

# 109 年度停車場電動汽車充電柱安裝案

充電柱管理平台 OCPP 通訊協定介接規格書

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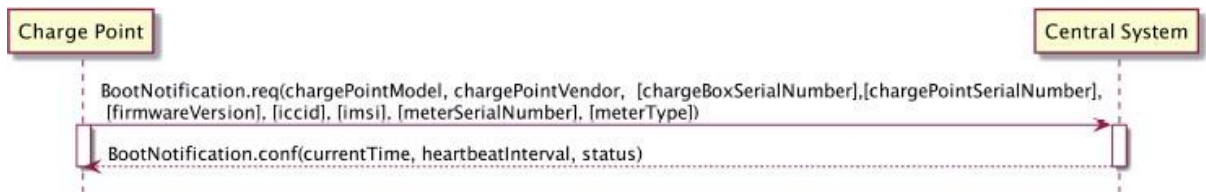
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# 1. 充電樁 Power on

## 1.1 說明

充電樁 Power on 須向後台傳送 bootnotification.req，以告知後台充電樁已上線。

## 1.2 OCPP 相關 command



### BootNotification.req

參數名稱	型別	參數說明	範例
chargePointModel	CiString20	充電樁型號	CNS32A-0001
chargePointVendor	CiString20	充電樁製造商	FE-EVI
chargePointSerialNumber	CiString25	充電樁序號	FE201901280001

### BootNotification.conf

參數名稱	型別	參數說明	範例
currentTime	Datetime	系統時間	UTC(yyyy-MM-dd'T'HH:mm:ss.SSSZ)
interval	integer	Heartbeat 回傳時間(S)	2
status	CiString20	後台回復	Accepted/ Pending/ Rejected

## 1.3 CP 傳送失敗處理

傳送失敗處理	Interval	次數	說明
CP→CS 1 <sup>st</sup> 傳送 re-try	5S	5	
CP→CS 1 <sup>st</sup> re-connect	60S	10	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req
CP→CS 2 <sup>nd</sup> re-connect	600S	無限次	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req

## 2.Heartbeat

### 2.1 說明

充電樁會定時回報 heartbeat

- 充電樁傳送 Heartbeat 讓後台知道，該充電樁仍在連線
- Sending interval 由 Bootnotification.conf: interval (單位:秒) 決定
- 後台回應 Heart beat.conf，充電樁可對時。

### 2.2 OCPP 相關 command



Heartbeat.conf

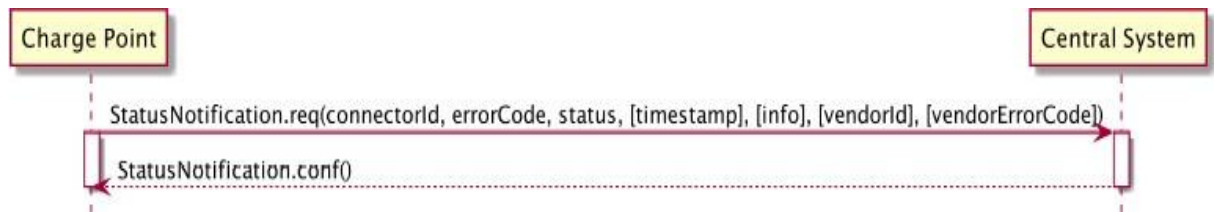
參數名稱	型別	參數說明	範例
currentTime	Datetime	系統時間	UTC(yyyy-MM-dd'T'HH:mm:ss.SSSZ)

### 3. StatusNotification

#### 3.1 說明

充電樁如果狀態有改變須向後台發送 StatusNotification.req

#### 3.2 OCPP 相關 command



#### BootNotification.req

參數名稱	型別	參數說明	範例
connectorId	Integer	接頭編號 (>=0) Connectorid 0 代表控制器本身	1
errorCode	ChargePointErrorCode	充電樁錯誤碼	
status	ChargePointStatus	充電樁狀態	

#### 3.3 CP 傳送失敗處理

傳送失敗處理	Interval	次數	說明
CP→CS 1 <sup>st</sup> 傳送 re-try	5S	5	
CP→CS 1 <sup>st</sup> re-connect	60S	10	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req
CP→CS 2 <sup>nd</sup> re-connect	600S	無限次	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req

