

EVlink Pro DC

OCPP Protocol

Connectivity Guide

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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.

Safety Instructions

DANGER

HAZARD OF ELECTRIC SHOCK

- Do not open the product.
- Product to be serviced by qualified personnel only.

Failure to follow these instructions will result in death or serious injury.

NOTE: All instructions applicable to the enclosed product and all safety precautions must be observed.

For more information, you can download the app of the Customer Care Center by using the following QR code:



About the Book

Purpose of this Document

The purpose of this document is to guide you with the connectivity of EVlink Pro DC range with OCPP 1.6 supervision.

Document Version History

Document reference version	Release date	Evolution
0.5	20/05/2023	Specific keys added Error table simplification
0.4	24/04/2023	Clarification on Smart charging
0.3	24/04/2023	-
0.2	07/03/2023	Smart charging added
0.1	14/09/2022	Document creation

Terminology

Acronym	Designation
OCPP	Open Charge Point Protocol (communication protocol used between the charging stations and a central system)

Related Documents

Document title	Document reference version	Author	Release date	Link
Open Charge Point Protocol 1.6	1.6	Open Charge Alliance	12/2019	https://www.openchargealliance.org/
Improved security for OCPP 1.6-J	1.0	Open Charge Alliance	02/2023	https://www.openchargealliance.org/

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Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Product Family

- EVlink Pro DC 180 kW
- EVlink Pro DC 150 kW
- EVlink Pro DC 120 kW

Supervision Commissioning

For more information on supervision commissioning, refer to GEX4300900 *EVlink Pro DC 180 - Commissioning Guide*. This document is not available in the Schneider Electric Download Center. Contact your Schneider Electric representative to get access to this guide.

Supported OCPP Operations

The supported protocol is OCPP 1.6 JSON.

The following table details the supported OCPP messages:

Supported messages

Operations initiated by charge point:

Operation group	Message	Supported	Comment
Core	Authorize	x	–
	BootNotification	x	Details in section, page 11 BootNotification
	Heartbeat	x	–
	MeterValues	x	Details in section, page 12 MeterValues
	StartTransaction	x	–
	StatusNotification	x	Details in section, page 12 StatusNotification
	StopTransaction	x	–
Firmware Management	DiagnosticsStatusNotification	x	
	FirmwareStatusNotification	x	

Operations initiated by central system:

Operation group	Message	Supported	Comment	
Core	ChangeAvailability	x	–	
	ChangeConfiguration	x		
	ClearCache	x		
	DataTransfer	x		
	GetConfiguration	x		
	RemoteStartTransaction	x		
	RemoteStopTransaction	x		
	Reset	x		
	UnlockConnector	x	Not applicable	
Firmware Management	GetDiagnostics	x	Details in section, page 13 GetDiagnostics	
	UpdateFirmware	x	Details in section, page 13 UpdateFirmware	
Local Authentication List Management	GetLocalListVersion	x	–	
	SendLocalList	x		
Reservation	CancelReservation	x		
	ReserveNow	x		
Smart charging	GetCompositeSchedule	x		
	ClearChargingProfile	x		
	SetChargingProfile	x		Details in section, page 12 SetChargingProfile
Remote trigger	TriggerMessage	x		–

