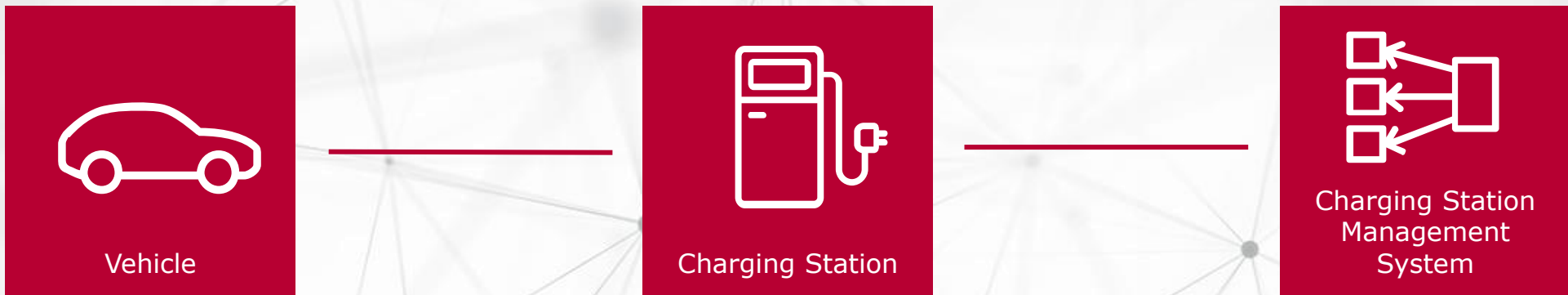


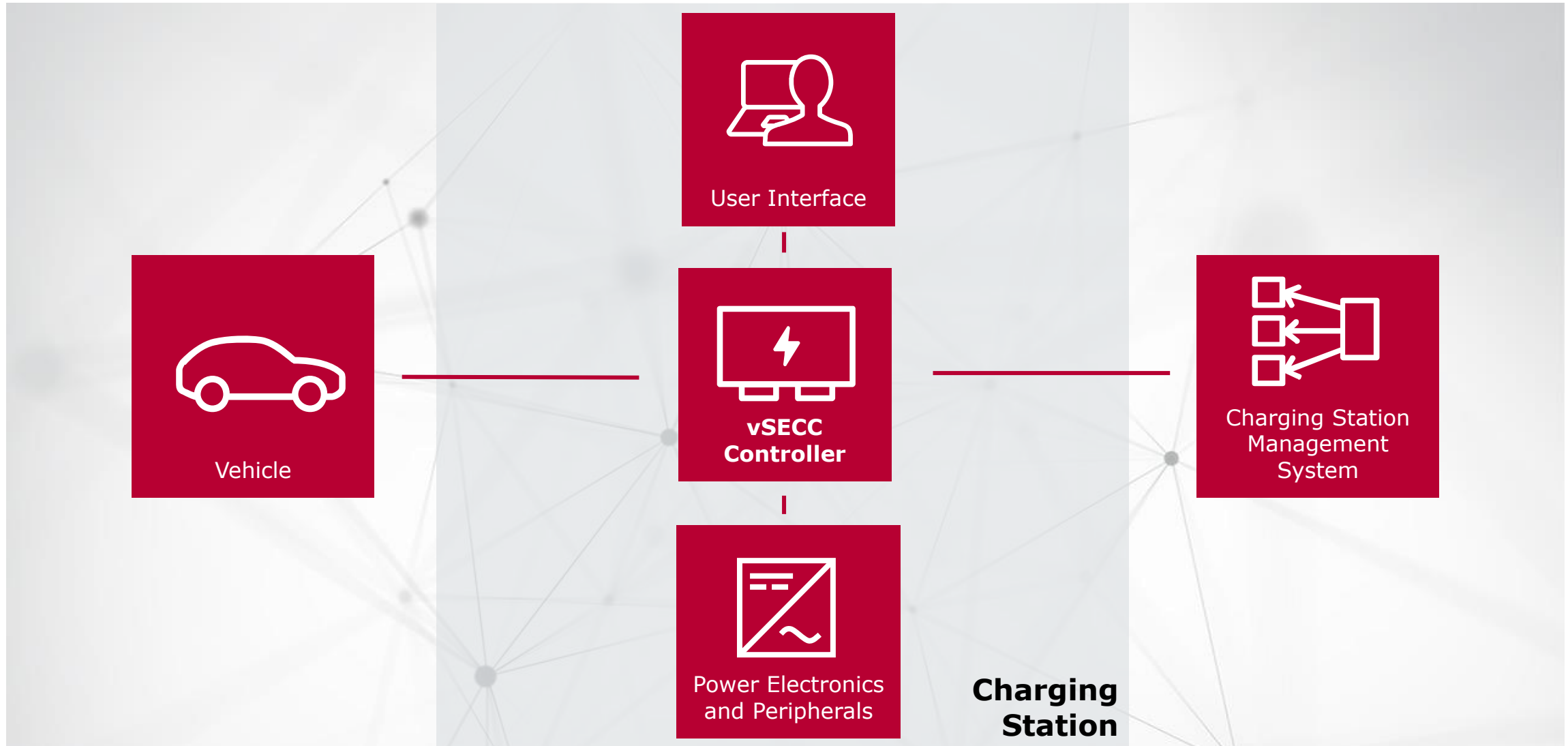


vSECC Controllers – for Supply Equipment Communication

The Role of the vSECC Controller in the Charging System



The Role of the vSECC Controller in the Charging System



The Role of the vSECC Controller in the Charging System

vSECC Controller

Supply Equipment Communication
Controller



- ▶ Controller for charging stations and charge points
- ▶ Communication interface between electric vehicle, user interface, charging station management system, power electronics and peripherals

Products

vSECC / vSECC.MCS Standalone Controller

vSECC.single Board for Integration

High-Power & Megawatt Chargers

- ▶ Public and Semi-Public
- ▶ Companies
- ▶ Communities

Commercial

- ▶ Double dispenser for commercial vehicles
- ▶ Megawatt Charging

Commercial and Pantograph

- ▶ Charging stations for commercial vehicles



Common Software Base

Semi-Public

- ▶ Mobile Chargers
- ▶ Commercial Fleets

Residential

- ▶ Smart DC Wallbox
- ▶ DC charging for microgrids

Public and Semi-Public

- ▶ Single dispenser solutions
- ▶ Charging stations for commercial fleets



vSECC.single Standalone Controller

Advantages

**Universal controller
for all communication
functions**

**MCS Prototypes and all
Controllers are
available on Stock!**

**CP/PP supervision
designed for SIL 2***
**No extra hardware
required!**

**Powerful multi-core
processor**

vSECC Controllers

**Remote software
updates**

**Compact industrial
top-hat rail design***
with IP 20

**Turnkey solution
for Megawatt &
Bi-directional
Charging
with ISO 15118-20**

**IEC 61851
ISO 15118
DIN SPEC 70121
OppCharge*
SAE J3105*
CHAdMO*
OCPP**

*except vSECC.single / Board

Products

vSECC / vSECC.MCS Standalone Controller

High-Power & Megawatt Chargers

- ▶ Public and Semi-Public
- ▶ Companies
- ▶ Communities

Commercial

- ▶ Double dispenser for commercial vehicles
- ▶ Megawatt Charging

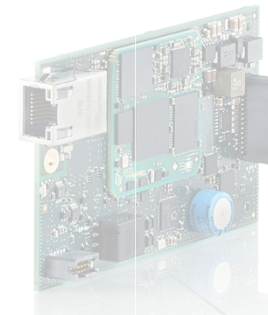
Commercial and Pantograph

- ▶ Charging stations for commercial vehicles



Common Software Base

vSECC.single Board for Integration



Semi-Public

- ▶ Mobile Chargers
- ▶ Commercial Fleets

Residential

- ▶ Smart DC Wallbox
- ▶ DC charging for microgrids

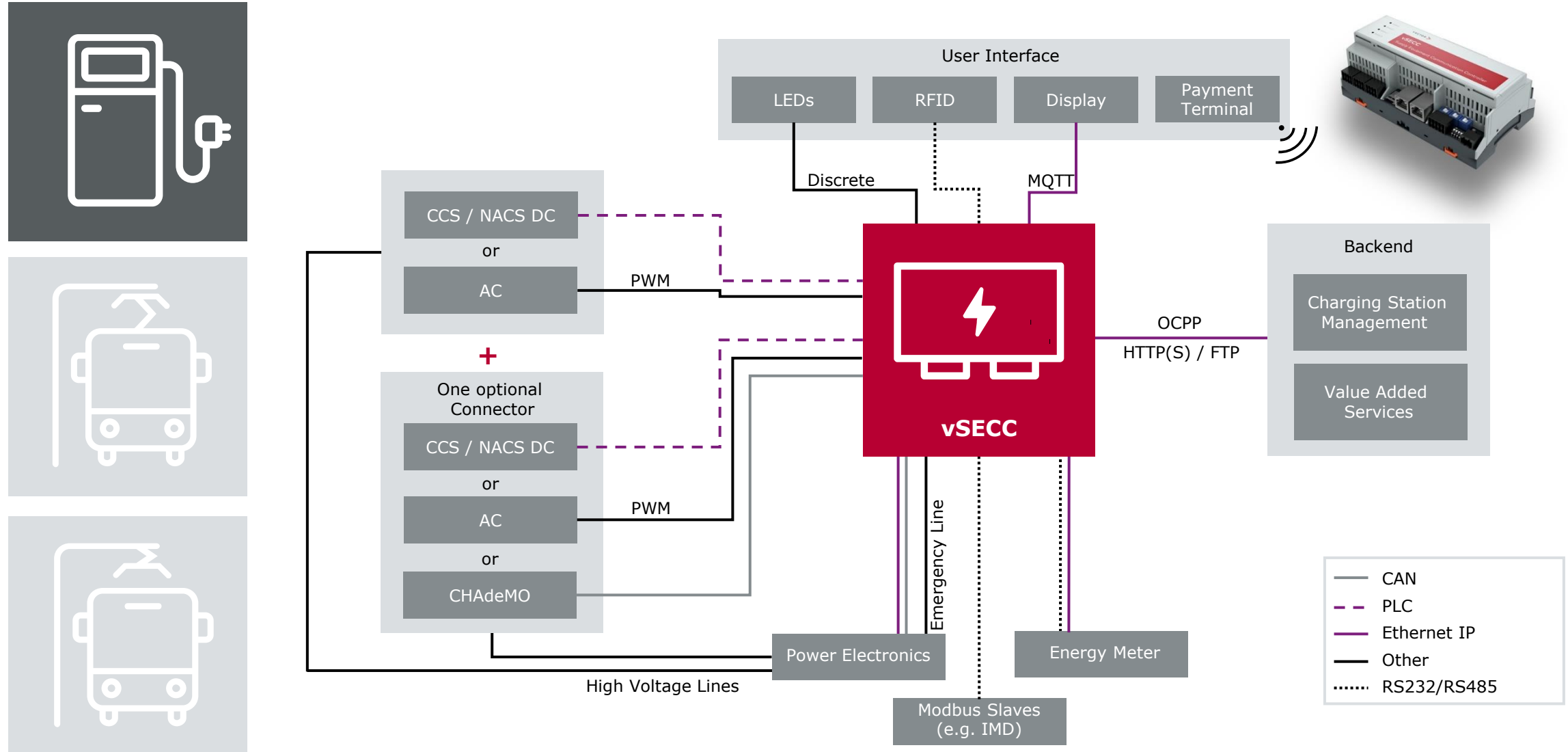
Public and Semi-Public

- ▶ Single dispenser solutions
- ▶ Charging stations for commercial fleets

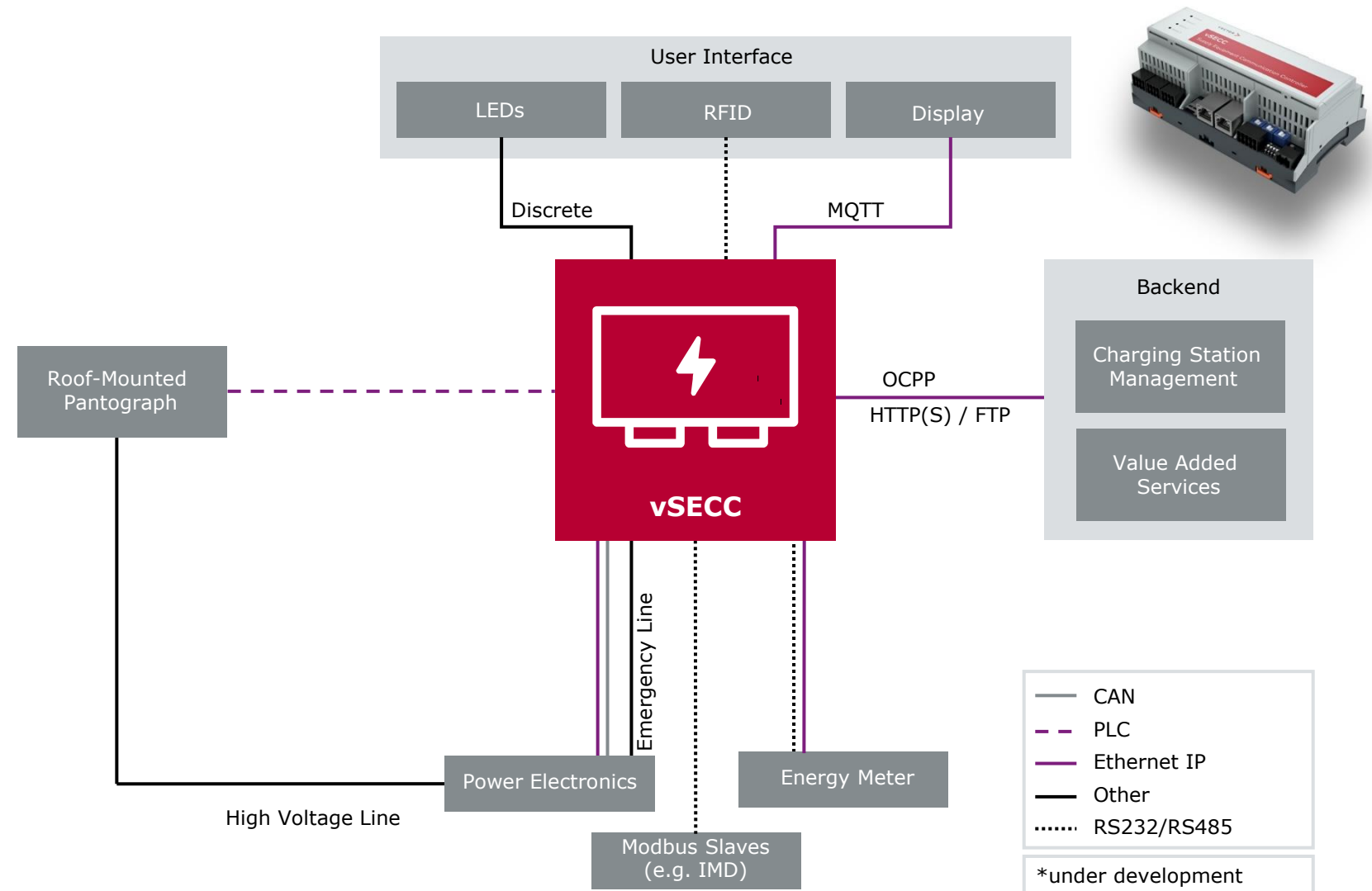
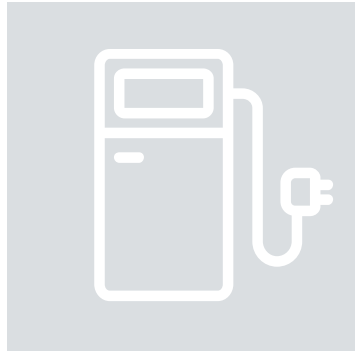


vSECC.single Standalone Controller

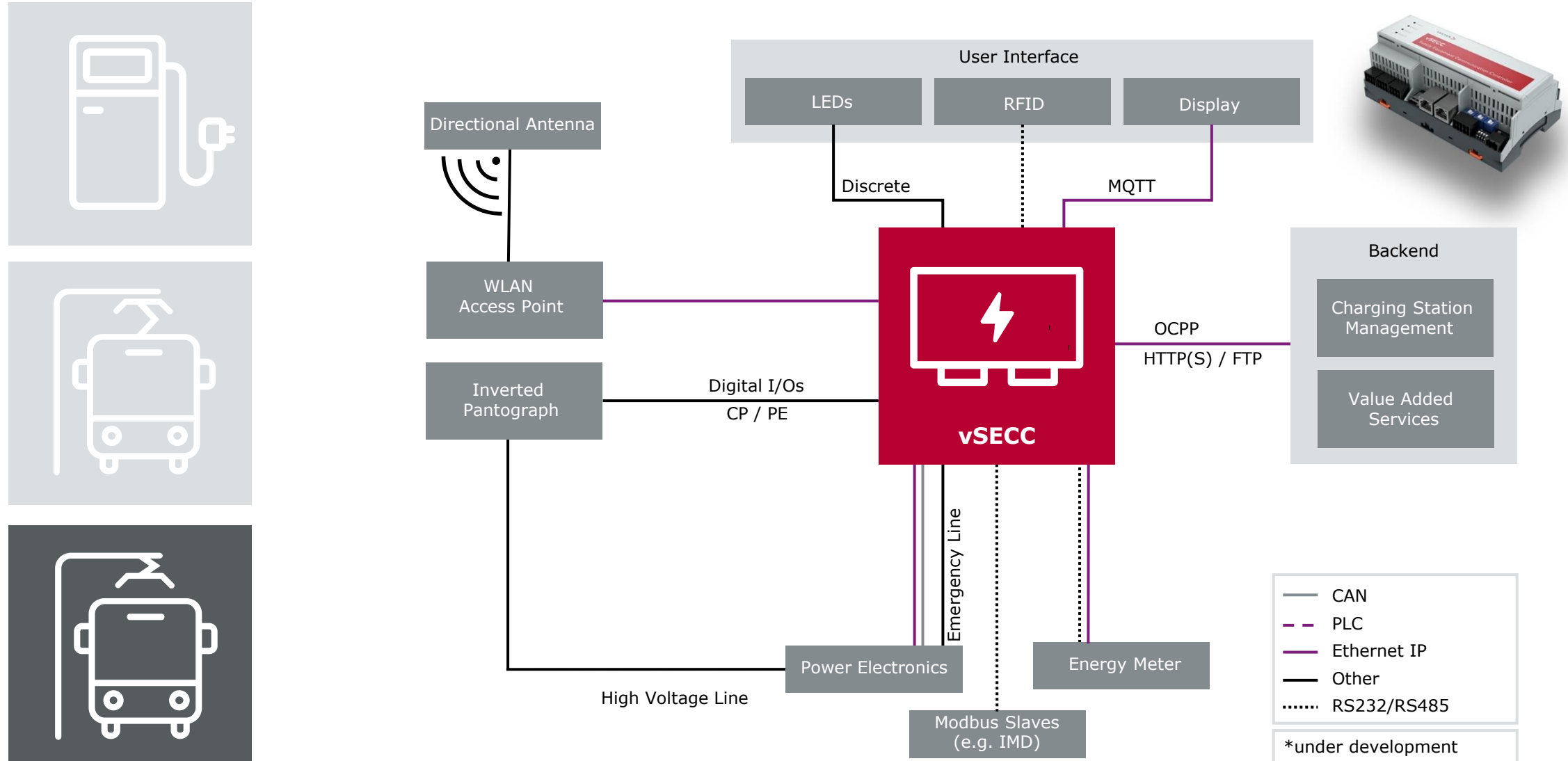
Interfaces Inside Conductive Charging Station