## ChargePointErrorCode

Value	Description
<b>ConnectorLockFailure</b>	Failure to lock or unlock connector.
<b>EVCommunicationError</b>	Communication failure with the vehicle, might be Mode 3 or other communication protocol problem. This is not a real error in the sense that the Charge Point doesn't need to go to the faulted state. Instead, it should go to the SuspendedEVSE state.
<b>GroundFailure</b>	Ground fault circuit interrupter has been activated.
<b>HighTemperature</b>	Temperature inside Charge Point is too high.
<b>InternalError</b>	Error in internal hard- or software component.
<b>LocalListConflict</b>	The authorization information received from the Central System is in conflict with the LocalAuthorizationList.
<b>NoError</b>	No error to report.
<b>OtherError</b>	Other type of error. More information in vendorErrorCode.
<b>OverCurrentFailure</b>	Over current protection device has tripped.
<b>OverVoltage</b>	Voltage has risen above an acceptable level.
<b>PowerMeterFailure</b>	Failure to read power meter.
<b>PowerSwitchFailure</b>	Failure to control power switch.
<b>ReaderFailure</b>	Failure with idTag reader.
<b>ResetFailure</b>	Unable to perform a reset.
<b>UnderVoltage</b>	Voltage has dropped below an acceptable level.
<b>WeakSignal</b>	Wireless communication device reports a weak signal.

## ChargePointStatus

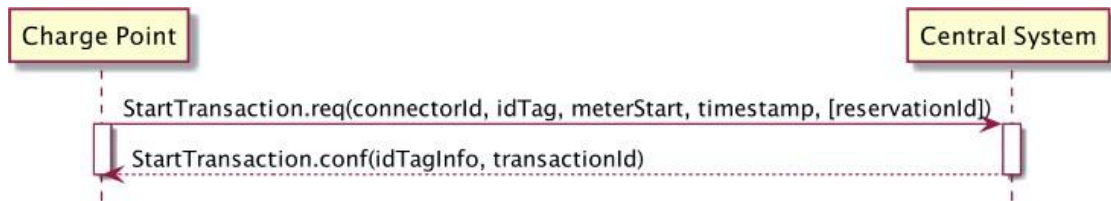
Status	Condition
<b>Available</b>	When a Connector becomes available for a new user (Operative)
<b>Preparing</b>	When a Connector becomes no longer available for a new user but no charging session is active. Typically a Connector is occupied when a user presents a tag, inserts a cable or a vehicle occupies the parking bay (Operative)
<b>Charging</b>	When the contactor of a Connector closes, allowing the vehicle to charge (Operative)
<b>SuspendedEVSE</b>	When the contactor of a Connector opens upon request of the EVSE, e.g. due to a smart charging restriction or as the result of <a href="#">StartTransaction.conf</a> indicating that charging is not allowed (Operative)
<b>SuspendedEV</b>	When the EVSE is ready to deliver energy but contactor is open, e.g. the EV is not ready.
<b>Finishing</b>	When a charging session has stopped at a Connector, but the Connector is not yet available for a new user, e.g. the cable has not been removed or the vehicle has not left the parking bay (Operative)
<b>Reserved</b>	When a Connector becomes reserved as a result of a <a href="#">Reserve Now</a> command (Operative)
<b>Unavailable</b>	When a Connector becomes unavailable as the result of a Change Availability command or an event upon which the Charge Point transitions to unavailable at its discretion. Upon receipt of a <a href="#">Change Availability</a> command, the status MAY change immediately or the change MAY be scheduled. When scheduled, the <a href="#">Status Notification</a> shall be send when the availability change becomes effective (Inoperative)
<b>Faulted</b>	When a Charge Point or connector has reported an error and is not available for energy delivery . (Inoperative).

## 4. Start Transaction

### 4.1 說明

啟動充電樁，開始充電服務

### 4.2 OCPP 相關 command



#### StartTransaction.req

參數名稱	型別	參數說明	範例
connectorId	integer	接頭編號(>0)	1
idTag	CiString20	USER 的 RFID	FCD12233
meterStart	integer	電表開始度數(Wh)，為 電表累積值	1234
timestamp	Datetime	開始充電時間	UTC(yyyy-MM-dd'T'HH:mm:ss.SSSZ)

#### StartTransaction.conf

參數名稱	型別	參數說明	範例
idTagInfo	idTagInfo	回傳 idtag 的狀態	Status:Accepted
transactionId	integer	交易編號	12330000444



## 7.27. IdTagInfo

### Class

Contains status information about an identifier. It is returned in Authorize, Start Transaction and Stop Transaction responses.

