



# Load management for EV charging

EcoStruxure™ EV Charging Expert



[se.com/ecostruxure-ev-charging-expert](https://se.com/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

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



EcoStruxure EV Charging Expert is a Solar Impulse Efficient solution.



[Find out more](#)



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.



### Simple offer

Now offered as a single reference, our solution comes fully equipped with all features and supports up to 250 charge points. Easily scale your infrastructure by adding EV chargers as your needs evolve.

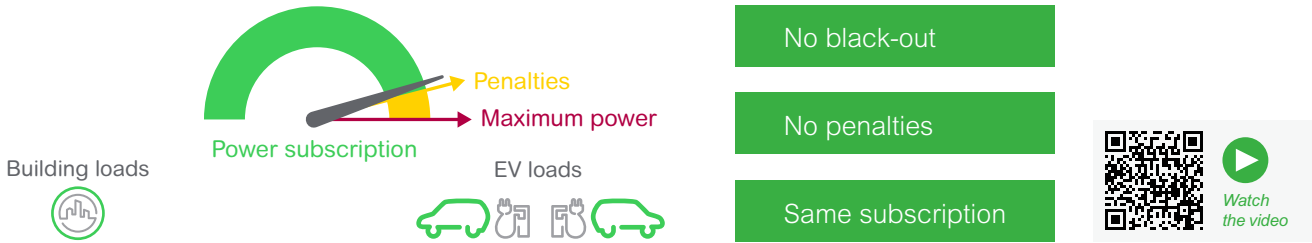


### Local or connected offer

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.

# 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.



## 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 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

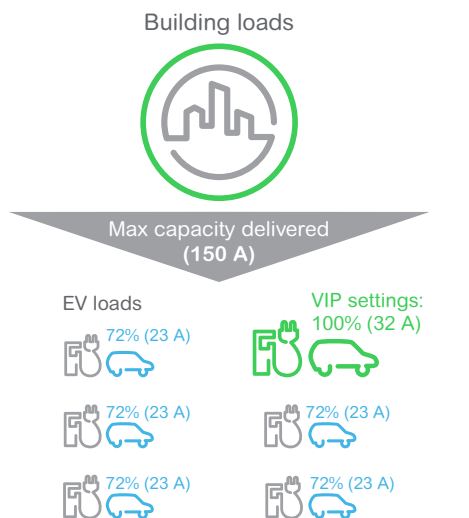
### Dynamic load management

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

## Manage the available energy with, load reduction, load shedding, and the integration of PV production



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.

### Taking into account the PV production

For enabling higher charging capacity, EVCE can add the PV production to the power allocation for charge the vehicles.

# EcoStruxure EV Charging Expert



## Characteristics

- PLC type: Essential Edge Controller, Harmony BX1
- Operating system: Linux Yocto
- Supply voltage: 12 – 24 V DC
- Inrush current: 6 A
- Consumption: 24 W
- Dimensions: HxDxW:141x48x99 mm
- Protection class: IP20
- Standards/Directives:
  - Directive 2014/30/EU (EMC)
  - Directive 2014/35/EU (Low Voltage)
  - EN 55011
  - IEC 61000-6-1
- Connections: 2x Ethernet ports (10/100/1000 Mb/s), 2x USB 3.0, 2x CAN, 2x RS-232/422/485, HDMI (deactivated), Power connector (12-24 V DC)

## Connection to the charging stations

- Directly to the Ethernet LAN via an external switch
- Compliant with the latest cybersecurity recommendations