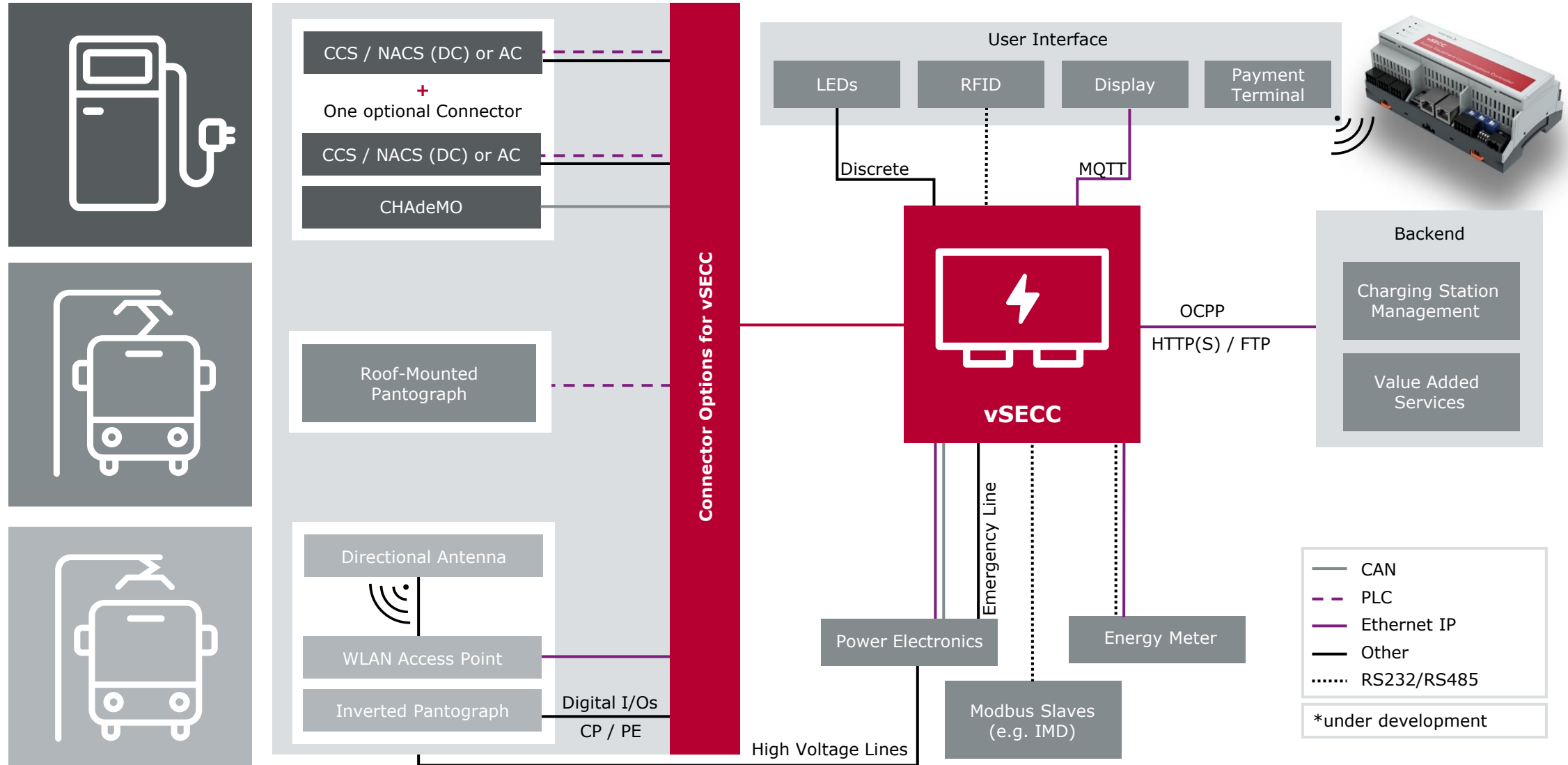
Interfaces Inside Roof-Mounted Pantograph Pole



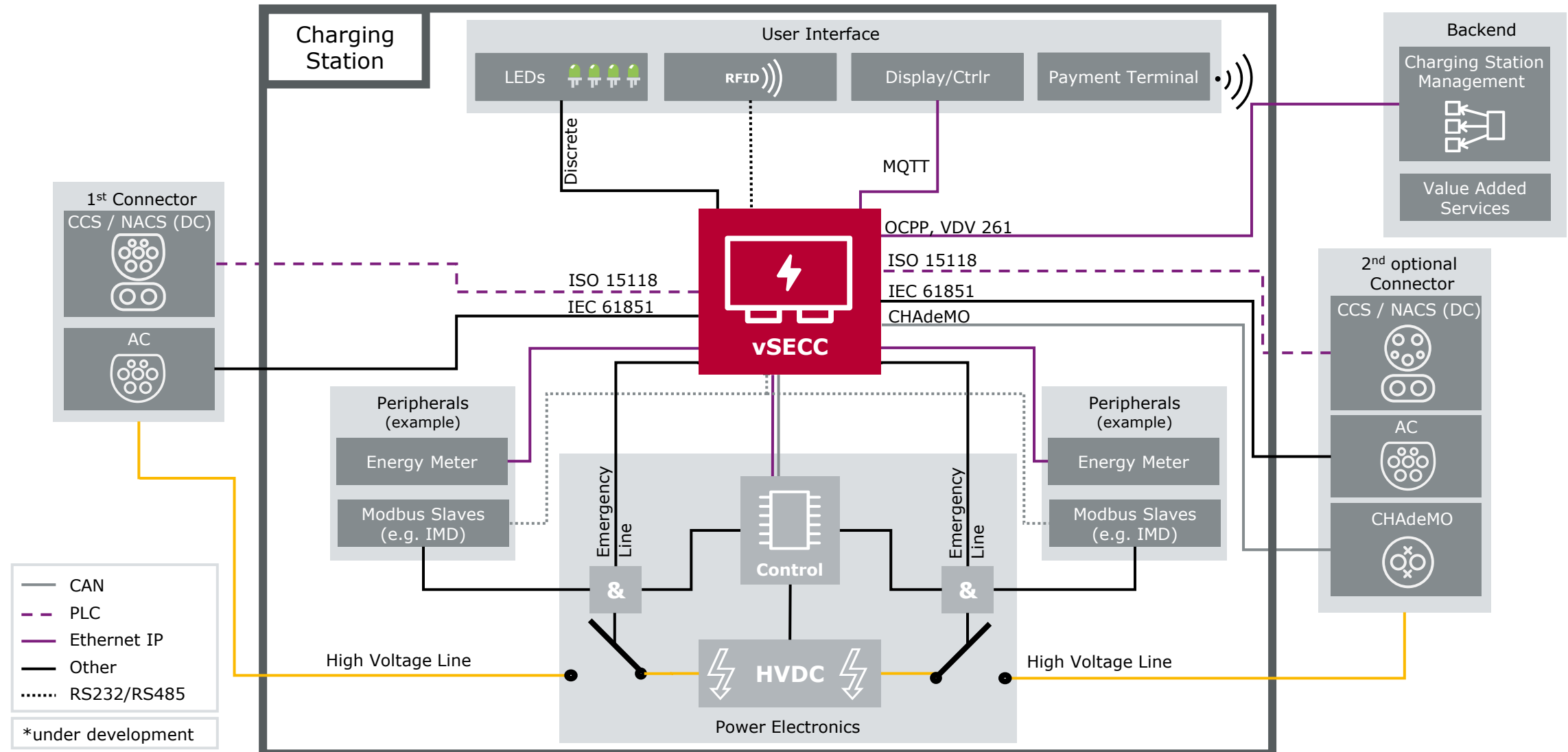
Interfaces Inside Inverted Pantograph Pole



