Expert dynamic from 50 to 100 charging stations

Reference architectures



EV charging infrastructure for commercial and industrial buildings



EcoStruxure EV Charging Expert

Performs data acquisition and runs algorithms to control total demand and power allocation.



Modem 3G/4G

To connect to remote OCPP monitoring or access the operation dashboard

Modicon managed and unmanaged switches

The Modicon Networking range offers you a smart and flexible way to integrate Ethernet solutions into your operation, from the device level to the control network and your corporate network.

Unmanaged switch for star topology



4 or 8 ports for copper

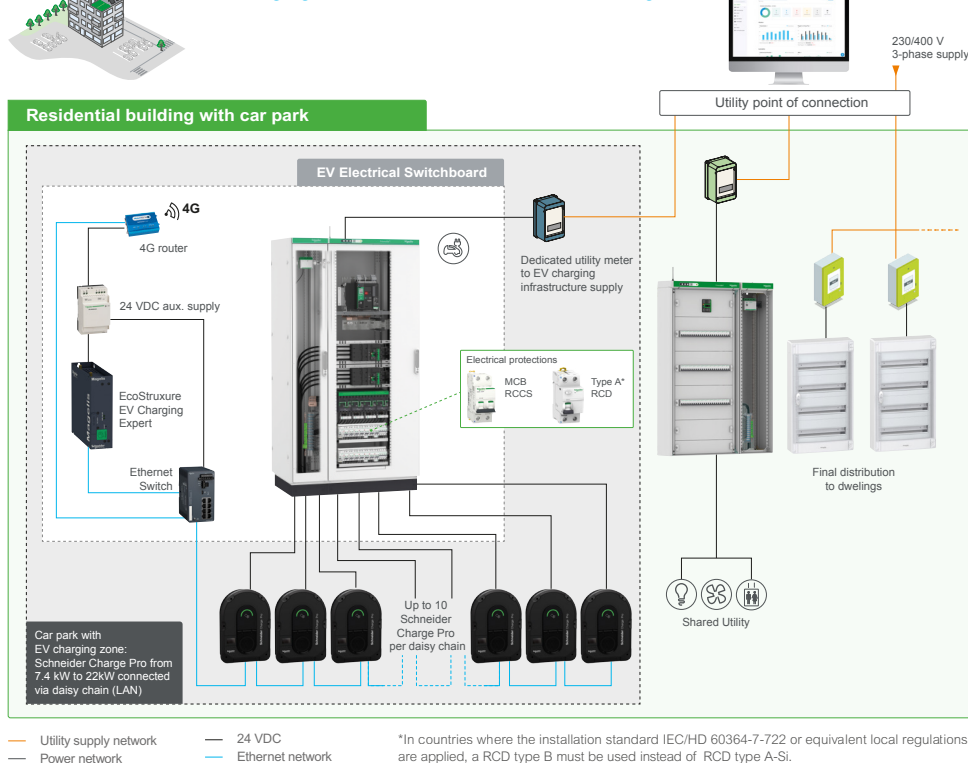
Managed switch for ring and daisy chain topologies



4 or 8 ports for copper



EV charging infrastructure for residential buildings



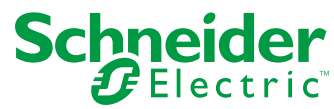
Power meter

Real-time measurement of total building consumption to dynamically communicate the energy available.

Schneider Electric meter compatibility and communication specifications

- IEM 3x5x – MODBUS RTU/TCP
- PM5320 – MODBUS RTU/TCP
- PowerTag (via SmartLink) Zigbee to MODBUS Top
- ComPact NSX – MODBUS TCP
- MasterPact MTZ – MODBUS TCP

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