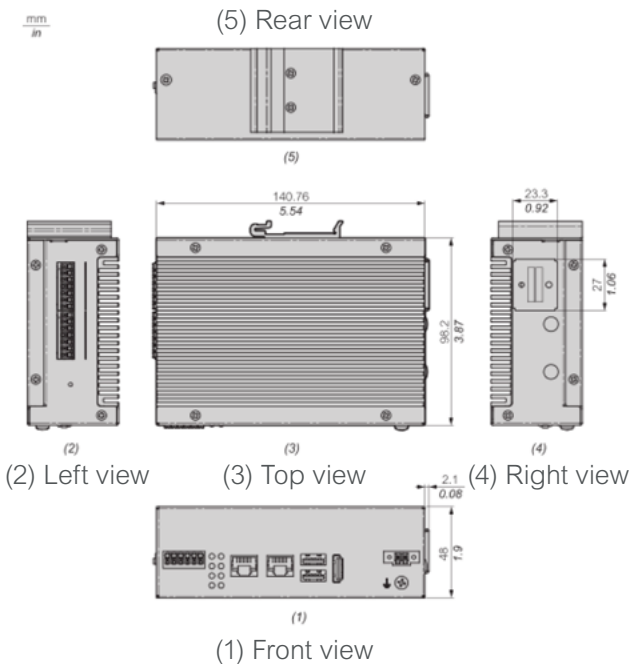
## External network integration

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

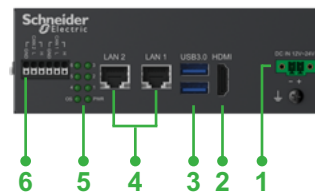
## Device main functions

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

## Dimensions

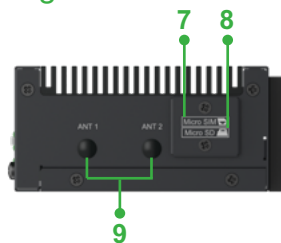


## Front view



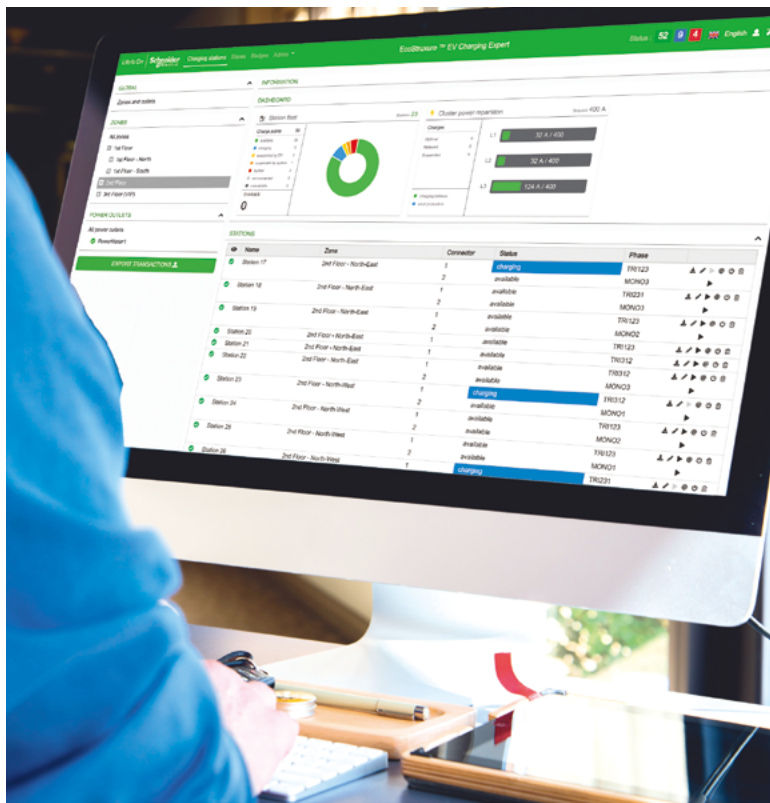
1. DC power connector
2. HDMI port (deactivated\*)
3. USB 3.0
4. LAN ports (10/100/1000 Mb/s)
5. LEDs
6. CAN ports