If expiryDate is not given, the status has no end date.

Field Name	Field Type	Description
expiryDate	dateTime	Optional. This contains the date at which idTag should be removed from the Authorization Cache.
parentIdTag	IdToken	Optional. This contains the parent-identifier.
status	AuthorizationStatus	Required. This contains whether the idTag has been accepted or not by the Central System.

## 7.2. AuthorizationStatus

### Enumeration

Status in a response to an [Authorize.req](#).

Value	Description
Accepted	Identifier is allowed for charging.
Blocked	Identifier has been blocked. Not allowed for charging.
Expired	Identifier has expired. Not allowed for charging.
Invalid	Identifier is unknown. Not allowed for charging.

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Value	Description
ConcurrentTx	Identifier is already involved in another transaction and multiple transactions are not allowed. (Only relevant for a <a href="#">StartTransaction.req</a> .)

### 4.3 CP 傳送失敗處理

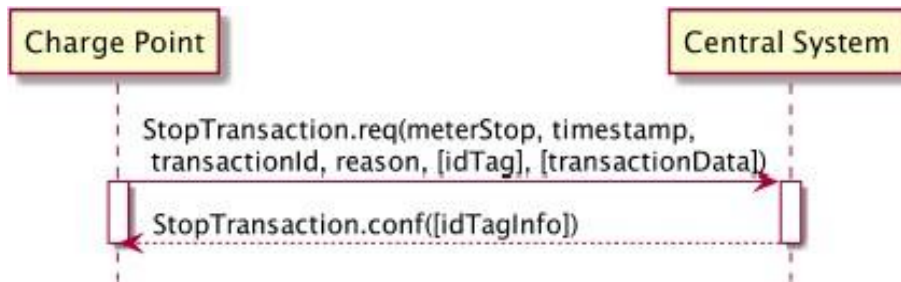
傳送失敗處理	Interval	次數	說明
CP→CS 1 <sup>st</sup> 傳送 re-try	5S	5	
CP→CS 1 <sup>st</sup> re-connect	60S	10	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req
CP→CS 2 <sup>nd</sup> re-connect	600S	無限次	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req

# 5. Stop Transaction

## 5.1 說明

停止充電樁充電服務

## 5.2 OCPP 相關 command



### StopTransaction.req

參數名稱	型別	參數說明	範例
meterStop	integer	電表結束度數(Wh) 為電表累積值	1234
timestamp	Datetime	結束充電時間	UTC(yyyy-MM-dd'T'HH:mm:ss.SSSZ)
transactionId	integer	交易編號	12330000444
reason	reason	結束原因	remote

### StopTransaction.conf

參數名稱	型別	參數說明	範例
idTagInfo	idTagInfo	回傳 idtag 的狀態	Status:Accepted

### 7.36. Reason

*Enumeration*

Reason for stopping a transaction in [StopTransaction.req](#).

Value	Description
EmergencyStop	Emergency stop button was used.
EVDIsconnected	disconnecting of cable, vehicle moved away from inductive charge unit.
HardReset	A hard reset command was received.
Local	Stopped locally on request of the user at the Charge Point. This is a regular termination of a transaction. Examples: presenting an RFID tag, pressing a button to stop.
Other	Any other reason.
PowerLoss	Complete loss of power.
Reboot	A locally initiated reset/reboot occurred. (for instance watchdog kicked in)

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Value	Description
Remote	Stopped remotely on request of the user. This is a regular termination of a transaction. Examples: termination using a smartphone app, exceeding a (non local) prepaid credit.
SoftReset	A soft reset command was received.
UnlockCommand	Central System sent an Unlock Connector command.
DeAuthorized	The transaction was stopped because of the authorization status in a <a href="#">StartTransaction.conf</a>

