

EcoStruxure™ EV Charging Expert



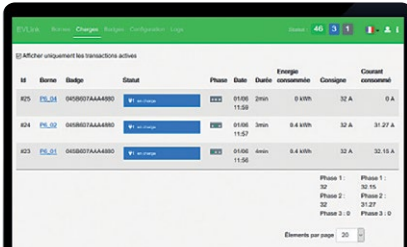
EcoStruxure EV Charging Expert



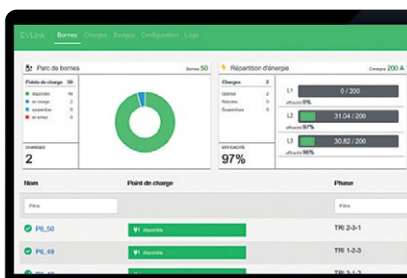
EV Charging Expert has been awarded with the prestigious "Solar Impulse Efficient Solution" label.



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Charging history of electric vehicles



Current charging sessions

EcoStruxure EV Charging Expert allows EV charging to be monitored, controlled and maximized based on the real-time available power in the building.

It helps to ensure the respect of cost and energy efficiency constraints of a set of charging stations by controlling their operation. The controller runs its management program according to the selected parameters and data received from the charging stations.

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 a 3G or 4G modem
- Communication under OCPP 1.6 JSON (possible upgrade to OCPP 2.0)

Functions

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

User interface

EcoStruxure EV Charging Expert provides access to an ergonomic and intuitive user interface (web server) to:

- remote start / stop a charging session
- reset or reboot a charging station
- visualize a dashboard indicating the status of each charging station
- manage badges (local addition, import or export badge list) and user rights
- access and export the history of charging data by station, by badge or aggregated for the infrastructure
- consult and export maintenance data.

To download the latest release of EcoStruxure EV Charging Expert software, please scan or click on the following QR code:



➤ EcoStruxure EV Charging Expert CORE references

		EcoStruxure EV Charging Expert with Static mode (dynamic load management with STATIC current setpoint)		EcoStruxure EV Charging Expert with Dynamic and Static modes (dynamic load management with DYNAMIC current setpoint, or STATIC current setpoint)			
References ⁽¹⁾		HMIBSCEA53D1ESS	HMIBSCEA53D1ESM	HMIBSCEA53D1EDB	HMIBSCEA53D1EDS	HMIBSCEA53D1EDM	HMIBSCEA53D1EDL
Features							
Capacity	Number of EVlink charging stations	15	50	5	15	50	100
Power management	Dynamic, with a STATIC current setpoint	●	●	●	●	●	●
	Time of use / DI		●		●	●	●
Multi zone	Maximum number of zones	1	10	2	2	10	20
	Maximum number of zone levels	1	3	2	2	3	3
Other loads	Power consumption reporting on other feeders		●			●	●
Badge management	VIP privilege user badge		●			●	●
Station management	VIP privilege charging station		●			●	●

(1) To upgrade from a current CORE reference to an upper-level one, consult the UPGRADES Software references.

➤ EcoStruxure EV Charging Expert UPGRADES Software references

Upgrade from a current CORE to an upper-level one

Reference	Description
EVLMSDB2EDS	Upgrade EV Charging Expert dynamic 5 CS to 15 CS
EVLMSDB2EDM	Upgrade EV Charging Expert dynamic 5 CS to 50 CS
EVLMSDB2EDL	Upgrade EV Charging Expert dynamic 5 CS to 100 CS
EVLMSSESS2EDS	Upgrade EV Charging Expert 15 CS from static to dynamic
EVLMSSESS2ESM	Upgrade EV Charging Expert static from 15 CS to 50 CS
EVLMSSESS2EDM	Upgrade EV Charging Expert from 15 CS static to 50 CS dynamic
EVLMSSESS2EDL	Upgrade EV Charging Expert dynamic from 15 CS to 50 CS
EVLMSSESS2EDL	Upgrade EV Charging Expert from 15 CS static to 100 CS dynamic
EVLMSSESS2EDL	Upgrade EV Charging Expert dynamic from 15 CS to 100 CS
EVLMSSESM2EDM	Upgrade EV Charging Expert from 50 CS static to 50 CS dynamic
EVLMSSESM2EDL	Upgrade EV Charging Expert static 50 CS to dynamic 100 CS
EVLMSSEDM2EDL	Upgrade EV Charging Expert dynamic from 50 CS to 100 CS

Additional information

Range compatibility:

EVlink Pro AC

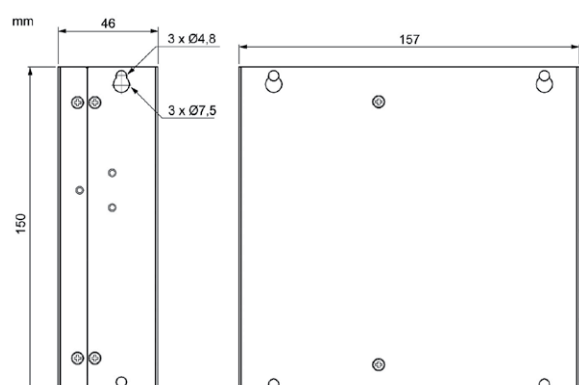
EVlink Smart Wallbox

EVlink Parking

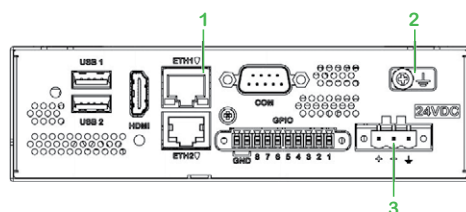
Practical information

➤ EcoStruxure EV Charging Expert dimensions (mm)

Dimensions



Rear view



1- ETH1 (10/100/1000 Mbps/s)

2- Ground

3- DC supply

EcoStruxure™ EV Charging Expert



➤ Features and benefits

Simplified,
decentralized,
flexible installation
architecture



- EcoStruxure EV Charging Expert manages and controls up to 100 charging stations from one single controller and user interface dashboard
- It is available in different versions to adapt to the specific customer needs, whether this is for fewer than 5 charging stations, or to up to 100
- It allows several parking zones to be managed, each one with its own power metering for dynamic load management, and all of it from a single controller
- It is scalable, and allows the installation to be upgraded easily from a current model to a more sophisticated one if the customer's EV charging needs evolve
- It operates with open protocols (OCPP 1.6Json) facilitating integration with other systems
- It allows the execution of installations according to "EV/ZE Ready" standards
- It is available at most distributors.

Designed to be
easily installed
and commissioned
by an installer



- Protection and control components to be installed in a Prisma panel or equivalent
- The webserver includes a configuration assistant that walks the installer through the different steps to configure the system
- Automatic scan and configuration of charging stations, all in parallel to save time
- Easy firmware updates, with the most recent firmware release available on se.com.

Multiple functionalities
for efficient operation
and maintenance



- Integrates the local supervision of charging stations and their power management in a single product
- Includes an intuitive dashboard interface to manage and control the installation
- Optimizes building continuity of service all while providing the highest possible EV charging capabilities in real time
- Distributes energy equitably among all electric vehicles while maximizing the power delivered to the charging stations and the number of vehicles that charge simultaneously
- Provides time-of-use electricity tariff scheduling to limit EV charging when the electricity price is high, and to maximize it when it is low (depending on the selected model)
- The electric vehicle driver can see that the charging of the car is active before leaving it (a new vehicle is always actively charging when just connected) and prioritize it, even when all the available power is already being distributed to other vehicles which have been connected longer
- Allows the management of user badges without having to subscribe to an additional supervision system
- Allows priority (VIP) user badges or charging stations to be defined. These will not be load-shed, or will only be load-shed when strictly necessary to ensure the building's power continuity (depending on the selected model)
- Registers all historic data related to the EV charging transactions for analytics, cost allocation or invoicing
- Does not generate any subscription cost (if the services of a Charge Point Operator are needed, EcoStruxure EV Charging Expert is compatible with a CPO backend system (OCPP 1.6J protocol))
- Offers integration capabilities as it communicates with the Building Management System (BMS) via a webservice (may require specific development)
- Major international manufacturer and world leader in eMobility.