## Right view



7. SIM Card slot
8. SD Card slot
9. External Antenna slot (not available)

# An intuitive user interface to monitor the EV infrastructure

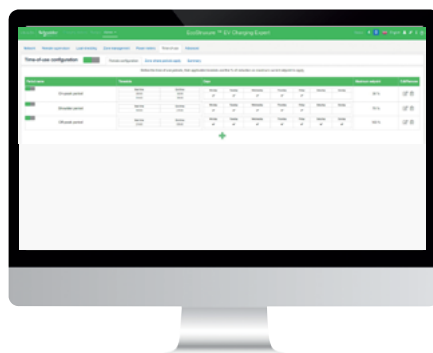
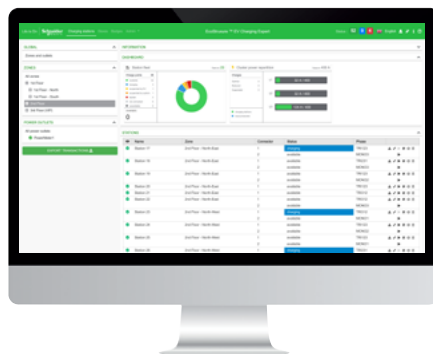


The monitoring is local with no cloud subscription required.

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 for all building types:



## Whether for residential, commercial, industrial buildings, or fleet operations, EcoStruxure EV Charging Expert adapts seamlessly to all use cases:

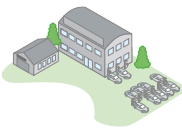
- Supports up to 250 charging stations. Simultaneously manages Schneider Charge Pro, EVlink Pro AC, and EVlink Pro DC ranges
- Dynamically allocate the optimal power to each charger to maximize energy usage
- Enables local badge management without a supervision system, including VIP badge handling
- Offers API integration with Building Energy Management Systems (BEMS)<sup>1</sup>
- Integrates photovoltaic (PV) production into total available power management

1. May require specific development.

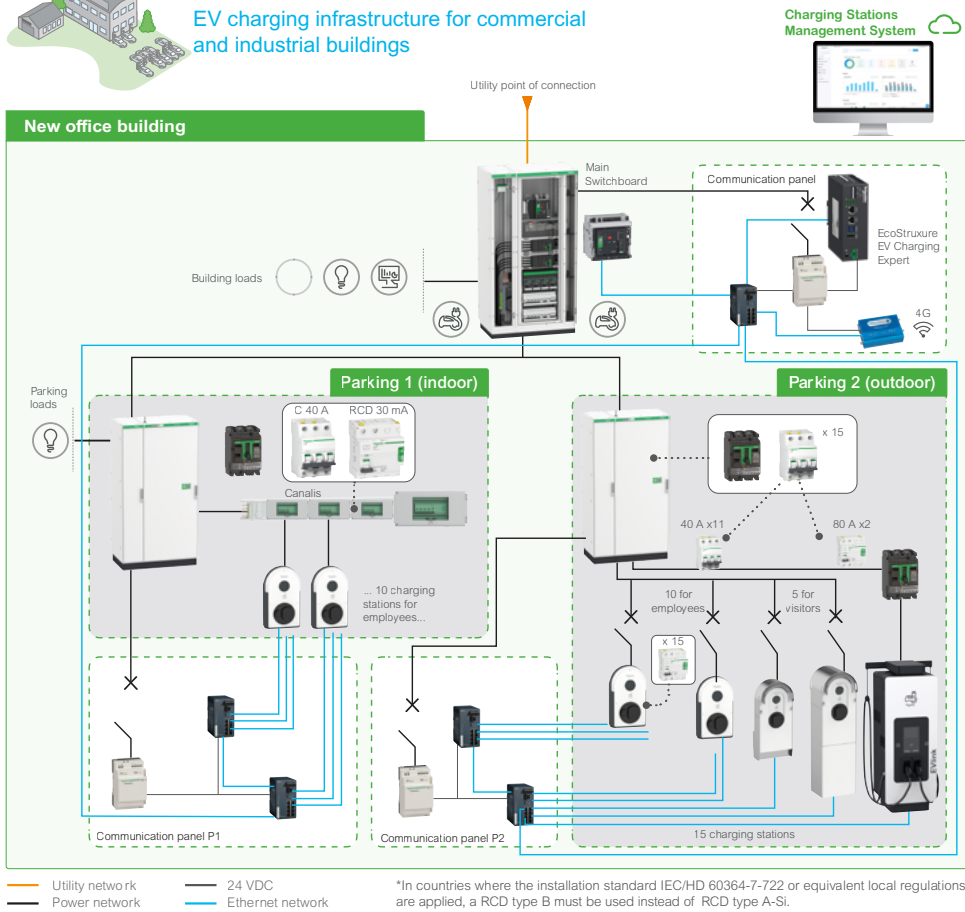
# EcoStruxure EV Charging Expert commercial references