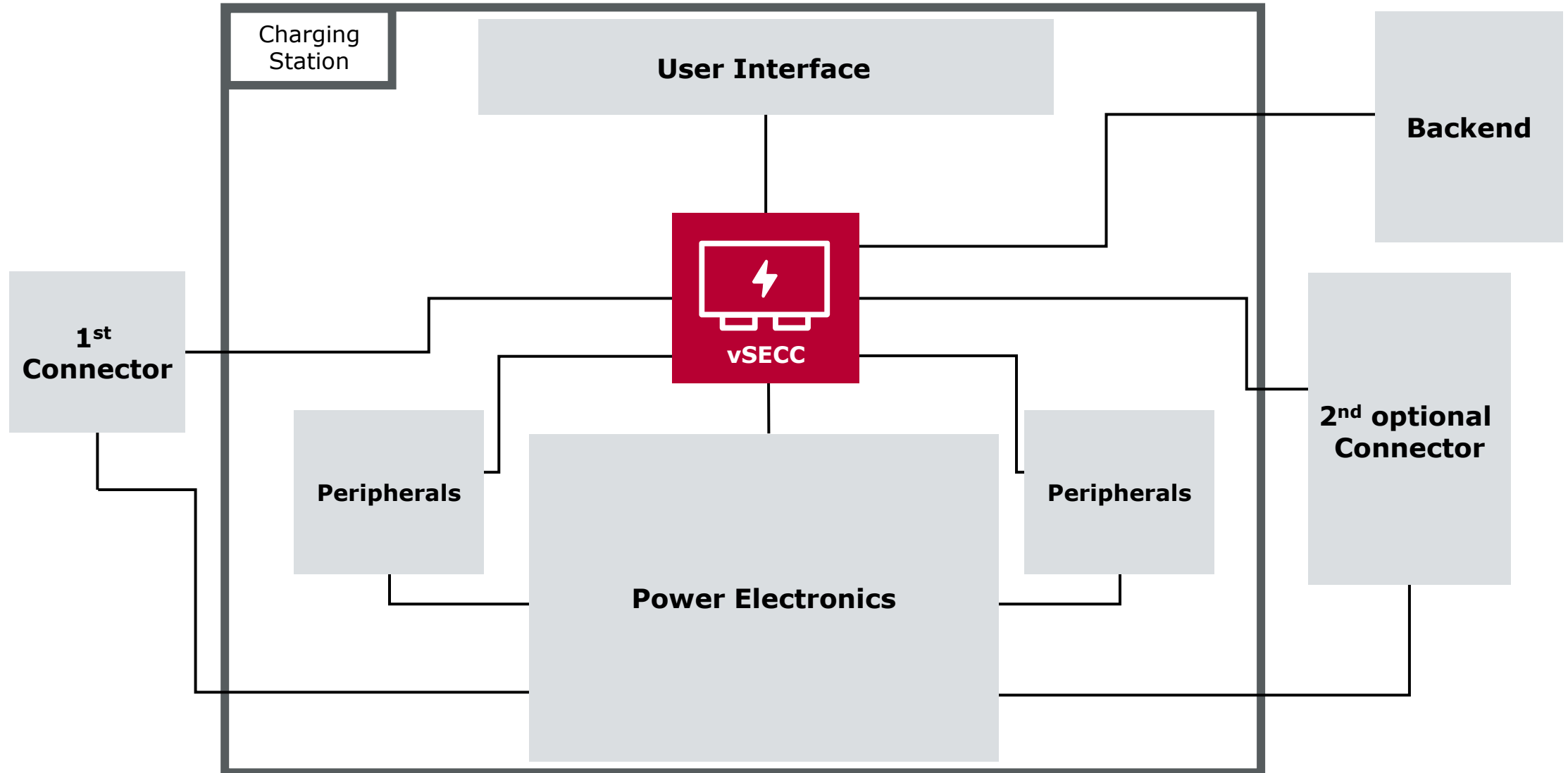
Many Applications with One Device



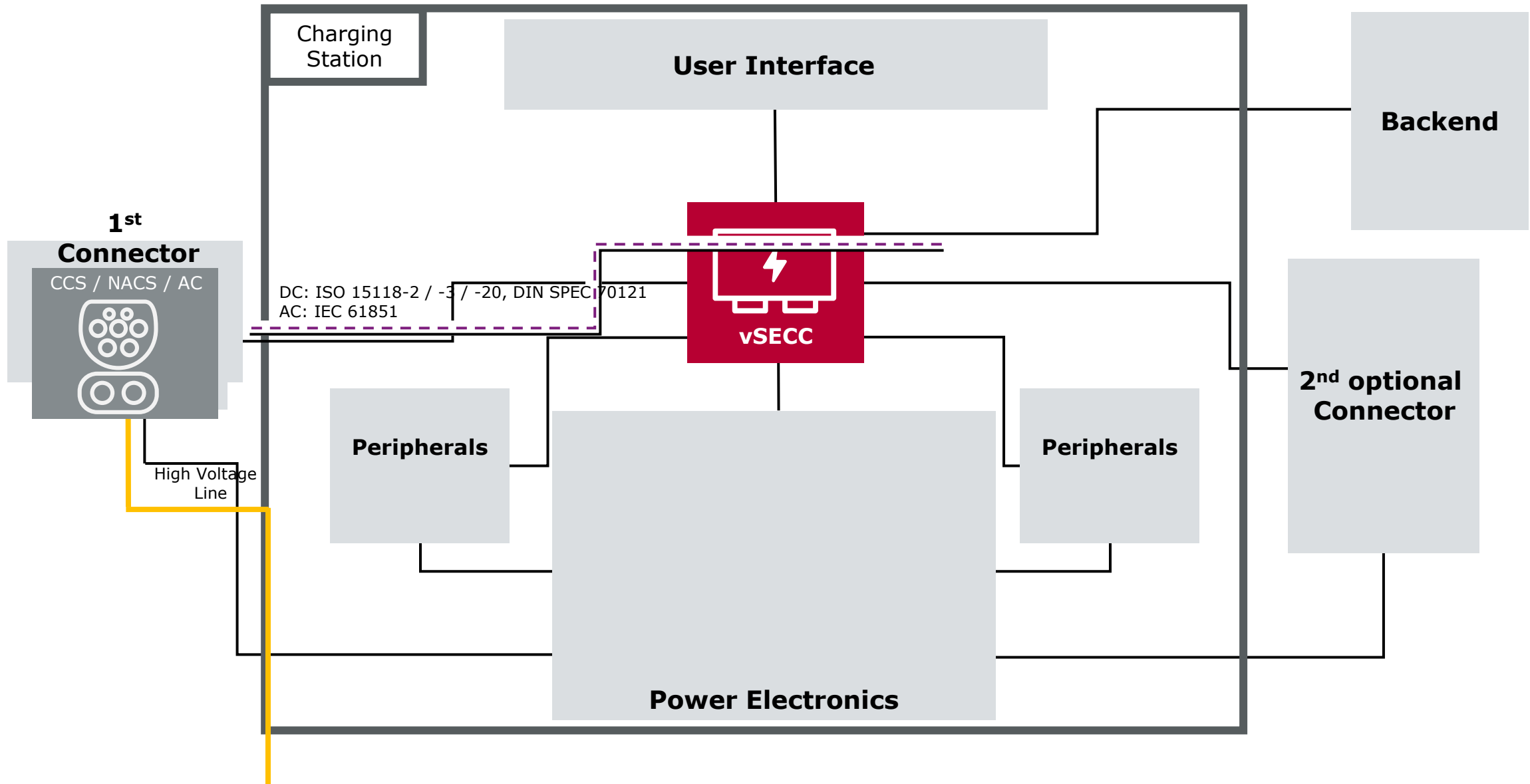
Reference Design



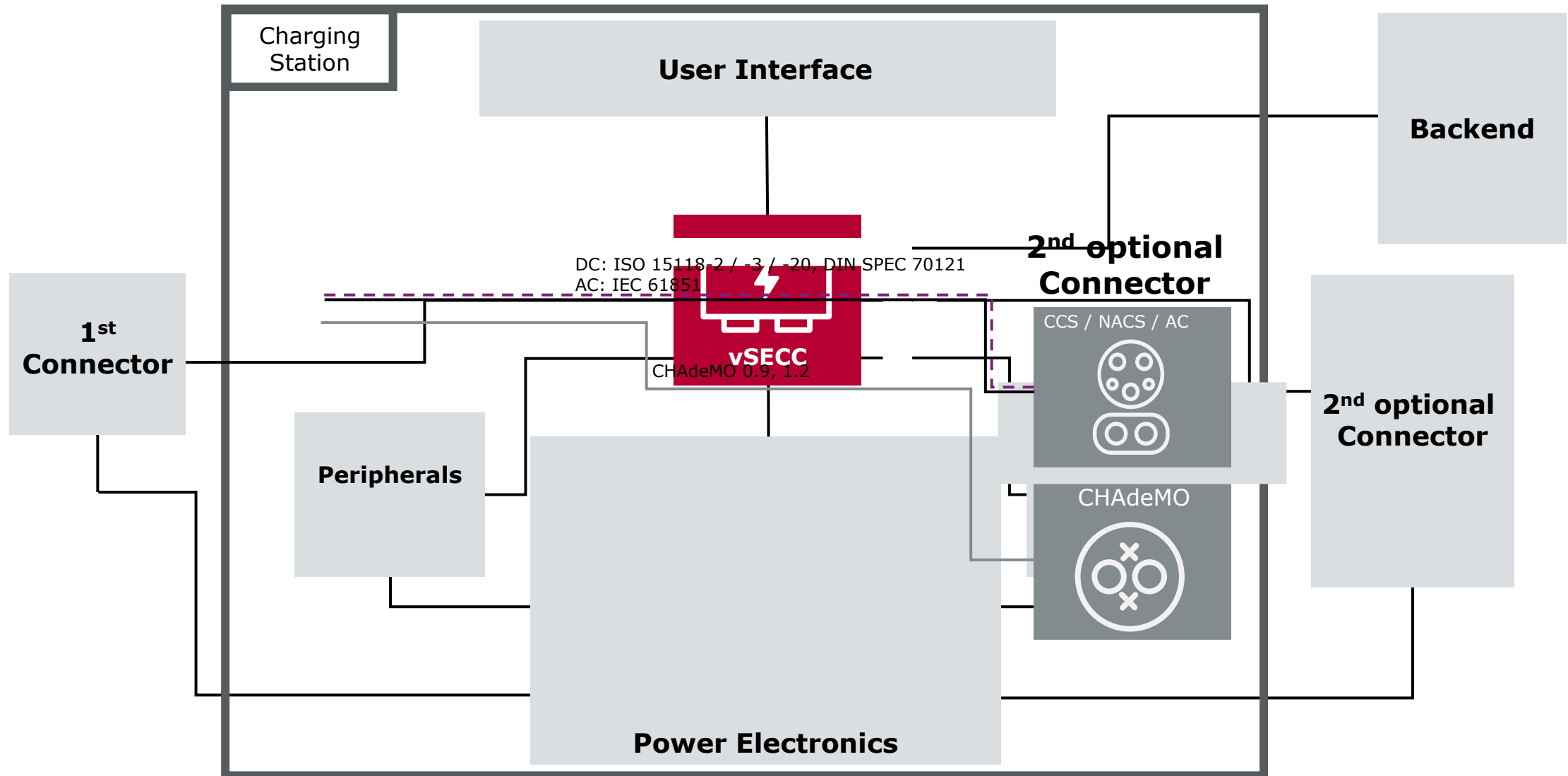
Reference Design



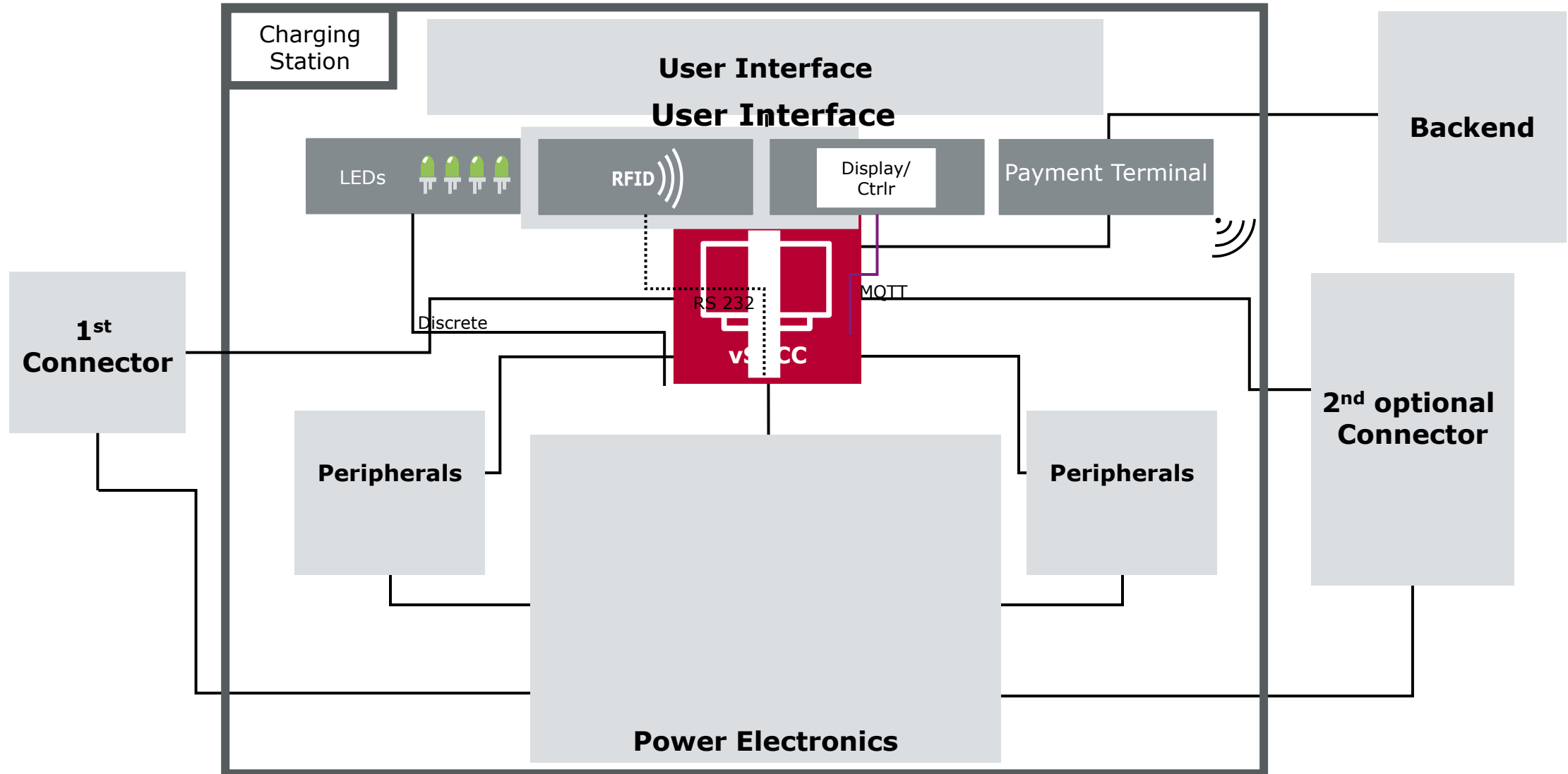
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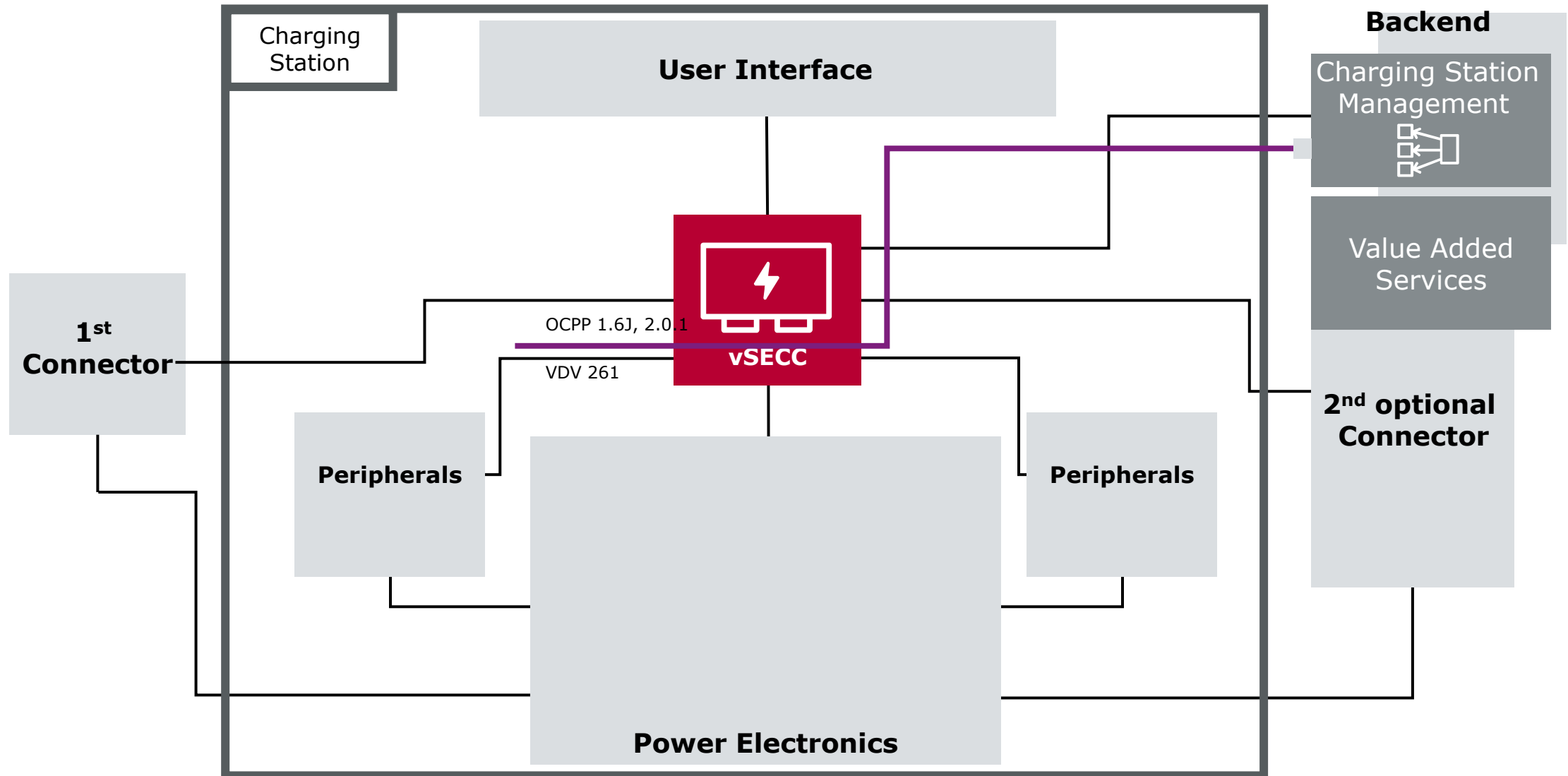
Reference Design



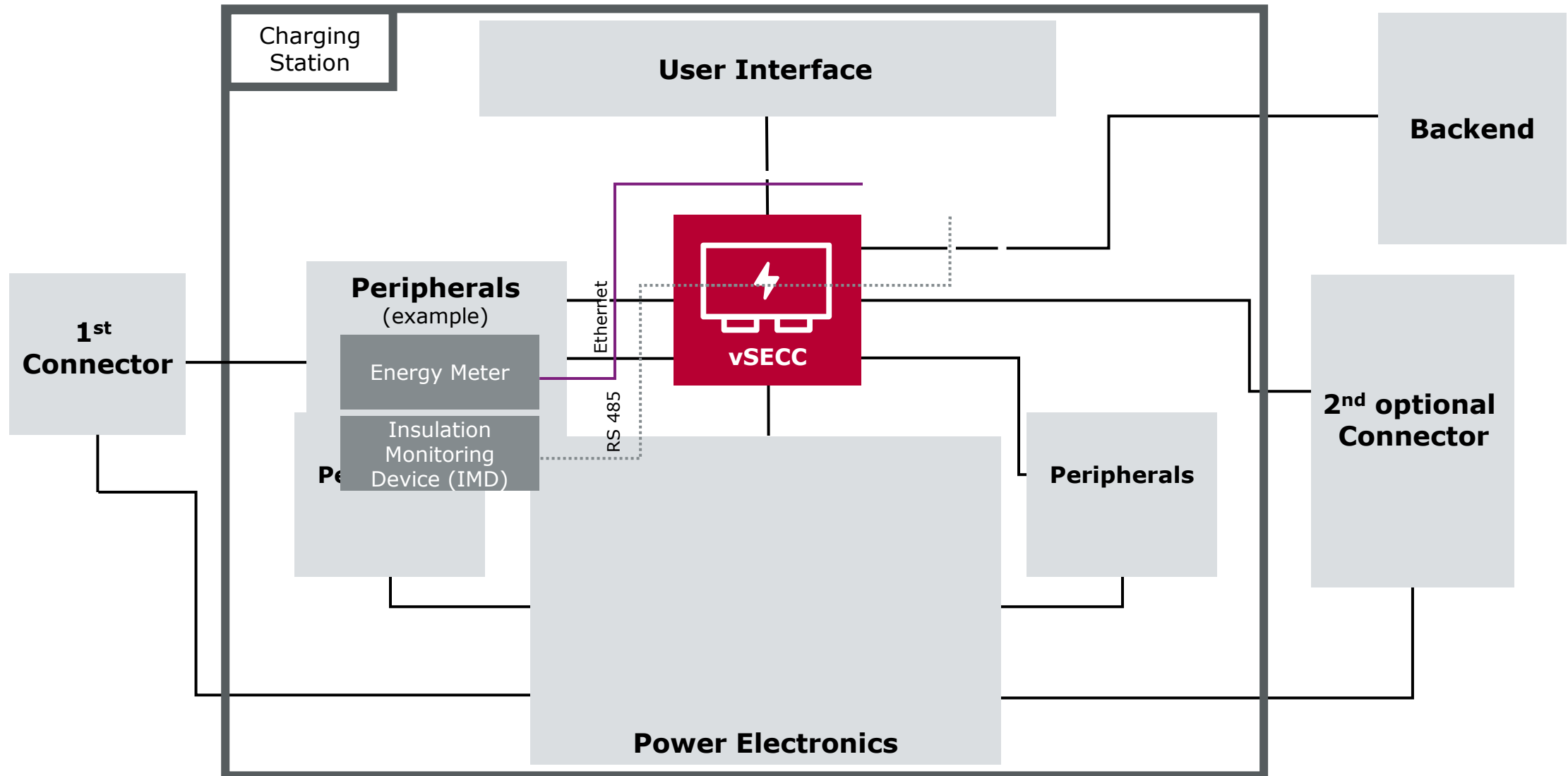
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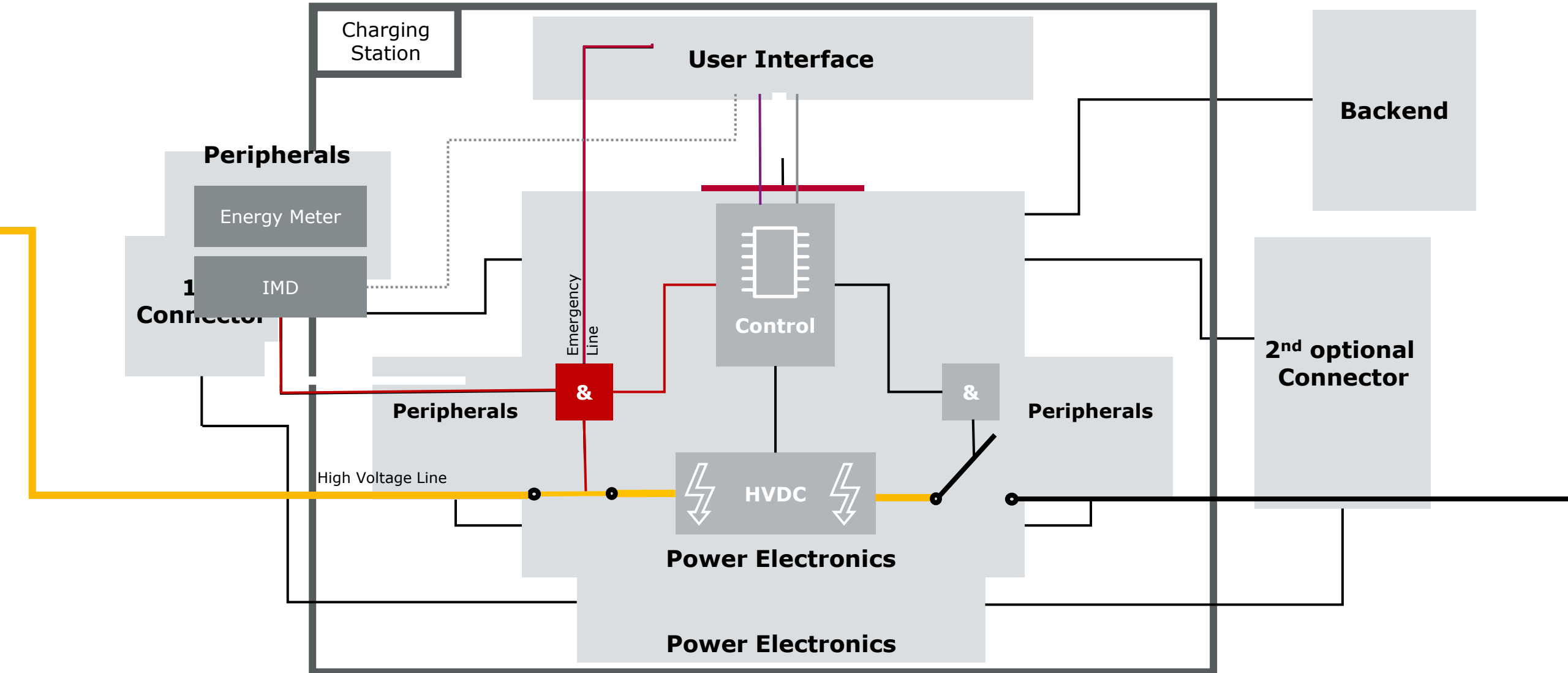
Reference Design



Reference Design



Reference Design



Interface Details



Interface Details



vSECC Connector Kit

All required vSECC connectors are now available as a kit!

