Schneider Charge

OCPP Protocol

Connectivity Guide

PKR9492300
10/2024

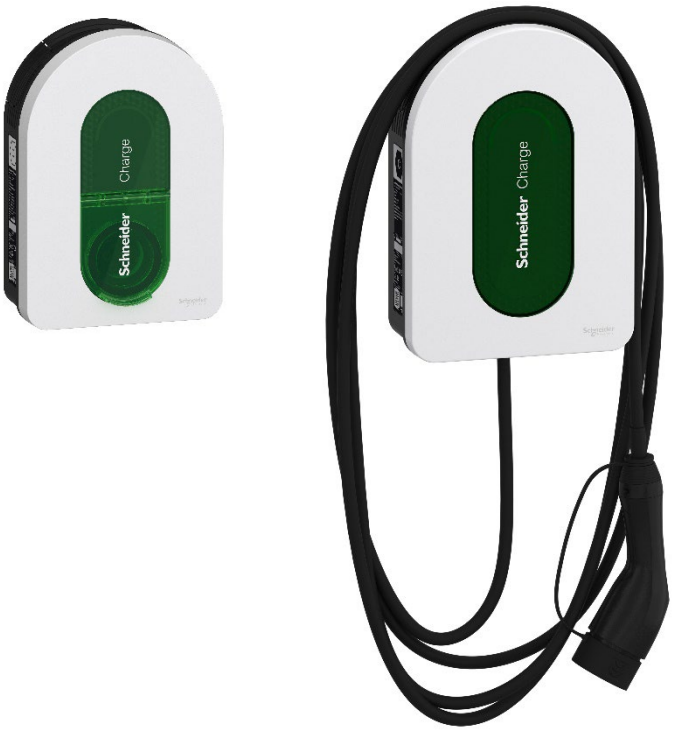

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Table of Contents

Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation and has received safety training to recognize and avoid the hazards involved.

About the Book

Purpose of this Document

The purpose of this document is to guide you with the connectivity of Schneider Charge range with OCPP protocol 1.6 supervisions.

Document Version History

Document Reference Revision	Release Date	Software Version	Evolution
PKR9492300 -00	Oct 2024	1.13.4	Document creation

Terminology

Acronym	Designation
EVSE	Electrical Vehicle Supply Equipment (charging station compliant with OCPP standard)
OCPP	Open Charge Point Protocol (communication protocol used between the charging stations and a central system)
T2S	Type 2 socket
ATC	Attached cable

Related Documents

Document Title	Document Reference– Revision	Author	Release Date	Link
Schneider Charge France offer Installation Guide	PKR9096301-02	Schneider Electric	08/2024	https://download.schneider-electric.com/files?p_enDocType=User+guide&p_File_Name=PKR9096301-02_EN_v01.pdf
Schneider Charge IEC offer Installation Guide	PKR9462701-01	Schneider Electric	08/2024	https://download.schneider-electric.com/files?p_enDocType=User+guide&p_File_Name=PKR9462701-01_FR.pdf
Open Charge Point Protocol 1.6	1.6	Open Charge Alliance	12/2019	https://www.openchargeal-liance.org/
Schneider Charge - Cybersecurity Guide	00	Schneider Electric	09/2024	https://download.schneider-electric.com/files?p_enDocType=User+guide&p_File_Name=PKR9492200-00_EN.pdf

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Safety Precautions

NOTICE

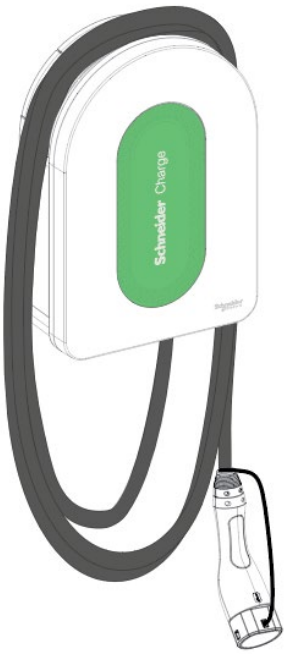
HAZARD OF INCORRECT USE

- This document contains general descriptions and/or general technical specifications of the products mentioned. It cannot be used to determine the suitability or reliability of these products for specific user applications. It is the responsibility of each user or integrator to conduct the appropriate risk analysis in full, assessing and testing products as regards the application in which they will be used and the execution of this application. Neither Schneider Electric nor any of its affiliated companies or subsidiaries can be held responsible for incorrect use of the information contained in this document. If you have any suggestions for improvements or correction, or have found errors in this publication, please notify us.
- All relevant state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to ensure compliance with documented system data, only the manufacturer should perform repairs to components. When equipment is used for applications with technical safety requirements, follow the relevant instructions.