BootNotification

- **chargePointModel**: commercial reference depending on the model

Commercial reference	Power	Output
EVD1S120TBB	120 kW DC	1x CCS2 + 1x CCS2
EVD1S120THB	120 kW DC	1x CCS2 + 1x CHAdeMO
EVD1S150TBB	150 kW DC	1x CCS2 + 1x CCS2
EVD1S150THB	150 kW DC	1x CCS2 + 1x CHAdeMO
EVD1S180TBB	180 kW DC	1x CCS2 + 1x CCS2
EVD1S180THB	180 kW DC	1x CCS2 + 1x CHAdeMO
EVD1S180TBCC	180 kW	1x CCS2 + 1x CCS2
EVD1S180THBCC	180 kW	1x CCS2 + 1x CHAdeMO
EVD1S150TBCC	150 kW	1x CCS2 + 1x CCS2
EVD1S150THBCC	150 kW	1x CCS2 + 1x CHAdeMO
EVD1S120TBCC	120 kW	1x CCS2 + 1x CCS2
EVD1S120THBCC	120 kW	1x CCS2 + 1x CHAdeMO
EVD1S180TBCC7	180 kW	1x CCS2 + 1x CCS2
EVD1S150TBCC7	150 kW	1x CCS2 + 1x CCS2
EVD1S120TBCC7	120 kW	1x CCS2 + 1x CCS2
EVD1S120TBB-AN	120 kW	1x CCS2 + 1x CCS2
EVD1S120THB-AN	120 kW	1x CCS2 + 1x CHAdeMO
EVD1S150TBB-AN	150 kW	1x CCS2 + 1x CCS2
EVD1S150THB-AN	150 kW	1x CCS2 + 1x CHAdeMO
EVD1S180TBB-AN	180 kW	1x CCS2 + 1x CCS2
EVD1S180THB-AN	180 kW	1x CCS2 + 1x CHAdeMO
EVD1S180TBCC7-AN	180 kW	1x CCS2 + 1x CCS2
EVD1S150TBCC7-AN	150 kW	1x CCS2 + 1x CCS2
EVD1S120TBCC7-AN	120 kW	1x CCS2 + 1x CCS2
EVD1S60TBB	60 kW	1x CCS2 + 1x CCS2
EVD1S60THB	60 kW	1x CCS2 + 1x CHAdeMO
EVD1S60TBCC5	60 kW	1x CCS2 + 1x CCS2
EVD1S60THBCC5	60 kW	1x CCS2 + 1x CHAdeMO
EVD1S60TBCC7	60 kW	1x CCS2 + 1x CCS2

- **chargePointVendor**: Schneider Electric
- **chargePointSerialNumber**
- **firmwareVersion**

DataTransfer

Supported DataTransfer from Charge Point Operator (CPO):

- **CostUpdated:**
 - **vendorId:** com.se.cost
 - **messageId:** CostUpdated
 - data:
 - **currency**
 - **method**
 - **connectID**
 - **totalCost**
 - **TransactionId**
 - data (response): empty
 - data example:
`{currency:"VNĐ","method":"CostUpdated","connectID":1,"total-Cost":16780,"transactionId":358}`

MeterValues

MeterValues parameter	Parameter values
Reading Context	Sample Periodic
Value Format	Raw
Measurands	<ul style="list-style-type: none"> • Energy.Active.Import.Register in Wh • Power.Active.Import in W • Power.Offered in W • SoC in %

StatusNotification

Optional parameter reported:

- **Timestamp**

SetChargingProfile

Limitations:

- CHAdeMO connector does not support Smart Charging.
- CCS2 connector: Setpoint = 0 kW leads to a residual charge of approximately 0.5 A per power module.
- CCS2 connector: For charging profile limit value other than 0, the minimum acceptance power limit threshold is 1 kW.

Charging profile parameter	Parameter values
chargingProfilePurpose	<ul style="list-style-type: none"> • TxDefaultProfile • TxProfile • ChargePointMaxProfile not supported
chargingProfileKind	<ul style="list-style-type: none"> • Absolute • Recurring • Relative
recurrencyKind	<ul style="list-style-type: none"> • Daily • Weekly
chargingSchedule	<ul style="list-style-type: none"> • chargingSchedule in watts (W) • minChargeRate: not supported
chargingSchedulePeriod	numberPhases: not applicable on DC charger

GetDiagnostics and UpdateFirmware

The supported protocols are: FTP, HTTP, and HTTPS.

Security Profiles

The following modes are supported by the charger:

- No TLS / No Basic Authentication
- TLS / No Basic Authentication
- No TLS / Basic Authentication
- TLS / Basic Authentication, recommended

User Authentication

User Authentication Modes

- Authentication is required from CPO
 - Remote request from CPO
 - Badge swipe authenticated by CPO
- No authentication is required. No badge is needed.

Offline Strategies

- Allow all badges: all badges are accepted to start a transaction as the default option.
- Local authorization:
 - Cached list: only the badges registered in a cached list are accepted to start a transaction.
 - Local list: only the badges showing on the list sent by the back-end to the charging station are accepted to start a transaction.
- Reject all: all badges are rejected to start a transaction.