- ▶ 2x Charging Connector for CCS or CHAdeMO (X300, X302, X303)
- ▶ 1x Analog Inputs & Temperature Sensor (X301)
- ▶ 1x Safety Outputs (X304)
- ▶ 1x CAN / Serial Interfaces (X305)
- ▶ 1x Digital In-/Outputs, Start (CHAdeMO) and Stop Buttons, Pantograph Control (X306)
- ▶ 1x Power Supply Connector (X307)



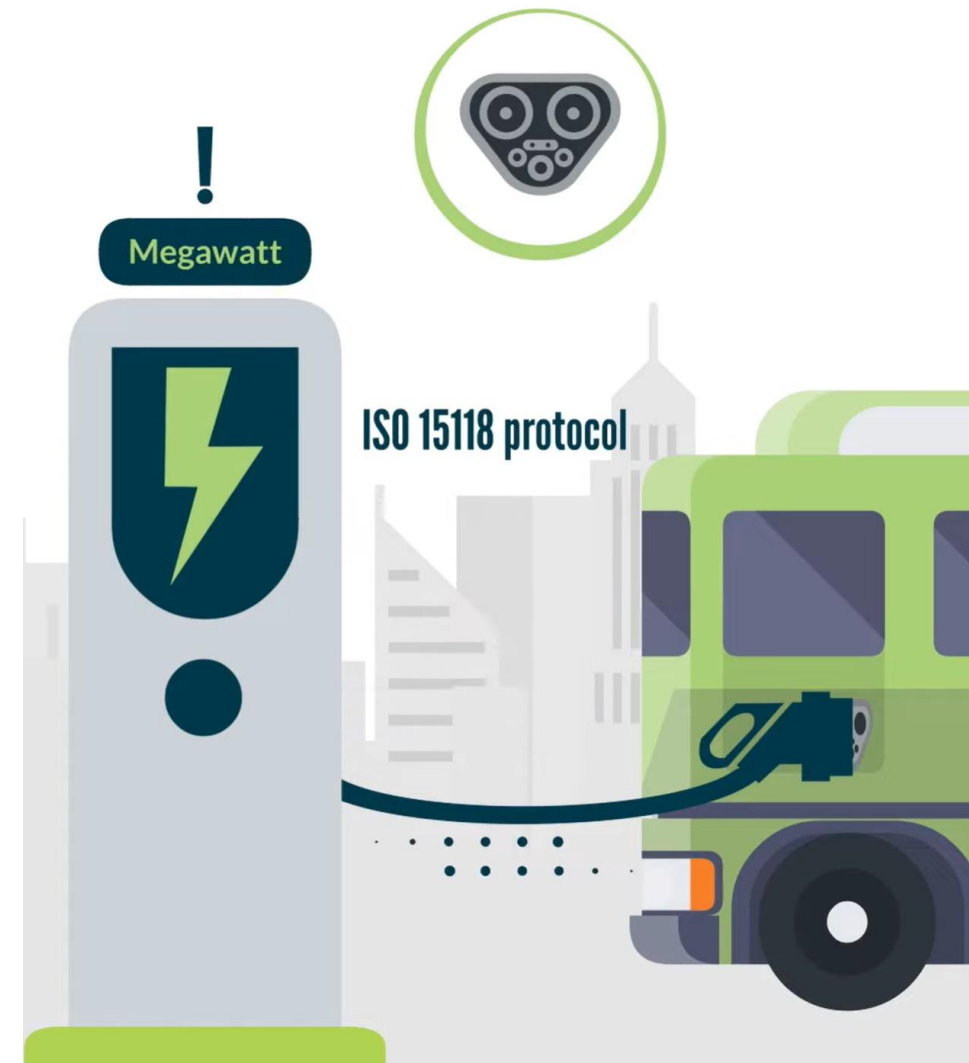
Megawatt Charging (MCS) under Standardization – Key Facts

Status Quo 06/2024

Min./Max. Voltage	500 – 1250 VDC
Min./ Max. Current	0 – 3000 A
Max. Charging Power	3,75 MW
Cable length (outside vehicle)	15 m
High-Level Communication	ISO 15118-20 Amendment
PHY Layer for HLC	10BASE-T1S*
Inlet/Outlet surface	MCS 3.2

*Agreed by IEC 61851-23-3

Please note: Standardization is still in Progress!



Source: CharIN e. V.

vSECC Prototypes for Megawatt Charging are available!

► Changes to normal vSECC:

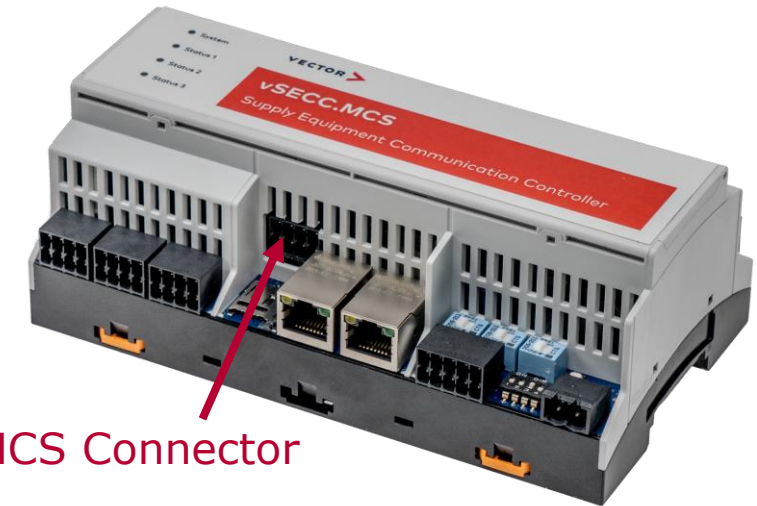
- 10BASE-T1S as physical layer
 - > One PLC connector is replaced with a 10BASE-T1S PHY
- 1x MCS + 1x CCS is possible
- SLAC is removed
- Use of Charge Enable instead of Control Pilot (IEC 61851-23-3)

► New Features:

- Auxiliary supply (24V) is not implemented
- Support of ISO 15118-20 (with Amendment) Scheduled and Dynamic Mode
- Support of TLS 1.3

► Advantage: Fast Time-to-Market!

- Software and Hardware Interfaces are the same like standard vSECC → Very short development time

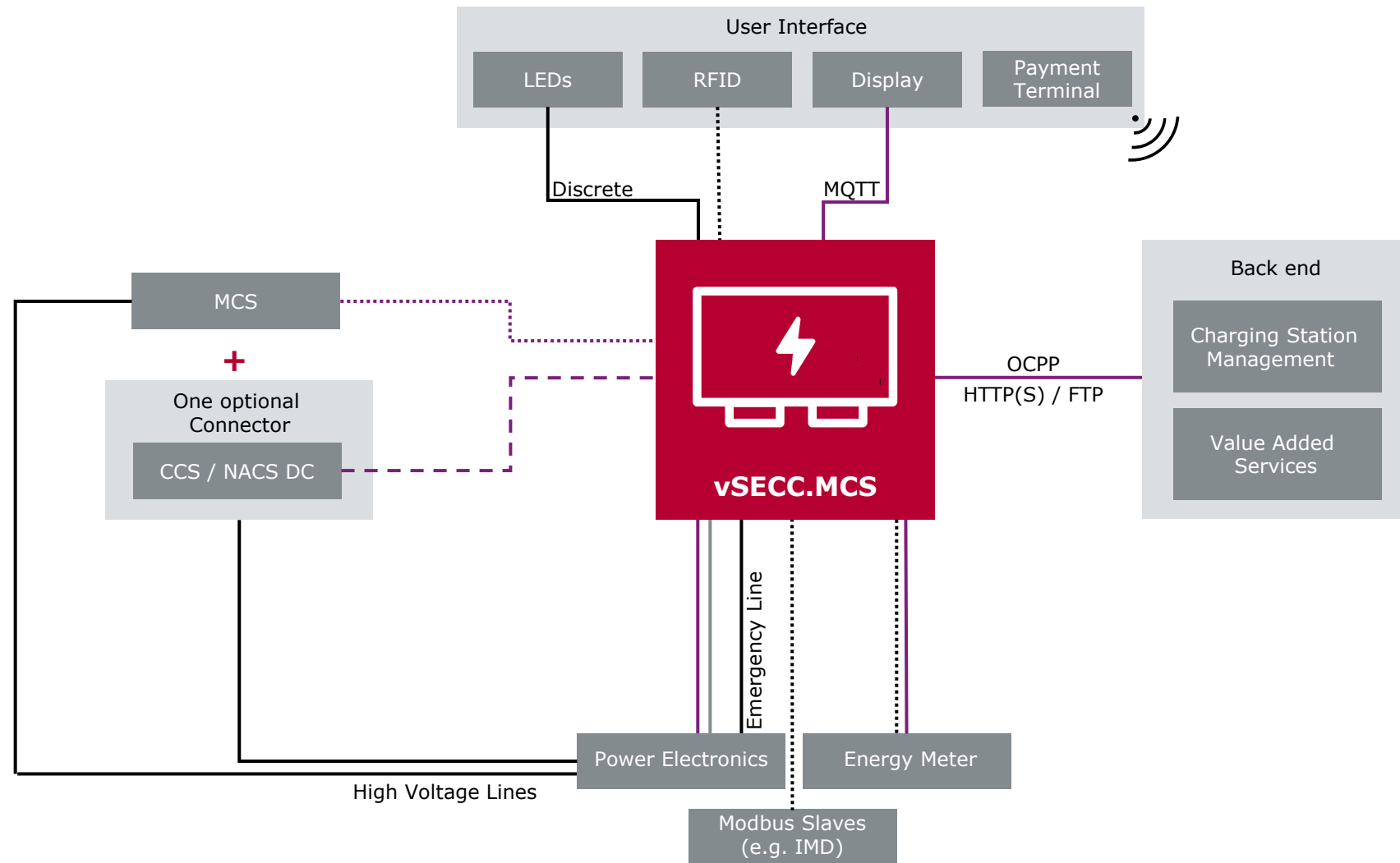


MCS Connector

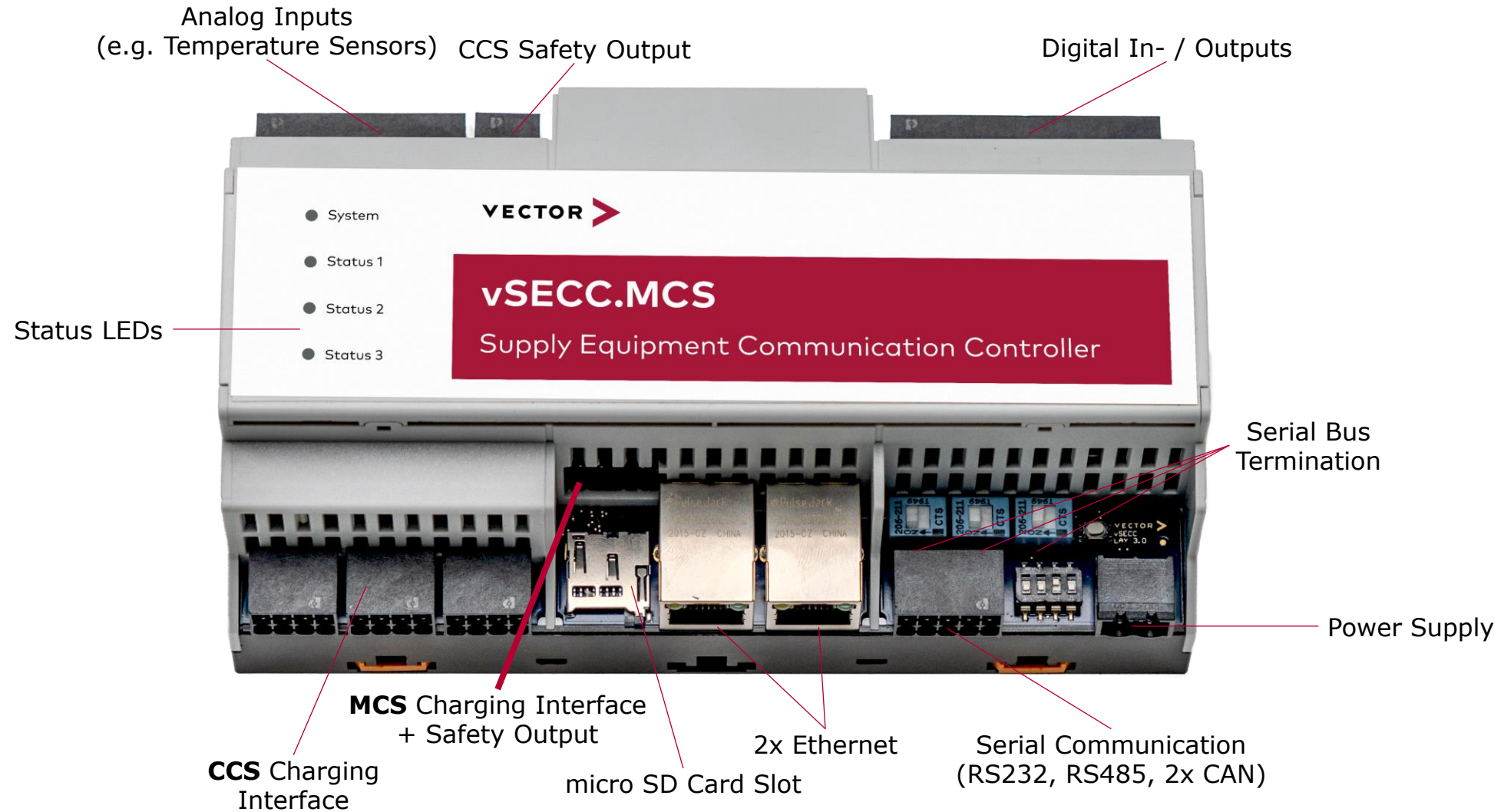


MCS Prototypes are available on stock!

Interfaces Inside Charging Station – vSECC.MCS



Interface Details



vSECC / vSECC.MCS Standalone Controller

vSECC.single Board for Integration

High-Power & Megawatt Chargers

- ▶ Public and Semi-Public
- ▶ Companies
- ▶ Communities

Commercial

- ▶ Double dispenser for commercial vehicles
- ▶ Megawatt Charging

Commercial and Pantograph

- ▶ Charging stations for commercial vehicles

Common Software Base

Semi-Public

- ▶ Mobile Chargers
- ▶ Commercial Fleets

Residential

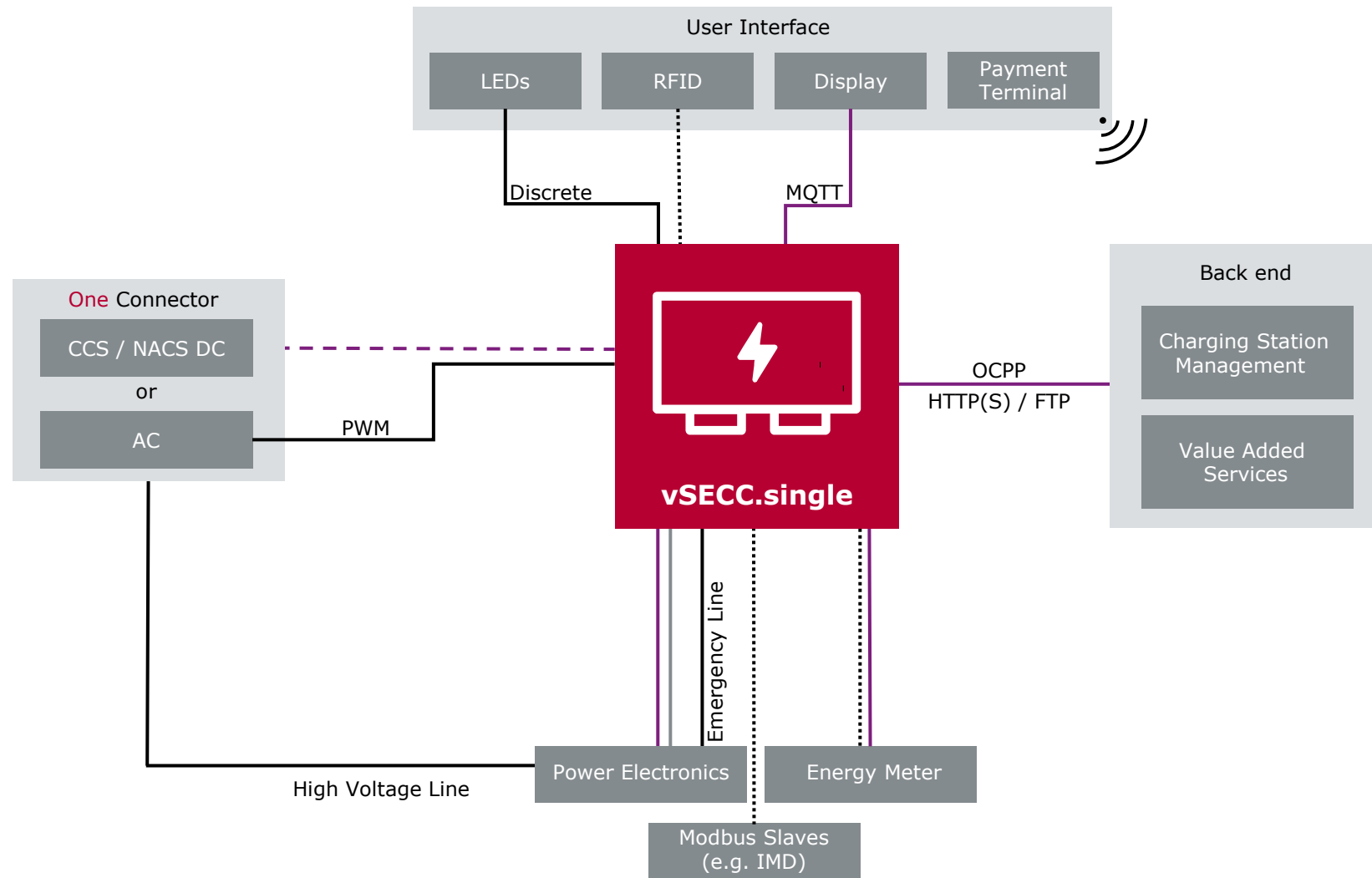
- ▶ Smart DC Wallbox
- ▶ DC charging for microgrids