Failure to follow these instructions can result in equipment damage.

Product Family

Charging stations with a T2S socket



Charging stations with an attached cable

Supported OCPP Operations

Supported protocol is OCPP 1.6 JSON.

The following tables detail the supported OCPP messages.

Operations Initiated by Charge Point

Message	Operation group	Comment
Authorize	Core	Supported
BootNotification	Core	Supported
DataTransfer	Core	No specific data transfer
DiagnosticsStatusNotification	Firmware and diagnostics file transfer	Supported
FirmwareStatusNotification	Firmware and diagnostics file transfer	Supported
Heartbeat	Core	Supported
MeterValues	Core	Supported
StartTransaction	Core	Supported
StatusNotification	Core	Supported
StopTransaction	Core	Supported

Operations Initiated by Central System

Message	Operation group	Comment
CancelReservation	Reservation	Supported
ChangeAvailability	Core	Not supported
ChangeConfiguration	Core	Supported
ClearCache	Core	Not supported
ClearChargingProfile	Smart charging	Supported
DataTransfer	Core	No specific data transfer
GetCompositeSchedule	Smart charging	Supported
GetConfiguration	Core	Supported
GetDiagnostics	Firmware and diagnostics file transfer	Supported *NOTE
GetLocalListVersion	Local auth list management	Not supported
RemoteStartTransaction	Core	Supported
RemoteStopTransaction	Core	Supported
ReserveNow	Reservation	Supported
Reset	Core	Supported
SendLocalList	Local auth list management	Not supported
SetChargingProfile	Smart charging	Supported

Message	Operation group	Comment
TriggerMessage	Remote trigger	Supported
UnlockConnector	Core	Supported
UpdateFirmware	Firmware and diagnostics file transfer	Supported *NOTE

***NOTE:**

- Supported protocols for FW upgrade and get diagnostic:

  FTP, **FTPS**, **HTTP** and **HTTPS**.

Smart Charging

The table below provides the supported smart charging features.

Class	Attribute	Comment
ChargingProfile	ChargingProfileId	Supported
	TransactionId	Supported
	StackLevel	Supported
	ChargingProfilePurpose	All profiles are supported (TxDefaultProfile, TxProfile, ChargePointMaxProfile).
	ReccurencyKind	All types are supported (Daily, Weekly).
	ValidFrom	Supported
	ValidTo	Supported
ChargingSchedule	Duration	Supported
	StartSchedule	Supported
	ChargingRateUnit	A and W are supported
	MinChargingRate	Parameter not used
ChargingSchedulePeriod	StartPeriod	Supported
	Limit	Supported
	NumberPhases	Parameter not used

NOTE: Messages containing not supported attributes are rejected by the charging station.

Parameters

Standard Keys

The table below details all EVSE parameters covered by the OCPP 1.6 Standard that can be read or modified from the supervision