Application	Fleets, Residential, commercial and industrial building
EcoStruxure EV Charging Expert references	HMIBX1A0NEVB100SCP
Schneider Electric charging station compatibility	Schneider Charge Pro EVlink Pro AC EVlink Pro DC DC StarCharge Fast EV Link Smart WallBox 24kW DC Chargers EVlink Parking EVlink City
Max number of charging stations	250
Max number of zones	20
Max number of zones levels	4
Dynamic load management	✓
Reduce zone setpoint via time of use table	✓
PV production integration	✓
API for integration in BEMS (Building Energy Management System)	✓
Service and access to transaction logs via authentication with RFID badges	✓
Charging prioritization (VIP service) for selected badges and/or EV chargers	✓

# Reference architectures



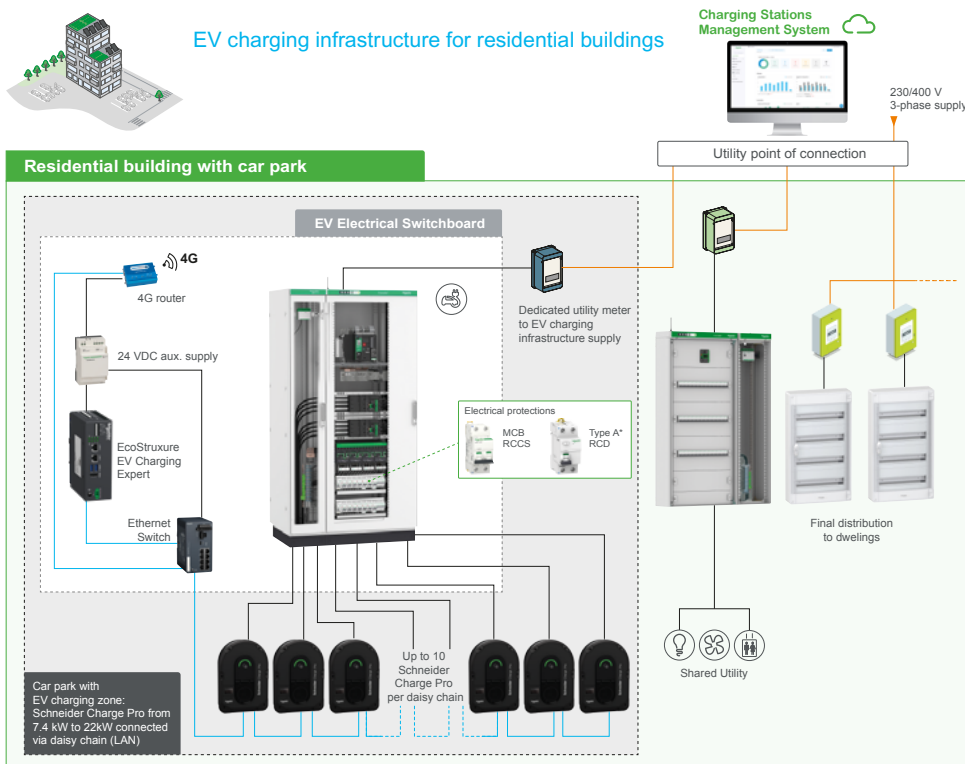
## EV charging infrastructure for commercial and industrial buildings



— Utility network    — Power network    — Ethernet network    — 24 VDC  
 \*In countries where the installation standard IEC/HD 60364-7-722 or equivalent local regulations are applied, a RCD type B must be used instead of RCD type A-Si.



## EV charging infrastructure for residential buildings



— Utility supply network    — Power network    — Ethernet network    — 24 VDC  
 \*In countries where the installation standard IEC/HD 60364-7-722 or equivalent local regulations are applied, a RCD type B must be used instead of RCD type A-Si.



### 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



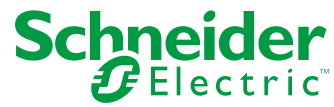
### Power meter

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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