Public and Semi-Public

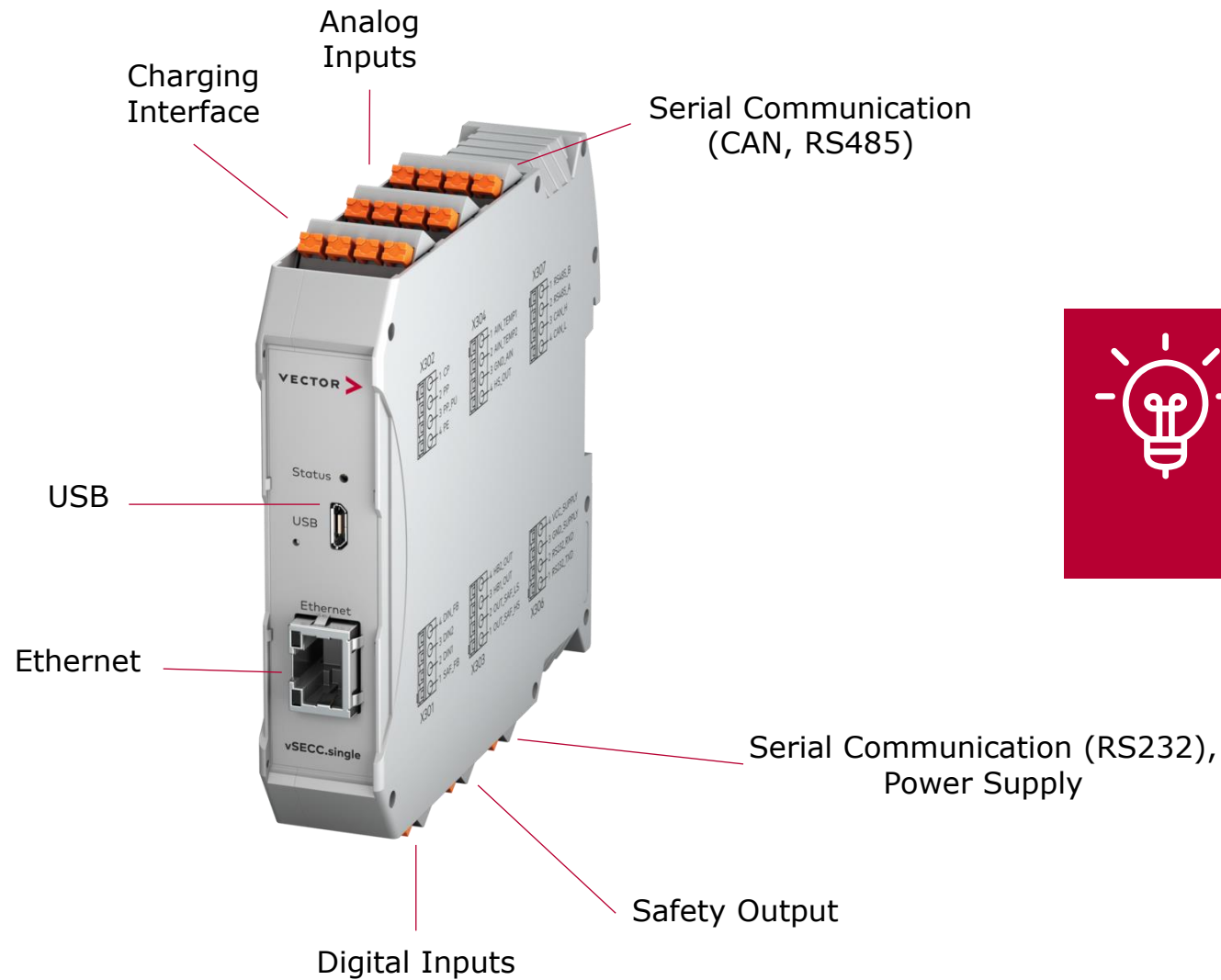
- ▶ Single dispenser solutions
- ▶ Charging stations for commercial fleets

vSECC.single Standalone Controller

Interfaces Inside Charging Station – vSECC.single



Interface Details



The vSECC.single is available as series units on stock!

vSECC.single +70°C Prototypes

- ▶ Extension of vSECC.single with heat sink to allow for higher temperatures
- ▶ Operating & Storage Ambient Temperature: -40°C to +70°C
- ▶ Same charging interfaces and pin assignment like vSECC.single
- ▶ Dimensions: ~45mm x 99 mm x 114,5 mm



Prototypes of the vSECC.single +70°C will be available from 10/2024!



vSECC / vSECC.MCS Standalone Controller

vSECC.single Board for Integration

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- ▶ Communities

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- ▶ Double dispenser for commercial vehicles
- ▶ Megawatt Charging

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- ▶ Mobile Chargers
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Residential

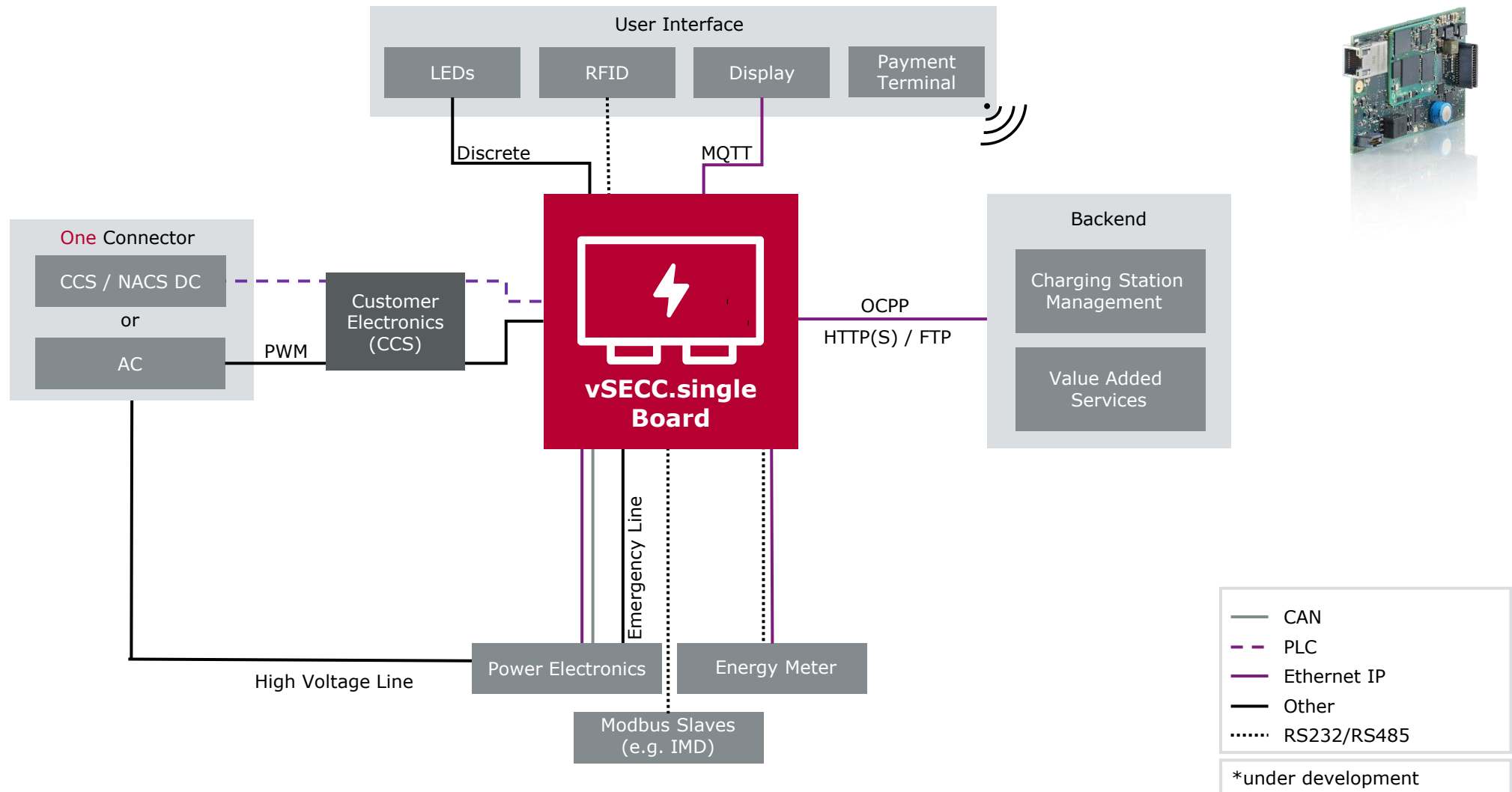
- ▶ Smart DC Wallbox
- ▶ DC charging for microgrids

Public and Semi-Public

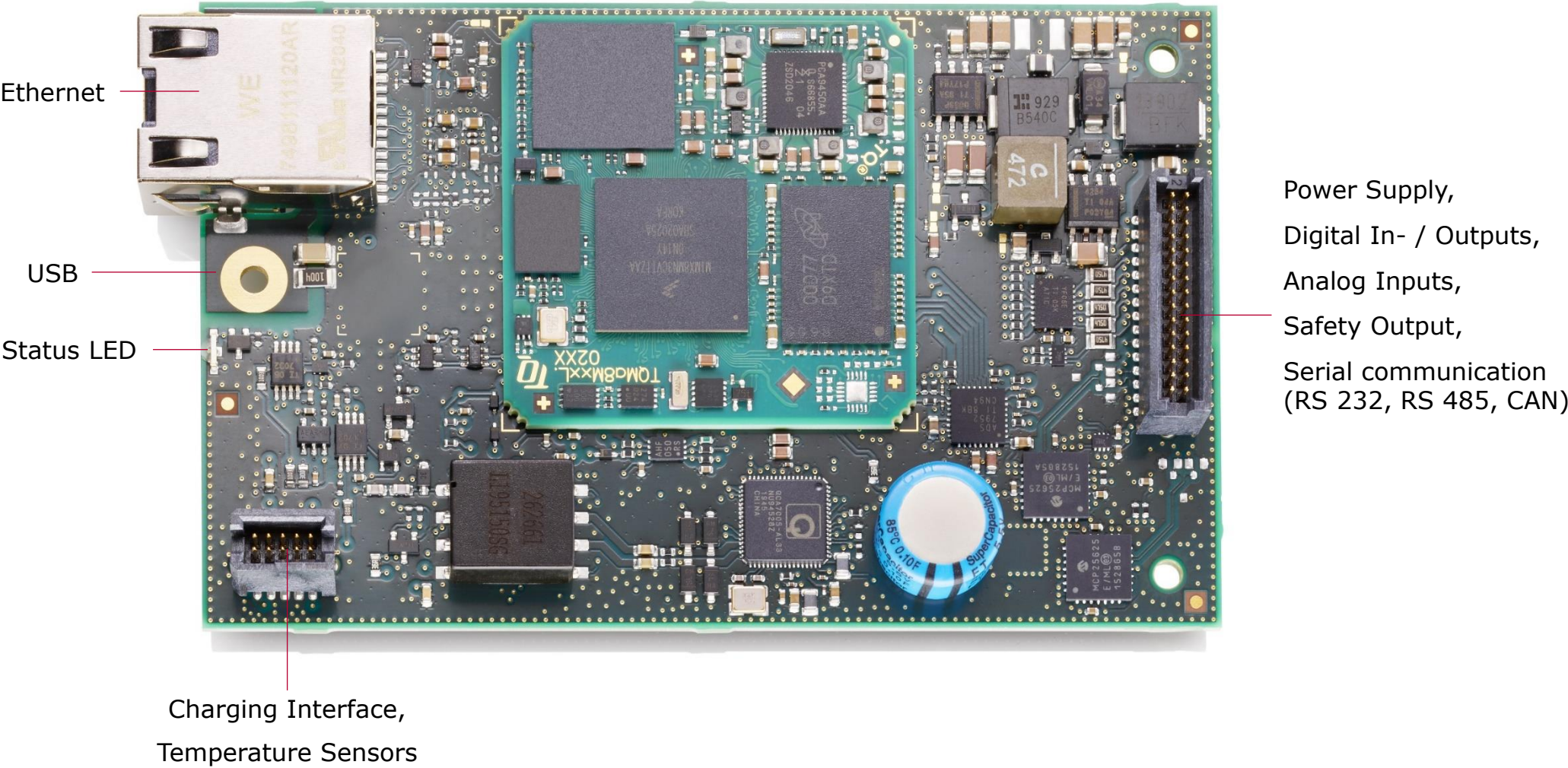
- ▶ Single dispenser solutions
- ▶ Charging stations for commercial fleets

vSECC.single Standalone Controller




Interfaces Inside Charging Station – Integration of vSECC.single Board



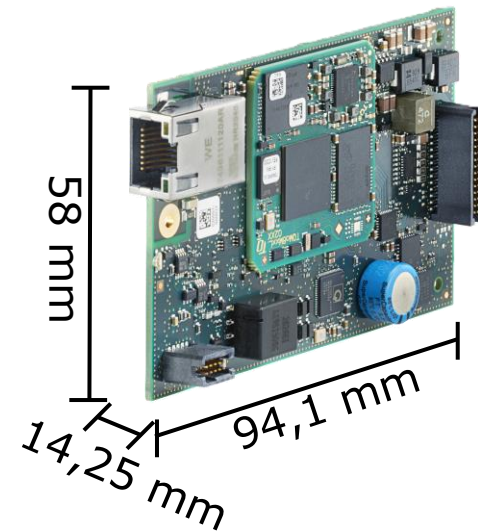
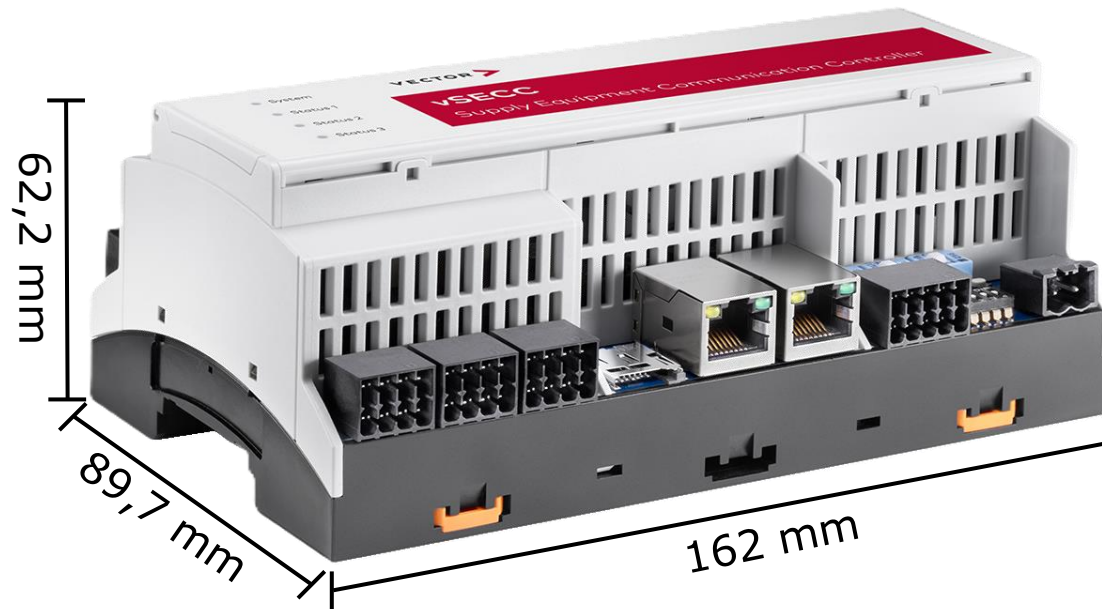
Interface Details



Hardware Details

	vSECC	vSECC.MCS	vSECC.single	vSECC.single Board
Main-CPU	i.MX 6Quad Core		i.MX8M Nano	
Power supply	18 V – 30 V DC		11 V – 13 V DC	12 V DC
Communication	2 x CAN 2 x 1000Base-T / 100Base-TX		1 x CAN 1 x 1000Base-T / 100Base-TX	
			1 x RS232 1 x RS485	
Charging interfaces			IEC 61851-1 / -23 SAE J1772 DIN SPEC 70121 ISO 15118-2 ISO 15118-3 (CCS) ISO 15118-20 (BPT + MCS)	
	OppCharge 1.3 SAE J3105 CHAdeMO v0.9, 1.2			
	Max. 2 charging points simultaneously			
Inputs and Outputs	8 x IEC 61131-2 Type 1 Digital Input 2 x 0 – 10 V Analog Input 16 x Digital Out (I _{max} = 200 mA)		3x High-Side Digital Outputs 4x Inputs (Analog / Digital Inputs, switchable)	10x Digital I/O (logic level 3.3 V) 4x 0-5 V Analog Input
Temperature Inputs	9 x temperature sensor input		2 x temperature sensor input (PT 1000)	
Safety output	3 x relay output (NO)	2 x relay output (NO)	1x High-Side Output	1 x (logic level 3.3 V)
(Housing) Dimensions (W x H x D)	162 mm x 89,7 mm x 62,2 mm (plastic)		22,5 mm x 99 mm x 114,5 mm (plastic)	14,25 mm x 58 mm x 94,1 mm
Weight	~276 g		~ 148 g	~ 48 g
Technical usage and storage requirements	Temperature: -40 °C to +70 °C		Temperature: -40 °C to +50 °C Prototypes for -40°C to +70°C available	Temperature: -40 °C to +70 °C
	Altitude: 0 – 2000 m above sea level			
	Humidity: Not condensing IP Protection class: IP 20			
Connectors	2 x RJ45		1 x RJ45 1 x Micro USB (in development)	
	8 x Phoenix DFMC / FKCN series (PCB connector)	7 x Phoenix DFMC / FKCN series (PCB connector)	6 x Phoenix FKDSO series (spring clamps)	1 x 30 pole SAMTEC base board connector 1 x 10 pole SAMTEC charging connector