## 5.3 CP 傳送失敗處理

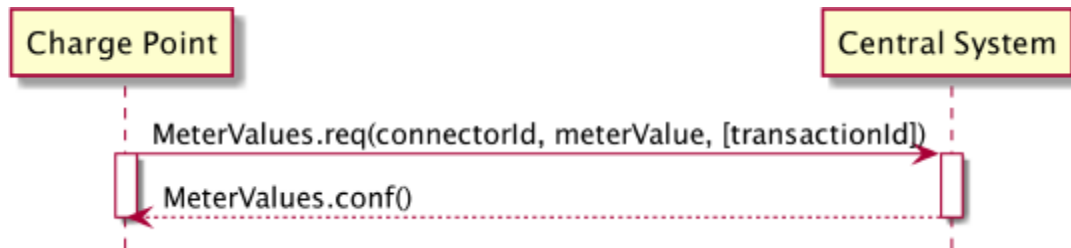
傳送失敗處理	Interval	次數	說明
CP→CS 1 <sup>st</sup> 傳送 re-try	5S	5	Re-try 5 次之後，不再重傳
CP→CS 1 <sup>st</sup> re-connect	60S	10	1. 關閉 web stock 連線，重新建立 web stock 連線 2. 重傳 bootnotification.req
CP→CS 2nd re-connect	600S	無限次	1. 關閉 web stock 連線，重新建立 web stock 連線 2. 重傳 bootnotification.req
CP→CS 充電中，離線中斷，恢復連線之後上傳 StopTransaction.req			

## 6. Meter Values

### 6.1 說明

充電樁可定時向後台回報特定資訊。

### 6.2 OCPP 相關 command



MeterValues.req

參數名稱	型別	參數說明	範例
connectorId	Integer	接頭編號(>0)	1
meterValue	meterValue	度數為非累積值	

## 7.33. MeterValue

*Class*

Collection of one or more sampled values in [MeterValues.req](#). All sampled values in a MeterValue are sampled at the same point in time.

Field Name	Field Type	Card.	Description
timestamp	dateTime	1..1	Required. Timestamp for measured value(s).
sampledValue	<a href="#">SampledValue</a>	1..*	Required. One or more measured values

## 7.43. SampledValue

*Class*

Single sampled value in [MeterValues](#). Each value can be accompanied by optional fields.

Field Name	Field Type	Card.	Description
<b>value</b>	String	1..1	Required. Value as a "Raw" (decimal) number or "SignedData". Field Type is "string" to allow for digitally signed data readings. Decimal numeric values are also acceptable to allow fractional values for measurands such as Temperature and Current.
<b>context</b>	<a href="#">ReadingContext</a>	0..1	Optional. Type of detail value: start, end or sample. Default = "Sample.Periodic"
<b>format</b>	<a href="#">ValueFormat</a>	0..1	Optional. Raw or signed data. Default = "Raw"
<b>measurand</b>	<a href="#">Measurand</a>	0..1	Optional. Type of measurement. Default = "Energy.Active.Import.Register"

## 7.35. ReadingContext

*Enumeration*

Values of the context field of a value in [SampledValue](#).

Value	Description
<b>Interruption.Begin</b>	Value taken at start of interruption.
<b>Interruption.End</b>	Value taken when resuming after interruption.
<b>Other</b>	Value for any other situations.
<b>Sample.Clock</b>	Value taken at clock aligned interval.
<b>Sample.Periodic</b>	Value taken as periodic sample relative to start time of transaction.
<b>Transaction.Begin</b>	Value taken at end of transaction.
<b>Transaction.End</b>	Value taken at start of transaction.
<b>Trigger</b>	Value taken in response to a <a href="#">TriggerMessage.req</a>

### 6.3 CP 傳送失敗處理

傳送失敗處理	Interval	次數	說明
CP→CS 1 <sup>st</sup> 傳送 re-try	5S	5	
CP→CS 1 <sup>st</sup> re-connect	60S	10	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req
CP→CS 2 <sup>nd</sup> re-connect	600S	無限次	1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req

## 7.其他說明

CP = Charging Pile · CS = Charging Server

<b>MessageTypes</b>	<b>Example</b>
<b>CALL</b>	MessageTypeId=2 UniqueId="12312313" Action= "StartTransaction " Payload = "..."
<b>CALLRESULT</b>	MessageTypeId=3 UniqueId="12312313" Payload = "..."
<b>CALLERROR</b>	MessageTypeId=4 UniqueId="12312313" ErrorCode = ProtocError ErrorDescription = "..."