Authentication modes	Authentication required from CPO	AuthenticationOCPPMode = true
	Free (no badge needed)	AuthenticationOCPPMode = false Defaultidtag : provided by CPO, default value: "SIMTAG"
Offline strategies	Allow all badges	AllowOfflineTxForUnknownId = true
	Cache list only	AllowOfflineTxForUnknownId = false LocalAuthorizeOffline = true AuthorizationCacheEnable = true
	Local list only	AllowOfflineTxForUnknownId = false LocalAuthorizeOffline = true LocalAuthListEnabled = true
	Reject all badges	AllowOfflineTxForUnknownId = false LocalAuthorizeOffline = false

Authentication Time-Out

Local Authentication

If	Then
One connector is plugged in	The charging operation starts after the badge is presented to the screen.
Both connectors are plugged in	The charging operation starts on the connector that is visible on the screen. To change the connector, touch the screen.
No connector is plugged in	The screen is locked on the Welcome page.

Remote Authentication

The table below shows how to start the remote authentication **with the connector ID**:

If	And	Then
The connector is plugged in	-	The charging operation starts.
The connector is not plugged in	EnableRemoteStartNoConnectedEV = false	The charging request is rejected.
	EnableRemoteStartNoConnectedEV = true	The connector is plugged in within 2 minutes. The charging operation starts.
		The connector is not plugged in within 2 minutes. The charging request is dropped.
The connector ID is incorrect	-	The charging request is rejected.

The table below shows how to start the remote authentication **without the connector ID**:

If	And	Then
One connector is plugged in	-	The charging operation starts.
Both connectors are plugged in	-	The charging operation starts on Connector 1.
No connector is plugged in	EnableRemoteStartNoConnectedEV = false	The charging request is rejected.
	EnableRemoteStartNoConnectedEV = true	The connector is plugged in within 2 minutes. The charging operation starts.
		The connector is not plugged in within 2 minutes. The charging request is dropped.

Configuration Keys

Standard Keys

This table details all OCPP 1.6 standard configuration keys that can be read or modified from supervision.

Refer to the downloadable OCPP 1.6 documentation, page 7 for description, type and unit.

Key	Access mode	Default value
AllowOfflineTxForUnknownId	RW	true
AuthorizationCacheEnabled		false
AuthorizeRemoteTxRequests		true
ClockAlignedDataInterval		0
ConnectionTimeOut		120
GetConfigurationMaxKeys	RO	50
HeartbeatInterval	RW	60
LocalAuthorizeOffline		true
LocalPreAuthorize		false
MeterValuesAlignedData		Current.Import Current.Offered Energy.Active.Import.Register Power.Offered Power.Active.Import
MeterValuesAlignedDataMaxLength	RO	9
MeterValuesSampledData	RW	Current.Import Current.Offered Energy.Active.Import.Register Power.Offered Power.Active.Import SoC
MeterValuesSampledDataMaxLength		RO
MeterValueSampleInterval	RW	60
MinimumStatusDuration		10
NumberOfConnectors	RO	2
ResetRetries	RW	2
ConnectorPhaseRotationMaxLength	RO	1
ConnectorPhaseRotation	RW	Not Applicable
StopTransactionOnEVSideDisconnect		true
StopTransactionOnInvalidId		true
StopTxnAlignedDataMaxLength	RO	0
StopTxnSampledDataMaxLength		0
SupportedFeatureProfiles		Core FirmwareManagement LocalAuthListManagement Reservation

Key	Access mode	Default value	
		SmartCharging RemoteTrigger	
SupportedFeatureProfilesMaxLength		6	
TransactionMessageAttempts	RW	2	
TransactionMessageRetryInterval		10	
UnlockConnectorOnEVSideDisconnect		false	
WebSocketPingInterval		20	
LocalAuthListEnabled		false	
LocalAuthListMaxLength		RO	4000
SendLocalListMaxLength	400		
ReserveConnectorZeroSupported	true		
ChargeProfileMaxStackLevel	20		
ChargingScheduleMaxPeriods	20		
ConnectorSwitch3to1PhaseSupported	false		
MaxChargingProfilesInstalled	40		
ChargingScheduleAllowedChargingRateUnit	Power		
StopTxnAlignedData	RW		-
StopTxnSampledData			
AuthorizationKey (*)	W	-	