Key name	R/O	Accessibility	Type	Default value	Description
AuthorizeRemoteTxRequests	Required	R & W	Boolean	True	When set to true, a remote request to start a transaction in the form of a RemoteStartTransaction.req message will be authorized beforehand like a local action to start a transaction
ClockAlignedDataInterval	Required	R & W	Integer	0	Size (in seconds) of the clock-aligned data interval, a value of "0" is to be interpreted to mean that no clock-aligned data should be transmitted
ConnectionTimeOut	Required	R & W	Integer	0	Interval (from successful authorization) until the charging session is automatically canceled due to failure of EV user to (correctly) insert the charging cable connector(s) into the appropriate connector(s). 0 means no timeout
GetConfigurationMaxKeys	Required	R	Integer	100	The maximum number of configuration keys that can be requested in a GetConfiguration.req PDU
HeartbeatInterval	Required	R & W	Integer	60	The interval of inactivity in seconds (no OCPP exchanges) with central system after which the charge point should send a Heartbeat.req PDU
MeterValuesAlignedData	Required	R & W	CSL		The clock-aligned measurand(s) to be included in a MeterValues.req PDU, every ClockAlignedDataInterval seconds - not currently supported
MeterValuesAlignedDataMax-Length	Optional	R	Integer	0	The maximum number of items in a MeterValuesAlignedData Configuration Key - not currently supported
MeterValuesSampledData	Required	R & W	CSL	Voltage; Power.Active.Import; Energy.Active.Import.Register; Current.Import; Current.Offered; Frequency;	The sampled measurands to be included in a MeterValues.req PDU, every MeterValueSampleInterval seconds
MeterValuesSampledDataMax-Length	Optional	R	Integer	20	The maximum number of items in a MeterValuesSampledData Configuration Key
MeterValueSampleInterval	Required	R & W	Integer	30	The interval (seconds) between sampling of metering (or other) data, intended to be transmitted by "MeterValues" PDUs
NumberOfConnectors	Required	R	Integer	1	The number of physical charging connectors of this Charge Point
ResetRetries	Required	R & W	Integer	0	Number of times to retry an unsuccessful reset of the Charge Point
ConnectorPhaseRotation	Required	R & W	CSL	NotApplicable	The phase rotation per connector in respect to the connector's energy meter
ConnectorPhaseRotationMax-Length	Optional	R	Integer	0	The maximum number of items in a ConnectorPhaseRotation Configuration Key
StopTransactionOnEVSideDis-connect	Required	R & W	Boolean	True	When set to true, the Charge Point will administratively stop the transaction when the cable is unplugged from the EV
StopTransactionOnInvalidId	Required	R & W	Boolean	True	When set to true, the Charge Point will stop an ongoing transaction when it receives a non- Accepted authorization status in a StartTransaction.conf for this transaction
StopTxnAlignedData	Required	R & W	CSL		The clock-aligned periodic measurand(s) to be included in the TransactionData element of StopTransaction.req MeterValues.req PDU for every ClockAlignedDataInterval of the charging session

Key name	R/O	Accessibility	Type	Default value	Description
StopTxnAlignedDataMaxLength	Optional	R	Integer	0	The maximum number of items in a StopTxnAlignedData Configuration Key
StopTxnSampledData	Required	R & W	CSL		The sampled measurands to be included in the TransactionData element of StopTransaction.req PDU, every MeterValueSampleInterval seconds from the start of the charging session
StopTxnSampledDataMaxLength	Optional	R	Integer	0	The maximum number of items in a StopTxnSampledData Configuration Key
SupportedFeatureProfiles	Required	R	CSL	Core,FirmwareManagement,Smart Charging,Remote Trigger	A list of supported Feature Profiles
TransactionMessageAttempts	Required	R & W	Integer	3	How many times in total the Charge Point should try to submit a transaction-related message when the Central System fails to process it
TransactionMessageRetryInterval	Required	R & W	Integer	15	How long (in seconds) the Charge Point should wait before resubmitting a transaction related message that the Central System failed to process
UnlockConnectorOnEVSideDisconnect	Optional	R & W	Boolean	True	When set to true, the Charge Point will unlock the cable on the Charge Point side when the cable is unplugged at the EV
MessageTimeout	Optional	R & W	Integer	30s	
WebSocketPingInterval	Optional	R & W	Integer	60s	When set to 0 client side websocket Ping/Pong is disabled, positive values are interpreted as number of seconds between pings
SupportedFileTransferProtocols	Required	R	CSL	HTTP, HTTPS, FTP, FTPS	The supported protocols for diagnostics file transfer
ChargeProfileMaxStacklevel	Required	R	Integer	200	
ChargingScheduleMaxPeriods	Required	R	Integer	100	
ChargingScheduleAllowedChargingRateUnit	Required	R	CSL	'Current','Power'	
MaxChargingProfilesInstalled	Required	R	Integer	200	
ConnectorSwitch3to1PhaseSupported	Optional	R	Boolean	True	
ReserveConnectorZeroSupported	Optional	R	Boolean	True	

All items listed above (even in OCPP its defined as "optional") are supported by the charge point.

Customized Keys

Following customized config keys are supported:

Key name	Type	Description	Access mode	Default value	Effective instantly
SupervisionUrl	String [199]	OCPP supervision (backend) URL	RW	Wss://sandbox.ecostruxure-ev-advisor.se.app/supervision/evcs/v1.6	Yes, re-connect to the new URL
BoxIdentifier	String [50]	Box identifier of the charge point	RW	Unique each charge point	Yes
DefaultIdTag	String [500]	Default Id tag for charge authorization	RW	FreeCharge	Yes
TICdetection	String, "true" or "false"	Whether TIC meter is detected	R	0	Yes
TICmode	Integer as string	TIC working mode	RW	0	Yes
MeterType	Integer as string	Whether MID meter detected	R	1	Yes
IMaxUser	Integer as string	Derating power	R	Charge point Max	Yes
PhaseNumber	Integer as string	Charge point number of phase	R	1 for 1-Phase 3 for 3-Phase	Yes
TriggerBackend-ConfigurationData-Reset	String, "true" or "false"	If value is written from "false" to "true", then specified data is reset. And all the configuration keys values are reset to default value (including standard customized config keys), including this key value (by default it's "false"). See the confluence link in the comments for what values to reset	RW	False	Yes

Supported Measurands

The table below details the supported measurands.