Dimensions of the vSECC Controllers



Products

vSECC / vSECC.MCS Standalone Controller

vSECC.single Board for Integration

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- ▶ DC charging for microgrids

Public and Semi-Public

- ▶ Single dispenser solutions
- ▶ Charging stations for commercial fleets

vSECC Software

vSECC.single Standalone Controller

Specification vSECC Software

VEHICLE COMMUNICATION

- ▶ IEC 61851 (basic signaling, AC)
- ▶ ISO 15118-2/-3, DIN SPEC 70121
- ▶ ISO 15118-20 incl. TLS 1.3, enabling bi-directional power transfer and Megawatt charging**
- ▶ CHAdeMO 0.9/1.2 (CAN)*
- ▶ OppCharge 1.3.0, SAE J3105 (WLAN)*

*vSECC only
** vSECC.MCS only

CHARGE AUTHORIZATION

- ▶ External Identification Means (EIM)
- ▶ RFID readers
 - ▶ Plug & Play with [Minova](#) & [Elatec](#)
 - ▶ Interface to other readers can be developed
 - ▶ Flexible Authorization Sequence
- ▶ Authorization via MQTT
- ▶ CSMS-initiated, e.g. mobile app
- ▶ Autocharge + Plug & Charge

USER INTERFACE

- ▶ Charging Information is provided via MQTT Broker for displaying
- ▶ Display of Tariffs and Cost
- ▶ Set Content to display from CSMS
- ▶ Digital I/Os can be used for status information
- ▶ HTML Site can be developed on vSECC Controller

METERING & BILLING

- ▶ Interface to Energy Meters
 - ▶ Plug & Play with [LEM](#) and [AST](#)
 - ▶ Interface to other meters can be developed
 - ▶ Providing meter readings via MQTT
- ▶ Conformity to German Calibration Law
- ▶ Usage of Cloud-based Payment Terminals



Specification vSECC Software

CHARGING MANAGEMENT

- ▶ OCPP 1.6J and 2.0.1 downwards-compatible
- ▶ HTTP(S), FTP
- ▶ Value Added Services (e.g. preconditioning with VDV 261)



POWER ELECTRONICS

- ▶ Control of Power Electronics (PE)
 - ▶ Plug & Play solution with various CAN-based PE models (UUGreen, Phoenix Contact)
 - ▶ Development of PE communication:
 - > In Configurable Customer Interface with Node-RED programming tool; or
 - > By interfacing via Vector's Power Electronics Protocol, based on WebSocket or CAN
- ▶ vSECC: Control of 2 power electronics for 2 charge points
- ▶ Dynamic switching between power modules possible

CONFIGURABLE CUSTOMER INTERFACE

- ▶ Interface to peripheral devices (e.g. Energy Meters, RFID readers, IMD, PE etc.) or HTML-based User Interface can be developed with the help of graphical notation
- ▶ Installable software container with Node-RED programming tool (browser-based) is delivered
- ▶ Example flows, e.g. for PE communication are provided and can be edited
- ▶ Most hardware interfaces of vSECC Controllers can be accessed

Maximum flexibility in choice of peripheral hardware & Easy use

Specification vSECC Software

PROVISIONING

- ▶ Configuration possibilities via CSMS or in our user-friendly web interface:
 - ▶ Configuration of vSECC Controller and variables
 - ▶ Firmware update
 - ▶ Log file management
 - ▶ Certificate management
- ▶ Further features of web interface:
 - ▶ Software Container Management & Provisioning
 - ▶ Network & IP configuration
 - ▶ PLC trace logging
 - ▶ Remote support interface
- ▶ Provisioning of multiple Controllers possible with Config Download, via Script or REST API

MAINTENANCE & SUPPORT

- ▶ Fast, reliable and ongoing support and training
- ▶ Clear and comprehensive documentation
- ▶ Feature updates every three months
- ▶ Firmware Update of peripheral hardware possible

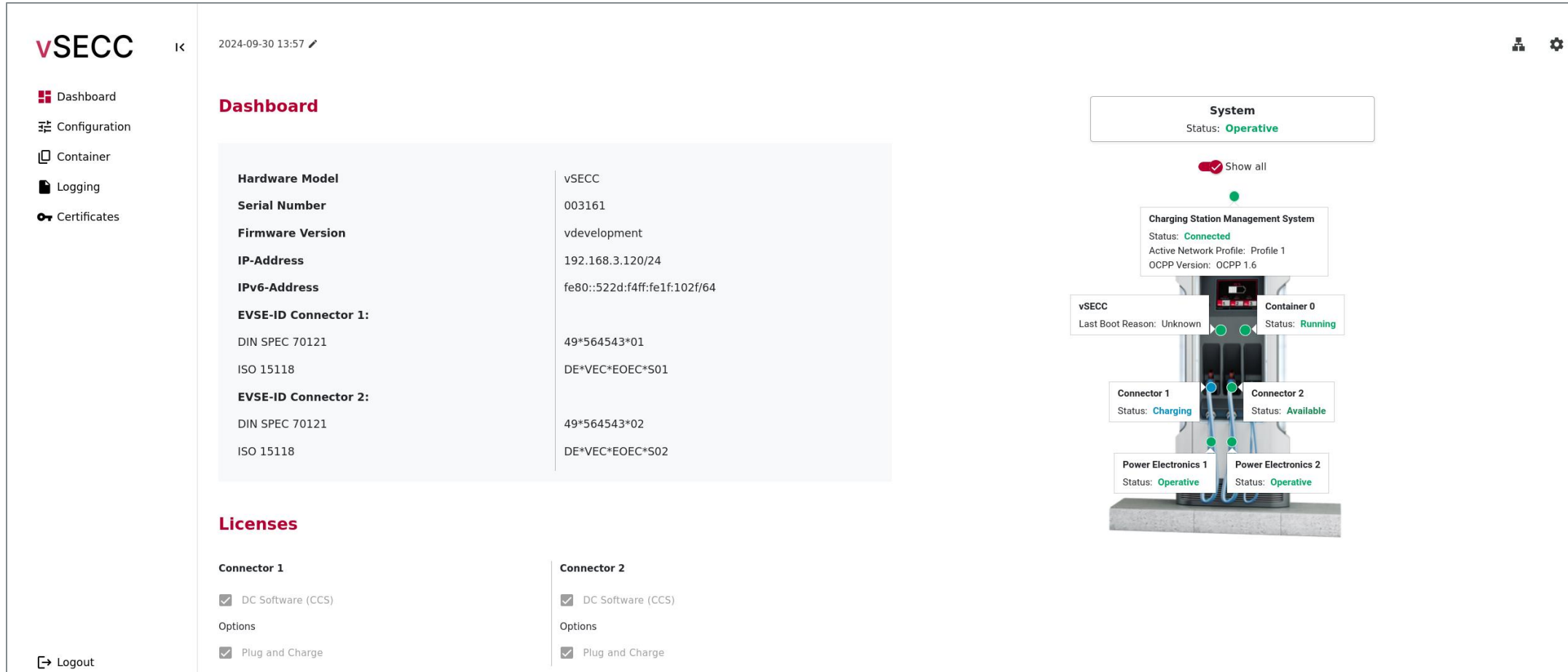
LINUX SYSTEM

- ▶ Secure boot mechanisms
- ▶ Hardware security module (key management)
- ▶ Hardware watchdog

**Controller for smart DC bidirectional charging, including scheduling and renegotiation,
that is compliant to German calibration law and available on Stock!**

Web Interface: Status Dashboard

- Dashboard provides an overview of the connected controller and status information



The screenshot displays the vSECC web interface's status dashboard. On the left, a sidebar contains navigation links: Dashboard, Configuration, Container, Logging, and Certificates. The main content area is divided into three sections: Hardware Model, Licenses, and a System Overview diagram.

Hardware Model

Property	Value
Hardware Model	vSECC
Serial Number	003161
Firmware Version	vdevelopment
IP-Address	192.168.3.120/24
IPv6-Address	fe80::522d:f4ff:fe1f:102f/64
EVSE-ID Connector 1:	
DIN SPEC 70121	49*564543*01
ISO 15118	DE*VEC*EOEC*S01
EVSE-ID Connector 2:	
DIN SPEC 70121	49*564543*02
ISO 15118	DE*VEC*EOEC*S02

Licenses

Connector 1	Connector 2
<input checked="" type="checkbox"/> DC Software (CCS)	<input checked="" type="checkbox"/> DC Software (CCS)
Options	Options
<input checked="" type="checkbox"/> Plug and Charge	<input checked="" type="checkbox"/> Plug and Charge

System Overview Diagram

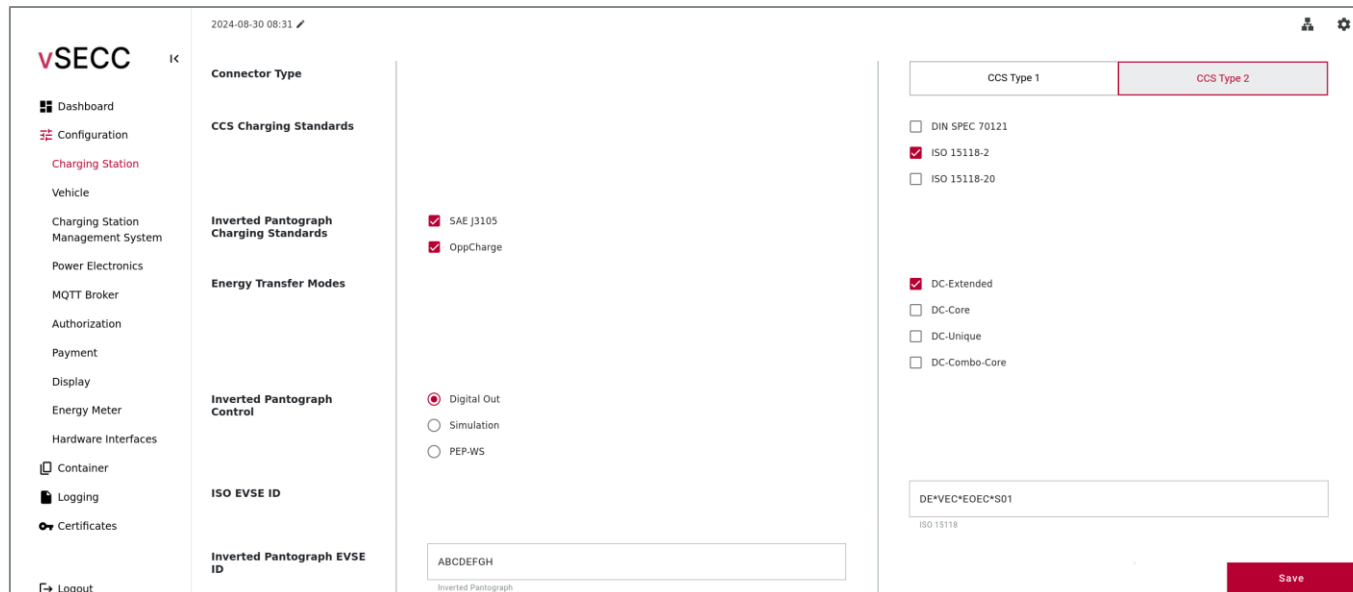
The diagram illustrates the system architecture and status of various components:

- System**: Status: **Operative**
- Charging Station Management System**: Status: **Connected**, Active Network Profile: Profile 1, OCPP Version: OCPP 1.6
- vSECC**: Last Boot Reason: Unknown
- Container 0**: Status: **Running**
- Connector 1**: Status: **Charging**
- Connector 2**: Status: **Available**
- Power Electronics 1**: Status: **Operative**
- Power Electronics 2**: Status: **Operative**

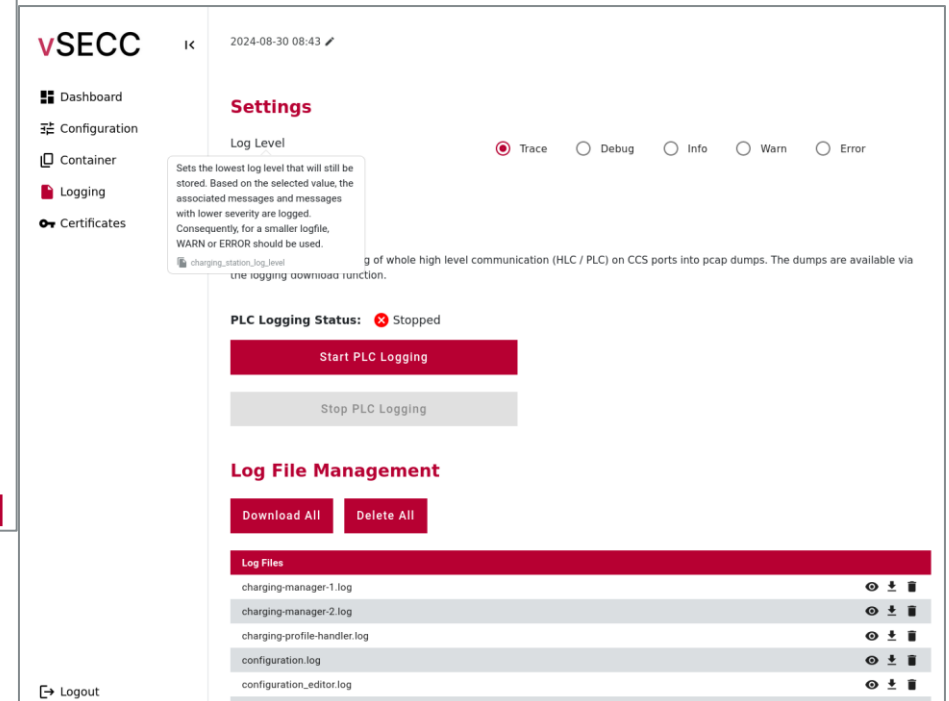
Web Interface: Configuring the vSECC Controller

- ▶ Scrollable configuration page
- ▶ Guidance through the configuration, to enable the desired functionality of the charging station
- ▶ Hovers describe the configuration variable

 **Easy to configure**



The screenshot shows the vSECC Configuration page. The left sidebar contains a navigation menu with options: Dashboard, Configuration (selected), Charging Station, Vehicle, Charging Station Management System, Power Electronics, MQTT Broker, Authorization, Payment, Display, Energy Meter, Hardware Interfaces, Container, Logging, and Certificates. The main content area is titled '2024-08-30 08:31' and features a 'Connector Type' section with tabs for 'CCS Type 1' and 'CCS Type 2'. Under 'CCS Type 2', there are checkboxes for 'DIN SPEC 70121', 'ISO 15118-2' (checked), and 'ISO 15118-20'. Below this, there are checkboxes for 'DC-Extended' (checked), 'DC-Core', 'DC-Unique', and 'DC-Combo-Core'. A text input field contains 'DE*VEC*EOEC*S01'. At the bottom right, there is a 'Save' button. The left sidebar also includes sections for 'Inverted Pantograph Charging Standards' (with checkboxes for 'SAE J3105' and 'OppCharge'), 'Energy Transfer Modes', 'Inverted Pantograph Control' (with radio buttons for 'Digital Out', 'Simulation', and 'PEP-WS'), 'ISO EVSE ID', and 'Inverted Pantograph EVSE ID' (with a text input field containing 'ABCDEFGH').