RO = read only
 RW = read and write
 W = write only
 * = from improved security for OCPP 1.6

Non-Standard Keys

Key	Access mode	Type	Unit	Default value	Description
AuthenticationOCPPMode	RW	Boolean	-	True	Allows authentication by CPO false: no authentication, free charging
DefaultIdTag		String [20] *		"SIMTAG"	idTag sent through Authorize request when AuthenticationOCPPMode = false
SupervisionUrl		String [255] *		-	OCPP supervision URL
BoxIdentifier		String [50] *			OCPP Charger identifier
ChargeLimitedPower	RO	Integer	kW		Charging station maximum power
ConnectorALimitedPower					Connector A maximum power
ConnectorBLimitedPower					Connector B maximum power
disconnectedMeterValueSampleInterval	RW	Integer	second	900	Allows setting of sampling interval of the meter values when the charge and supervision are disconnected. The sampling interval ranges from 5 to 3600 seconds. Samples are sent to supervision.

Key	Access mode	Type	Unit	Default value	Description
SecurityEventsEnabled	False	Boolean	–	True	True: security events are notified to CSMS. False: security events are not notified to CSMS.
EnableMeterValuesContainVoltage	False	Boolean	–	False	Gets the DC voltage from the charger via the MeterValue message. True: the charger reports the output voltage to the backend. False: the charger does not report the output voltage to the backend.
EnableRemoteStartNoConnectedEV	RW	Boolean	–	True	Authorizes remote start transaction from CPO when no EV is connected.
(*) : in line with OCPP 1.6 standard, configuration keys are case insensitive					

Vendor Error Codes

⚡⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only trained personnel are allowed to carry out maintenance operations.

Failure to follow these instructions will result in death or serious injury.

OCPP Vendor Error Codes

OCPP error code in StatusNotification	DTC	Description
ReaderFailure	0x100005	Card reader communication failure alarm
OtherError	0x100007	Insulation warning
InternalError	0x100009	Abnormal SD card of terminal warning
OtherError	0x10000C	SECC socket connection fault alarm
	0x10000F	Environment detection board offline alarm
HighTemperature	0x100101	Terminal over-temperature alarm
InternalError	0x100102	Cable connector over-temperature alarm
	0x100202	Terminal emergency stop is pressed
ConnectorLockFailure	0x100205	Vehicle connector lock control error
GroundFailure	0x100206	Ground error
InternalError	0x100207	Insulation board error
	0x100208	Output relay control error
OtherError	0x10020A	Insulation error
	0x10020B	Power cabinet water level error
	0x10020C	Terminal door open
	0x10020D	High humidity error
	0x10020E	Tilt sensor triggered
PowerMeterFailure	0x10020F	Meter failure error
InternalError	0x100210	Communication error with subboard
	0x100211	Power loss error
	0x100212	Communication error with power cabinet
OverCurrentFailure	0x100213	Over-current error
InternalError	0x100214	Output over-voltage error
	0x100216	PLC board offline error
	0x200001	Power module communication fault alarm
	0x200002	Power module fault alarm
	0x200003	PDU relay control fault alarm
	0x200004	PDU communication fault alarm
OtherError	0x200008	Surge protection alarm
InternalError	0x200101	Power module over-temperature alarm
	0x200102	PDU over-temperature alarm
	0x200103	Power control fan communication alarm
	0x200104	Power control fan failure alarm
	0x200202	Power cabinet emergency stop is pressed

OCPP error code in StatusNotification	DTC	Description
OtherError	0x200203	Power cabinet water level error
	0x200204	Power cabinet door open
OverVoltage	0x200206	Input over-voltage error
PowerSwitchFailure	0x200207	Input relay control error
UnderVoltage	0x200208	Input under-voltage error
OtherError	0x200209	Circuit breaker tripped
	0x20020B	Tilt sensor alarm
	0x20020C	Fusing error

Cybersecurity

For more information about cybersecurity, refer to DOCA0310EN *EVlink ProDC Cybersecurity Guide*.

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