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➤ Operation

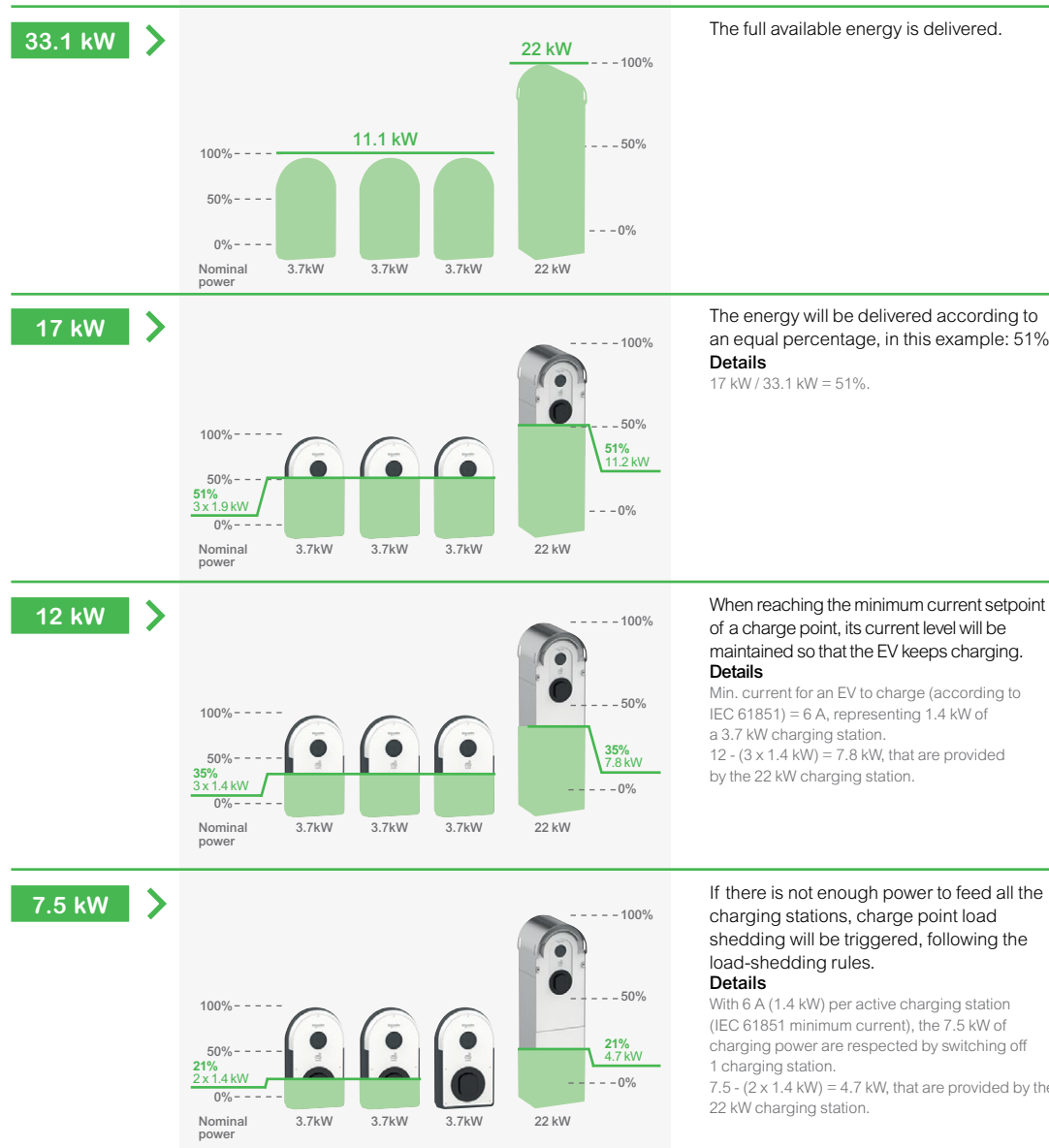
- EcoStruxure EV Charging Expert controls the EV charging infrastructure
- It allows the instantaneous power drawn by the entire set of connected electric vehicles to be limited, and manages the energy allocated to each one of them
- In real time, it transmits a setpoint to each charging station, which is transferred to the vehicles
- If the setpoint is exceeded, a decrease in energy is applied in the same way to all charge points (51% in the example with 17 kW of available power)
- Output is only reduced on the electrical phases that need it.

Descriptive example to illustrate the load reduction and load-shedding operation

Available power
in the building
allocated to
EV charging

Delivered charging power

Description



EcoStruxure™ EV Charging Expert



➤ Principle of load balancing between vehicles

When the load shedding is triggered, the algorithm allows the available energy to be distributed according to 2 strategies (depending on the settings):

- Based on the energy already consumed: the system interrupts the charging of the vehicles that have obtained the highest amount of kWh since the start of their charging, favoring recently arrived vehicles.
- Based on the connection time: the system interrupts the charging of the vehicles with the longest charging time, favoring those last arrived.

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

➤ Functions performed by all commercial references of EV Charging Expert

Access Management	Commissioning	Operation	Connectivity
▼	▼	▼	▼
Add, modify, delete, supervise badges	Commissioning all charging stations directly from EVlink LMS	Supervision through real-time dashboard and remote actions on charging stations	Connection with CPO supervision (OCPP 1.6 Json)
	Save and restore commissioned configuration	Charge data report export	Connection with EcoStruxure supervision (web services) ⁽¹⁾
		Maintenance report export	Optional: 3G/4G modem
			Commissioning by Ethernet cable

(1) May require specific development

Additional information

Charging station technical document	Language	References	
Installation Guides ⁽¹⁾	EN	EcoStruxure™ EV Charging Expert Installation Guide: DOCA0164 	
User Guides ⁽¹⁾	EN	EcoStruxure™ EV Charging Expert User Guide: DOCA0163 	Quick Start commissioning Guide EVSOLQSC001EN 

(1) To be downloaded.

To download the above documents, search by reference on www.se.com

Refer to Appendix for detailed

- > Switch detailsp. 98
- > Possible IT network topologiesp. 98
- > Typical load management architecturesp. 99