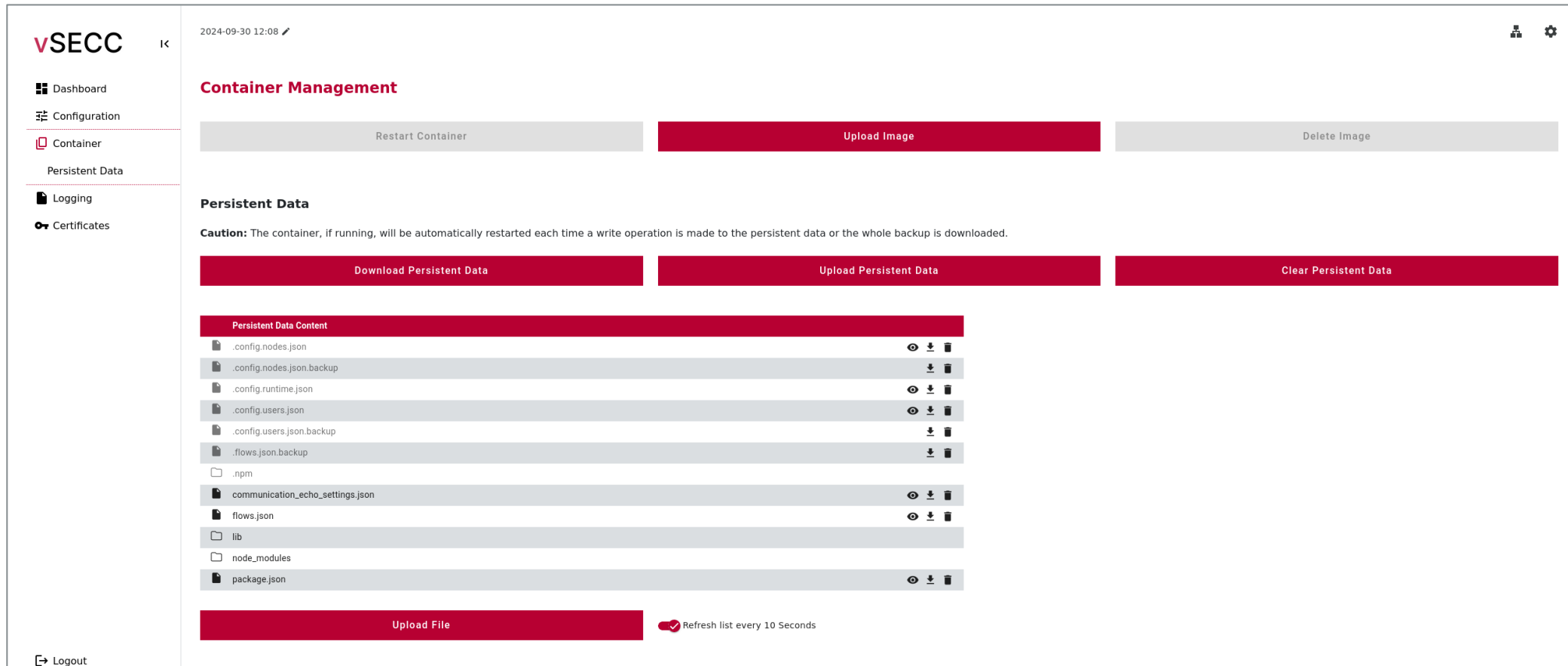


The screenshot shows the vSECC Settings page. The left sidebar is identical to the Configuration page. The main content area is titled '2024-08-30 08:43' and features a 'Settings' section. Under 'Settings', there is a 'Log Level' section with radio buttons for 'Trace' (selected), 'Debug', 'Info', 'Warn', and 'Error'. A tooltip explains: 'Sets the lowest log level that will still be stored. Based on the selected value, the associated messages and messages with lower severity are logged. Consequently, for a smaller logfile, WARN or ERROR should be used.' Below this, there is a 'charging_station_log_level' section with a text input field containing 'g of whole high level communication (HLC / PLC) on CCS ports into pcap dumps. The dumps are available via the logging download function.' The 'PLC Logging Status' is 'Stopped' (indicated by a red 'X' icon). There are buttons for 'Start PLC Logging' and 'Stop PLC Logging'. The 'Log File Management' section has buttons for 'Download All' and 'Delete All'. Below this, there is a table of log files:



Log Files	Download	Delete
charging-manager-1.log		
charging-manager-2.log		
charging-profile-handler.log		
configuration.log		
configuration_editor.log		

Configurable Customer Interface

- ▶ Installable software container with Node-RED programming tool (browser-based) is delivered
- ▶ Easy upload and management in Web Interface



The screenshot displays the vSECC web interface. On the left is a sidebar with navigation links: Dashboard, Configuration, Container (selected), Persistent Data, Logging, and Certificates. The main content area is titled 'Container Management' and includes buttons for 'Restart Container', 'Upload Image', and 'Delete Image'. Below this is the 'Persistent Data' section, which contains a caution message and buttons for 'Download Persistent Data', 'Upload Persistent Data', and 'Clear Persistent Data'. A table titled 'Persistent Data Content' lists various files and folders with icons for viewing, downloading, and deleting. At the bottom, there is an 'Upload File' button and a checkbox for 'Refresh list every 10 Seconds'.

vSECC 1K 2024-09-30 12:08  

Container Management





































Restart Container Upload Image Delete Image

Persistent Data


Caution: The container, if running, will be automatically restarted each time a write operation is made to the persistent data or the whole backup is downloaded.

Download Persistent Data Upload Persistent Data Clear Persistent Data

Persistent Data Content

 .config.nodes.json	  
 .config.nodes.json.backup	 
 .config.runtime.json	  
 .config.users.json	  
 .config.users.json.backup	 
 .flows.json.backup	 
 .npm	
 communication_echo_settings.json	  
 flows.json	  
 lib	
 node_modules	
 package.json	  

Upload File ☒ Refresh list every 10 Seconds

 Logout

Standardization Details: ISO 15118

ISO 15118 Use Case	Supported	Details
A. Start of charging process	✓	A1. Forced High Level Communication
B. Communication Setup	✓	
C. Certificate Handling	🕒	
D. Identification, Authentication and Authorisation	✓	
E. Target setting and charge scheduling	✓	E2. - E5. Scheduling of SA / EV / PE, Resuming
F. Charge controlling and Re-scheduling	✓	F0., F2. – F3.
G. Value-added services	✓	
H. End of charging process	✓	

Standardization Details: OCPP 2.0.1

OCPP Use Case	Supported	Details
A. Security	✓	A01 – A02: Update CS credentials, A05: Upgrade security profile
B. Provisioning	✓	B01 – B04, B05, B06 - B08, B09 – B10, B11 – B12: Boot, configure, reset CS, set new network connection profile
C. Authorization	✓	C01-C02, (C03), C05, C07-C08, C15: RFID, Start Button, by CSMS, EIM, Plug & Charge, Unknown ID when Offline
D. LocalAuthorizationList Management	⌚	
E. Transactions	✓	E01– E09, E11 – E13, E15: Start, stop, end charging
F. RemoteControl	✓	F01 – F04, F06: Remotely start & stop transactions, charging, trigger messages
G. Availability	✓	G01 – G04: Change, report availability
H. Reservation	⌚	
I. TariffAndCost	✓	I02 – I04: Provide tariff & cost information to driver
J. MeterValues	✓	J02: Send transaction related meter values
K. SmartCharging	✓	K01 – K02, K06 – K07, K10, K16 – K17: Smart Charging, Renegotiation
L. FirmwareManagement	✓	L02: Firmware Update via HTTP(S) and FTP
M. ISO 15118 CertificateManagement	✓	M04 – M05: Delete and Install certificates
N. Diagnostics	✓	N01, N04, N06 – N08: Upload Log Files via HTTP(S) and FTP, Set & Clear Monitors and Monitoring Events
O. DisplayMessage	⌚	O01-O02: Set content to display from the CSMS
P. DataTransfer	⌚	

For more details, please revise the Document „Supported OCPP Features + Restrictions“

Standardization Details: OCPP 1.6J

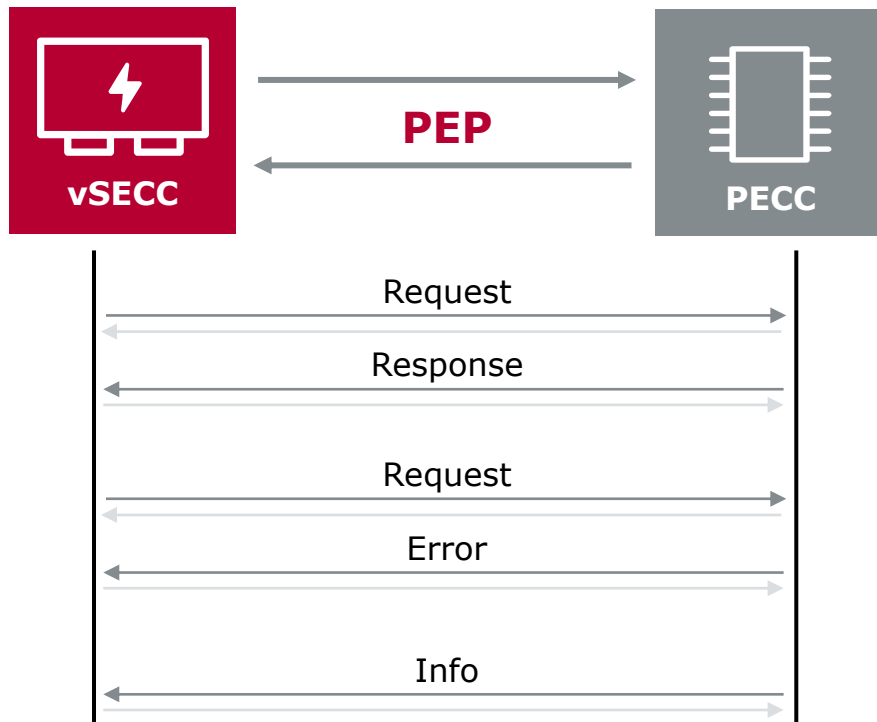
OCPP Profile	OCPP 1.6 Message	Supported	Details
Core	Authorize	✓	
	BootNotification	✓	
	ChangeAvailability	✓	
	ChangeConfiguration	✓	
	ClearCache	⌚	
	DataTransfer	(✓)	For charging cost
	GetConfiguration	✓	
	Heartbeat	✓	
	MeterValues	(✓)	No support for meter values outside of transactions
	RemoteStartTransaction, RemoteStopTransaction	✓	
	Reset	✓	
	StartTransaction, StopTransaction	✓	
	StatusNotification	✓	
	UnlockConnector	⌚	
Firmware Management	GetDiagnostics	✓	
	DiagnosticsStatusNotification	✓	
	FirmwareStatusNotification	✓	
	UpdateFirmware	✓	

Standardization Details: OCPP 1.6J

OCPP Profile	OCPP 1.6 Message	Supported	Details
Smart Charging	ClearChargingProfile	✓	
	GetCompositeSchedule	🕒	
	SetChargingProfile	✓	
Remote Trigger	TriggerMessage	(✓)	Support for the following trigger message types: BootNotification, StatusNotification, Heartbeat, SignChargingStationCertificate, SignCombinedCertificate, SignV2GCertificate
Security	CertificateSigned	✓	
	DeleteCertificate	(✓)	vSECC only supports deleting certificates based on their ID
	ExtendedTriggerMessage	(✓)	See remarks for "TriggerMessage"
	GetInstalledCertificateIds	🕒	
	GetLog	✓	
	InstallCertificate	✓	
	LogStatusNotification	✓	
	SecurityEventNotification	🕒	
	SignCertificate	✓	
	SignedFirmwareStatusNotification	🕒	
	SignedUpdateFirmware	🕒	

Vector's Power Electronics Protocol Communication Model

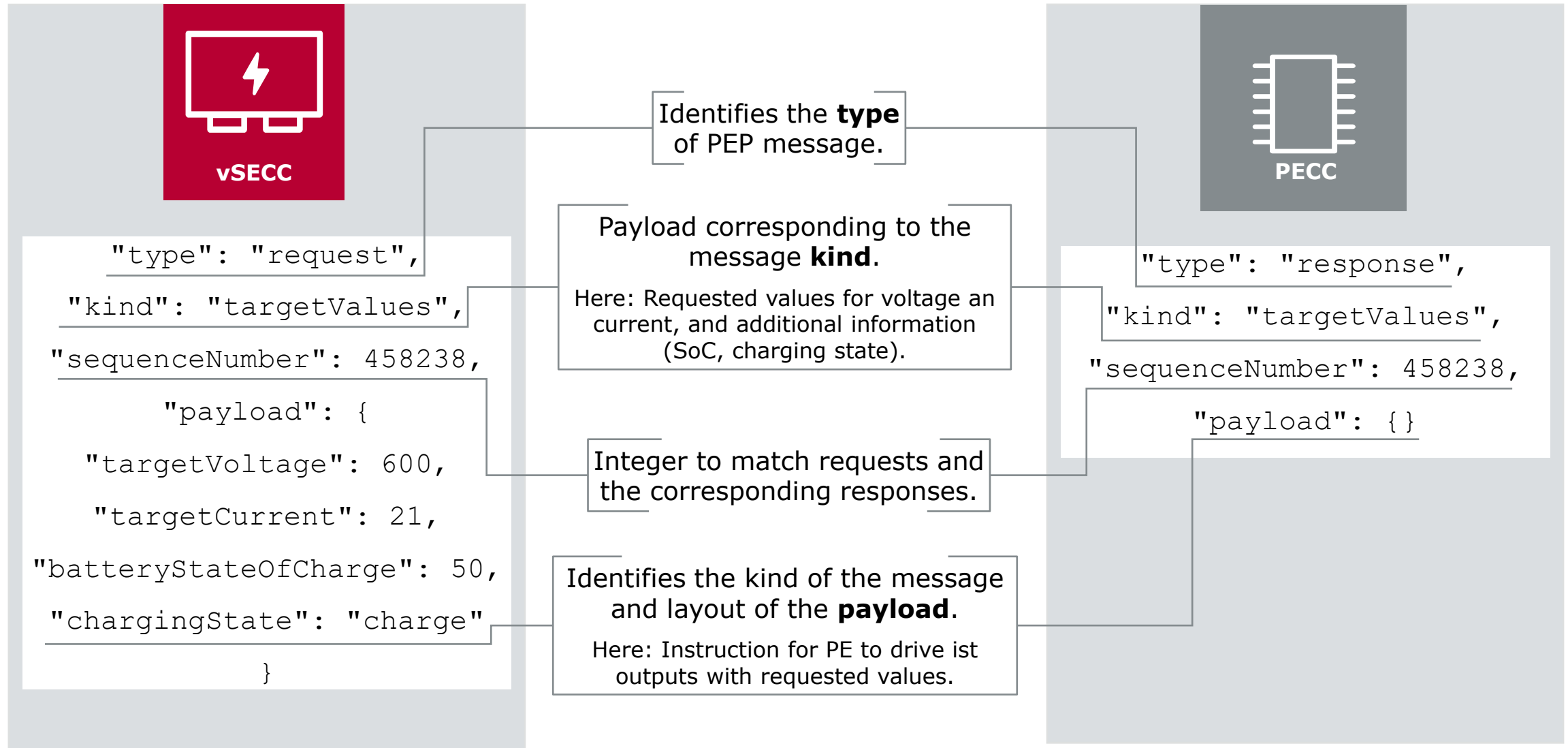
- ▶ Some charging station designs include a controller in addition to the SECC, e.g. for additional interfaces
- ▶ This control ("PECC") can interface to the vSECC Controller via Vector's Power Electronics Protocol
- ▶ PEP (Power Electronics Protocol) is a communication protocol based on WebSocket (alternatively CAN) to control the Power Electronics
- ▶ Two communication entities are defined:
Supply Equipment Communication Controller (vSECC) and
Power Electronics Communication Controller (PECC)



Power Electronics Communication based on WebSocket

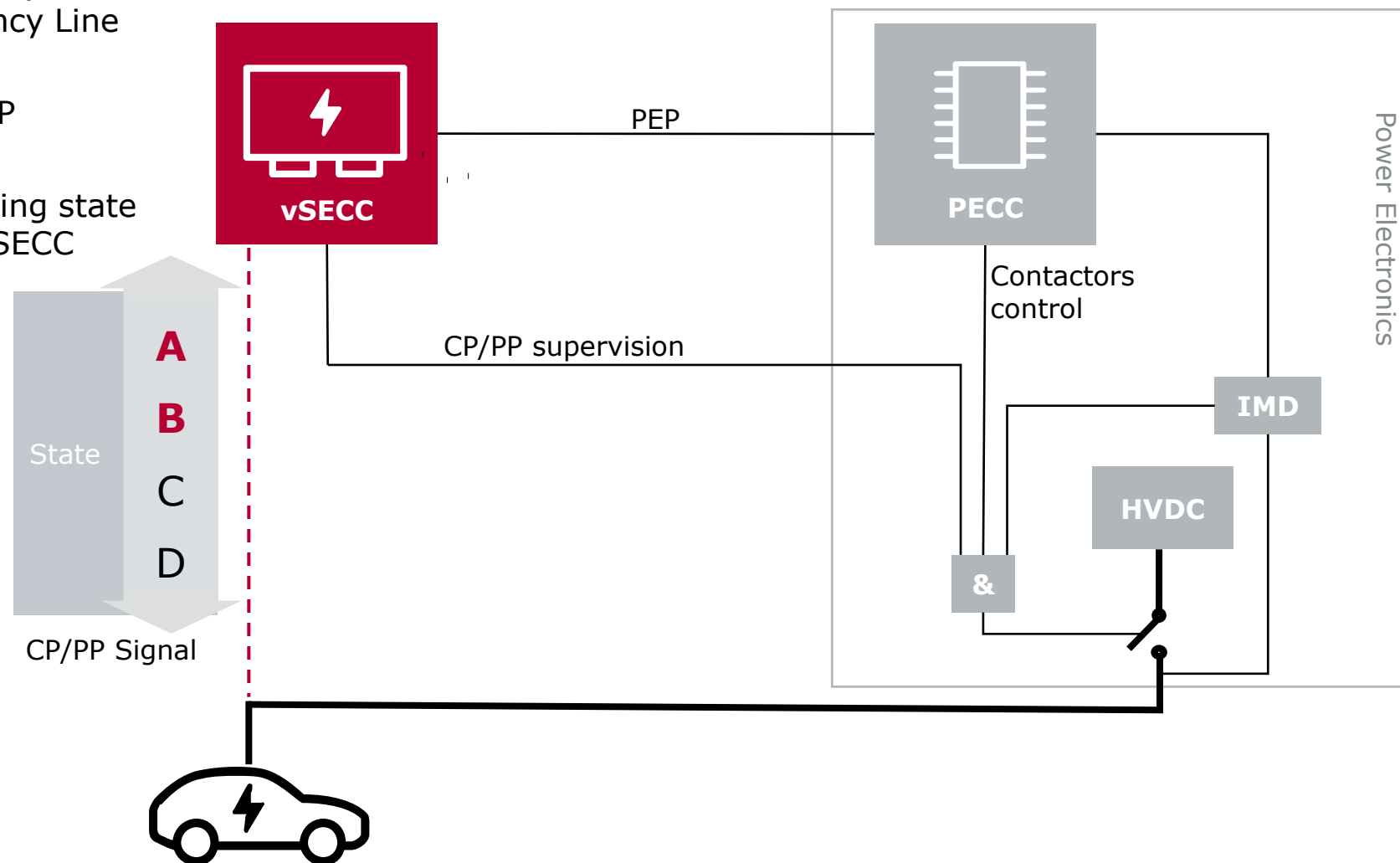
- ▶ vSECC acts as WebSocket client
 - ▶ Establishes a WebSocket connection
 - ▶ Leads the charging process
 - > Communicates with EV and PECC
 - > Controls and monitors the energy transfer
- ▶ PECC acts as WebSocket server
 - ▶ Waits until WebSocket connection is established
 - ▶ Is primarily responsible for executing and answering requests sent by the vSECC
- ▶ PEP defines two communication patterns
 - ▶ Request-reply pattern
 - > Request, response and error messages
 - ▶ One-way pattern
 - > Informational messages
- ▶ PEP messages consist of JavaScript Object Notation (JSON) encoded UTF-8 strings