Measurand	Description	Unit
Current.Import	Instantaneous current flow to EV.	Amp
Current.Offered	Maximum current offered to EV.	Amp
Energy.Active.Import	Value measured active energy imported from the grid supply.	Wh
Energy.Reactive.Import	Value measured reactive energy imported from the grid supply.	Varh
Frequency	Instantaneous reading of powerline frequency. **NOTE:** OCPP 1.6 does not have a UnitOfMeasure for frequency, the UnitOfMeasure for any SampledValue with measurand: Frequency is Hertz.	Hz
Power.Active.Import	Instantaneous active power imported by EV.	kW
Voltage	Instantaneous value for AC supply voltage.	Volts

Charge Point Behavior Notice

The table below details the supported measurands.

Items	Behavior
“freeCharge” idTag	The charge point has no card reader, so charge point uses “freeCharge” whenever an idTag is needed
BootNotification	• ChargePointModel- CR number, see following table for the CR number • ChargePointVendor- Schneider Electric
Online start transaction	When charge point is online (connected to a backend), once user plugin the connector, charge point waits for the backend to issue a remoteStartTransaction to initiate a charge
Offline behavior	• If charge point is configured to work in standalone mode (no CSMS is supposed to be connected), charge point automatically start a charging once an EV is connected and automatically stop a charging once EV is disconnected • If the charge point is configured to work in connected mode (a CSMS is supposed to be connected), but charge point is offline, charge point will automatically start a charging once an EV is connected • Charge point conforms to OCPP standard for offline strategy
Charging behavior: offline -> online	When a charging is started in offline period (with the configured CSMS), and once charge point is back online while the charging is still ongoing, charge point sends a startTransaction with idTag “freeCharge”. The CSMS may accept or reject the charging on their own policy. Charge point reacts according to the response from the CSMS: if CSMS accept the “freeCharge”, charging continues, if CSMS reject the “freeCharge”, charging will be stopped

Commercial reference number table

CR number	Cable / Socket	Description
EVH5A22N2S	T2S	Schneider Charge 7,4/11/22KW 1P+N/3P+N 16/32A T2S socket
EVH5A22N400F		Schneider Charge 7,4/11/22KW 1P+N/3P+N 16/32A T2S socket, with TIC interface
EVH5A07N2C7	ATC	Schneider Charge 7,4KW 1P+N 32A 7M Attached cable
EVH5A11N2C7		Schneider Charge 11KW 3P+N 16A 7M Attached cable
EVH5A07N2C5		Schneider Charge 7,4KW 1P+N 32A 5M Attached cable
EVH5A11N2C5		Schneider Charge 11KW 3P+N 16A 5M Attached cable

Vendor Error Codes

The table below details all error codes that can be raised by the charging station through StlatusNotification message.

Error code	Description	Recoverable by unplug gun	Need contact service
0x100206	Ground fault	Yes	Yes
0x200206	Power Input over voltage	Yes	Yes
0x200208	Power input under voltage	Yes	Yes
0x100213	Charging over current	Yes	Yes
0x100102	Cable over temperature	Yes	No
0x10020F	Metering chip data error	Yes	Yes
0x100215	Current leakage fault	Yes	Yes
0x100218	Cable fault	Yes	Yes
0x100205	Electronic lock fault	Yes	Yes
0x100217	CP signal fault	Yes	Yes
0x100208	Relay fault	No	Yes
0x10020C	Tamper detected	Yes	No

Cybersecurity and Data Privacy

OCPP Security Profiles

The following security profiles in OCPP1.6 security white papers are supported by the charge point:

- 0: No Basic Authentication / with or without TLS
- 1: Basic Authentication / No TLS
- 2: Basic Authentication / TLS, recommended

Other security information

Refer to Schneider Charge - Cybersecurity Guide, reference PKR9492200.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.