PEP (Power Electronic Protocol)-WS Communication Example



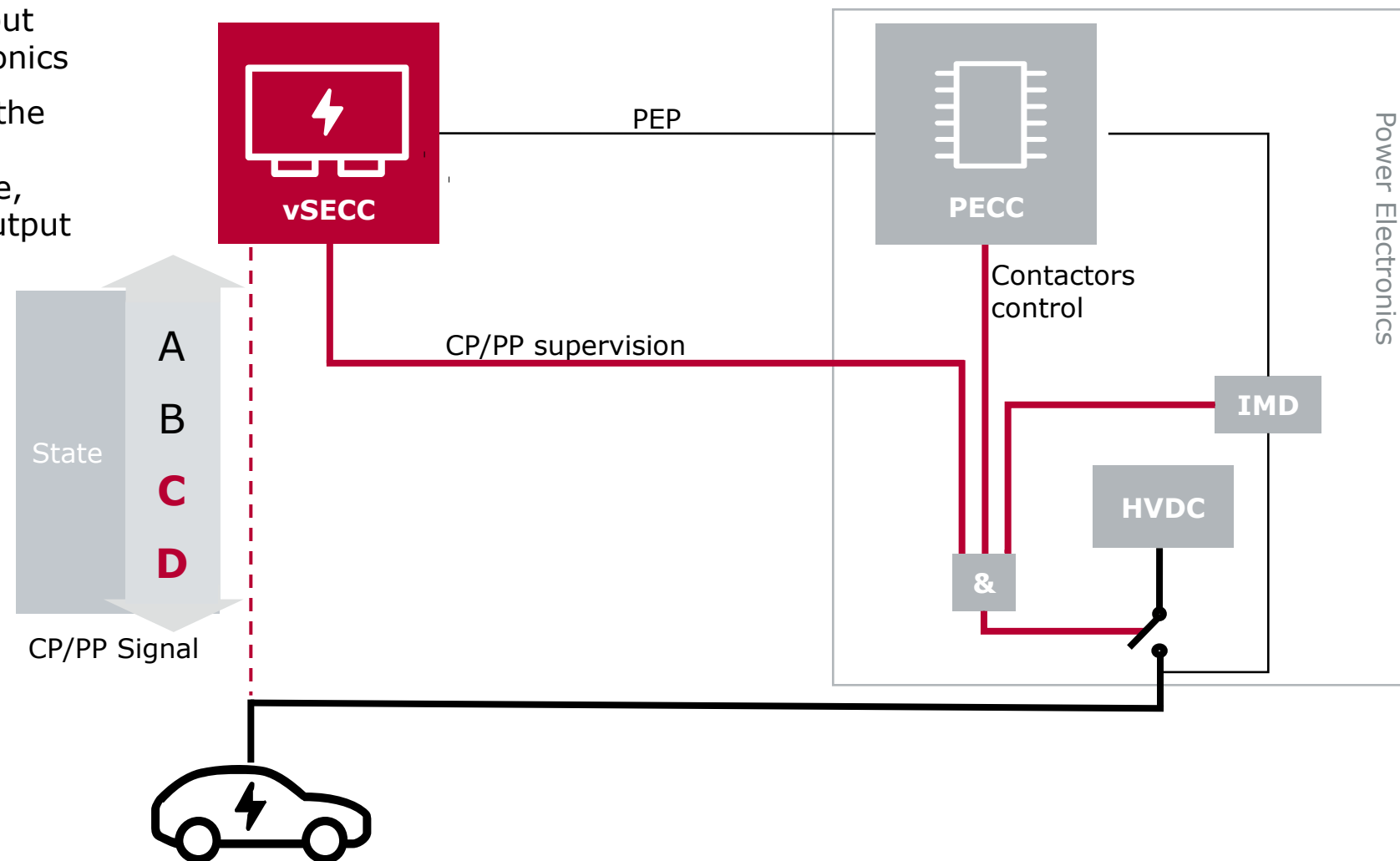
Emergency Line and Safety Shutdown

- ▶ To add an extra layer of safety, vSECC provides an Emergency Line based on Hardware
- ▶ No extra Hardware for CP/PP monitoring needed
- ▶ EV communicates the charging state via Control Pilot Signal to vSECC
- ▶ Depending on the Control Pilot state and the validity of the Proximity Pin signal, the vSECC allows to energize the outlet

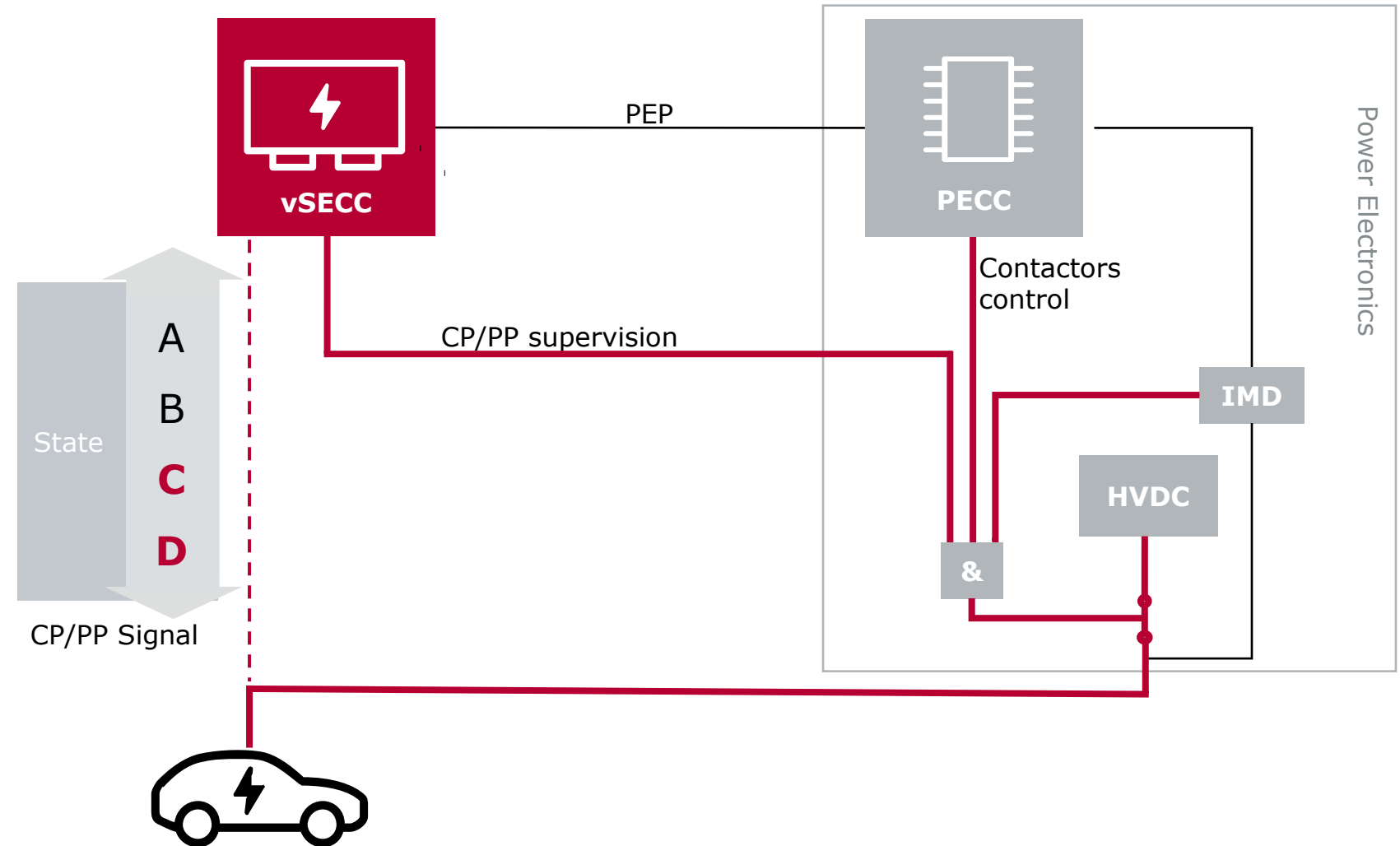


Emergency Line and Safety Shutdown

- ▶ The CP and PP signals are processed and provided as safety output directly to the power electronics
- ▶ Logical AND conjunction of the input from the Insulation Monitoring Device, PECC and vSECC's safety output controls the high-voltage DC module output



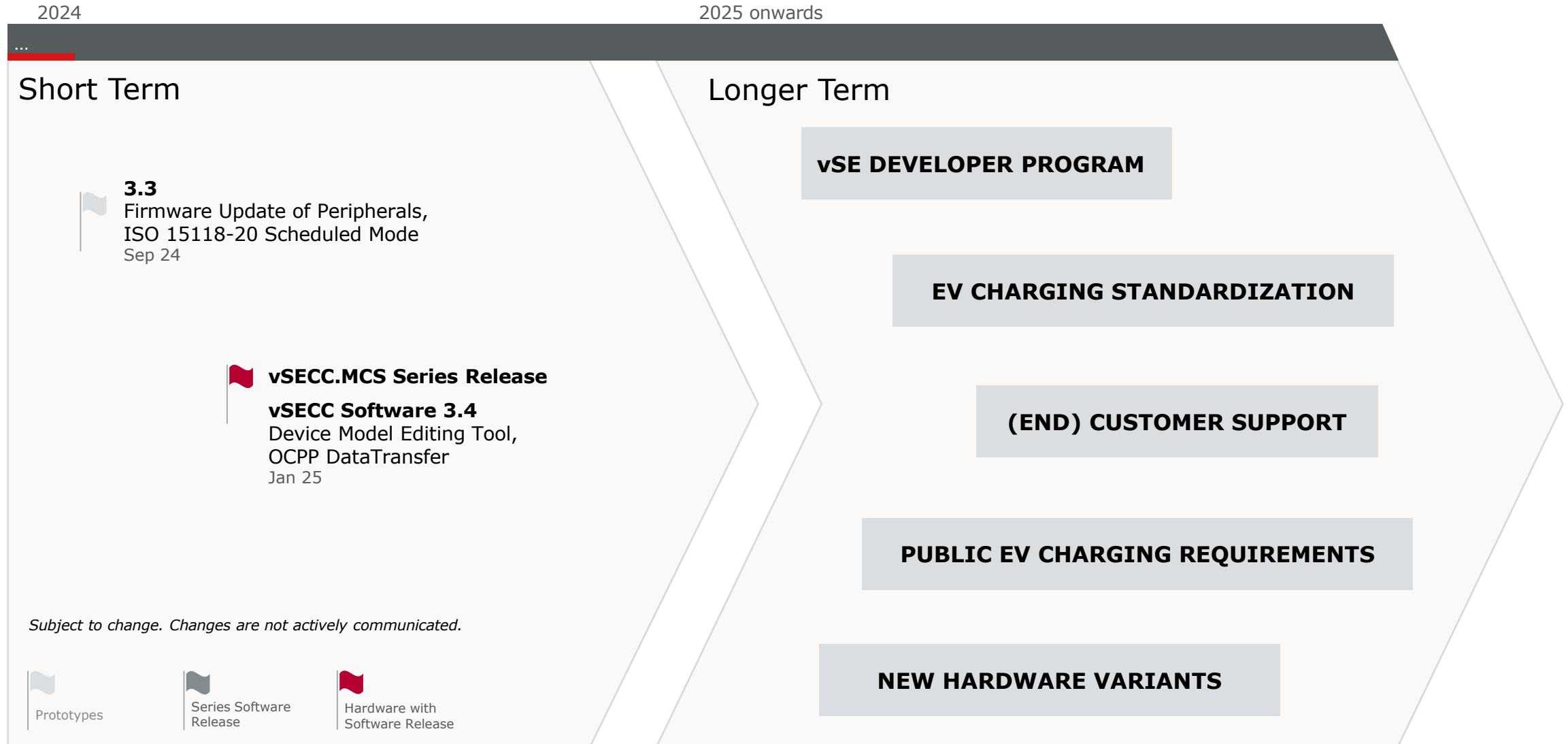
Emergency Line and Safety Shutdown



- ▶ Only if CP and PP signals are valid, the contactors are closed and the vehicle is being charged



Product Roadmap



Product Roadmap

2025 onwards

Longer Term

vSE DEVELOPER PROGRAM

- ▶ Possibility to deploy own software containers on vSECC Controllers, e.g. for functionality out of scope of current vSECC Controllers
- ▶ Enhanced features for even faster development of charging stations
- ▶ Virtualization possibilities for testing

(END) CUSTOMER SUPPORT

- ▶ Live Logging
- ▶ Provisioning Support

EV CHARGING STANDARDIZATION

- ▶ OCPP 2.1
- ▶ ISO 15118 AC charging
- ▶ ISO 15118-20 AC BPT charging
- ▶ ISO 15118-20 automated connection device (ACD)

PUBLIC EV CHARGING REQUIREMENTS

- ▶ Provide more information for display
- ▶ Charging Station Reservation

NEW HARDWARE VARIANTS

- ▶ Smart AC Charge Controller
- ▶ Controller Architecture for Sattelite Charging

Subject to change. Changes are not actively communicated.

E-Mobility Starter Kit

Configured According to your Needs

- ▶ Two **Controllers**:
Choice of 2 **vSECC** / **vSECC.MCS** / **vSECC.single** Controllers
- ▶ Charging interfaces selectable (e.g. CCS or AC, and CHAdeMO or Pantograph for vSECC)
- ▶ All software options available (e.g. Plug&Charge (DC))
- ▶ Power cable and mating connectors for vSECC included
- ▶ 12 months test access to **vCharM**
- ▶ 12 months software updates
- ▶ Getting started documentation, manuals and necessary files
- ▶ Access to e-Learnings
- ▶ Extensive integration guidance with comprehensive support



For more information visit vector.com/vSECC
or [watch the Unboxing Video](#)

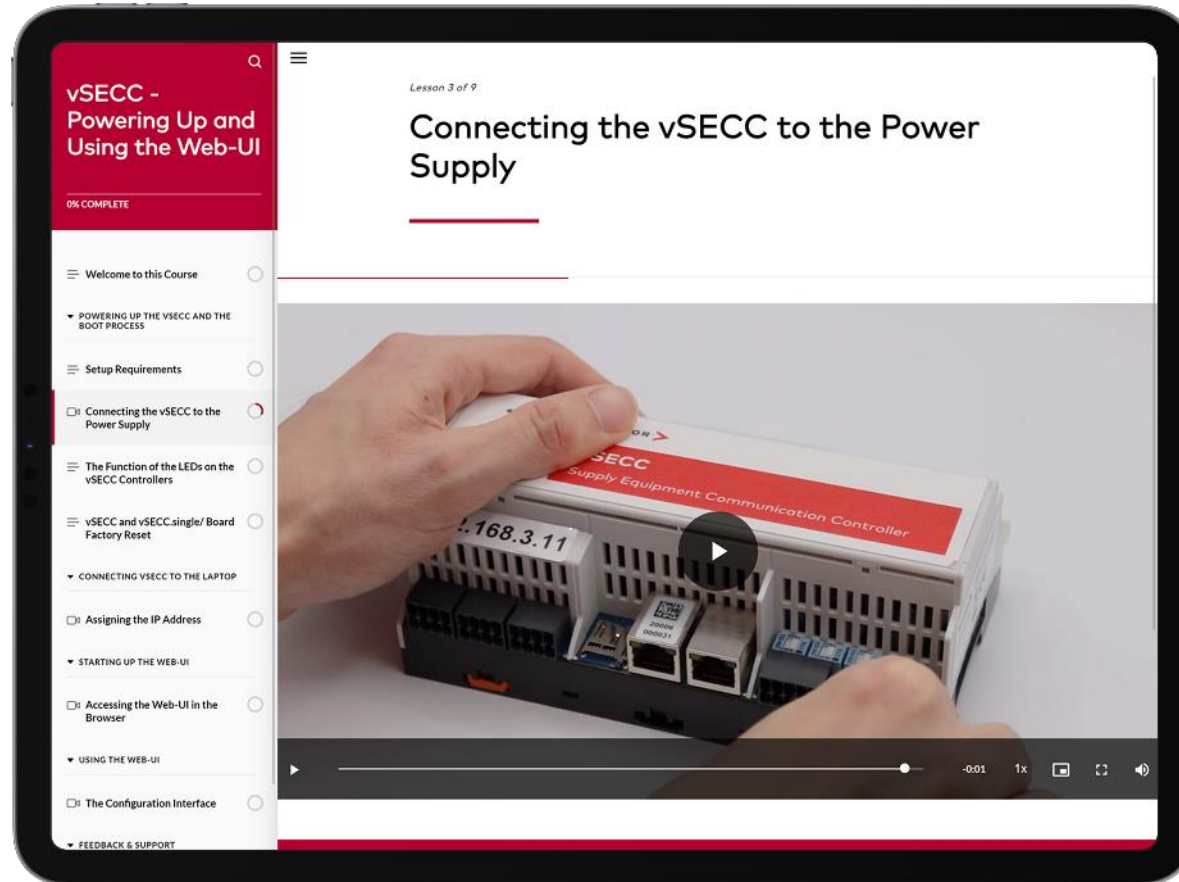


Setup Requirements

- ▶ Desk with 12/24V power supply
- ▶ General knowledge in Software and Hardware
- ▶ Software development environment (only for advanced functionality)

Your Kick-Start Into Charging Infrastructure

E-Learnings



Learn everything about the Starter Kit and the vSECC Controllers



Avoid errors and high maintenance costs



Accelerate the development process of your charging stations



Have fun learning!
www.vector.com/vsecc-learnings

Access to the vSECC Controller's courses via the Vector Academy

For more information about Vector
and our products please visit

www.vector.com

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