

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

110.02.03修正

目錄

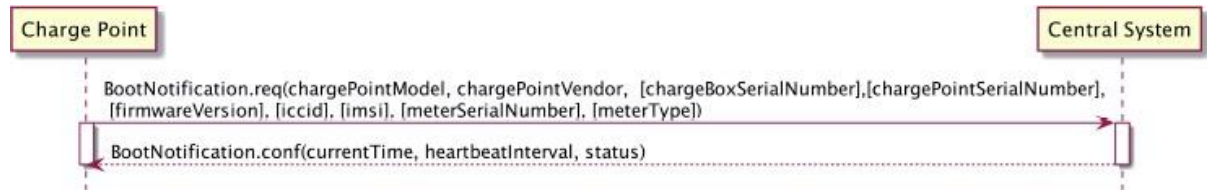
| | |
|----------------------------|----|
| 1. 充電樁 Power on..... | 3 |
| 1.1 說明 | 3 |
| 1.2 OCPP 相關 command..... | 3 |
| 1.3 CP 傳送失敗處理 | 3 |
| 2. Heartbeat..... | 4 |
| 2.1 說明 | 4 |
| 2.2 OCPP 相關 command..... | 4 |
| 3. StatusNotification..... | 5 |
| 3.1 說明 | 5 |
| 3.2 OCPP 相關 command..... | 5 |
| 3.3 CP 傳送失敗處理 | 5 |
| 4. Start Transaction..... | 8 |
| 4.1 說明 | 8 |
| 4.2 OCPP 相關 command..... | 8 |
| 4.3 CP 傳送失敗處理 | 10 |
| 5. Stop Transaction..... | 11 |
| 5.1 說明..... | 11 |
| 5.2 OCPP 相關 command..... | 11 |
| 5.3 CP 傳送失敗處理 | 12 |
| 6. Meter Values | 13 |
| 6.1 說明..... | 13 |
| 6.2 OCPP 相關 command..... | 13 |
| 6.3 CP 傳送失敗處理 | 15 |
| 7. 其他說明 | 16 |

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 st 傳送 re-try | 5S | 5 | |
| CP→CS 1 st 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 |

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

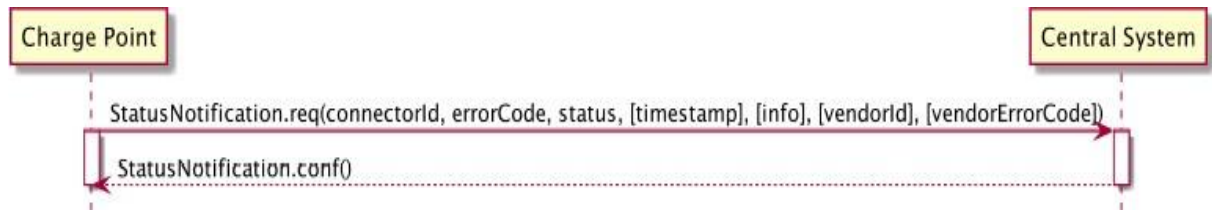
| 參數名稱 | 型別 | 參數說明 | 範例 |
|--------------------|----------|------|---------------------------------|
| currentTime | Datetime | 系統時間 | UTC(yyyy-MM-dd'T'HH:mm:ss.SSSZ) |

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 器 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 st 傳送 re-try | 5S | 5 | |
| CP→CS 1 st 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 |

| Value | Description |
|-----------------------------|---|
| ConnectorLockFailure | Failure to lock or unlock connector. |
| EVCommunicationError | 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. |
| GroundFailure | Ground fault circuit interrupter has been activated. |
| HighTemperature | Temperature inside Charge Point is too high. |
| InternalError | Error in internal hard- or software component. |
| LocalListConflict | The authorization information received from the Central System is in conflict with the LocalAuthorizationList. |
| NoError | No error to report. |
| OtherError | Other type of error. More information in vendorErrorCode. |
| OverCurrentFailure | Over current protection device has tripped. |
| OverVoltage | Voltage has risen above an acceptable level. |
| PowerMeterFailure | Failure to read power meter. |
| PowerSwitchFailure | Failure to control power switch. |
| ReaderFailure | Failure with idTag reader. |
| ResetFailure | Unable to perform a reset. |
| UnderVoltage | Voltage has dropped below an acceptable level. |
| WeakSignal | Wireless communication device reports a weak signal. |

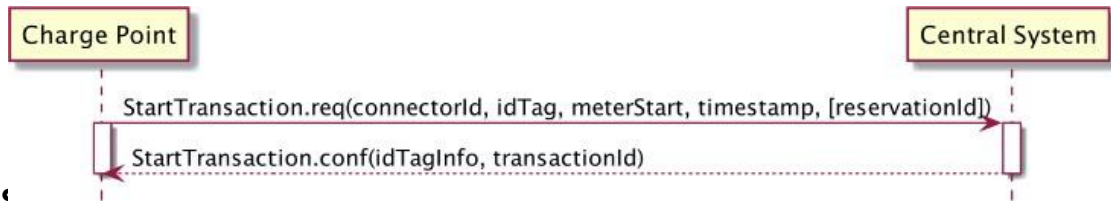
| Status | Condition |
|----------------------|---|
| Available | When a Connector becomes available for a new user (Operative) |
| Preparing | When a Connector becomes no longer available for a new user but no charging session is active. Typically a Connector is occupied when a user presents a tag, inserts a cable or a vehicle occupies the parking bay (Operative) |
| Charging | When the contactor of a Connector closes, allowing the vehicle to charge (Operative) |
| SuspendedEVSE | 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 StartTransaction.conf indicating that charging is not allowed (Operative) |
| SuspendedEV | When the EVSE is ready to deliver energy but contactor is open, e.g. the EV is not ready. |
| Finishing | 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) |
| Reserved | When a Connector becomes reserved as a result of a Reserve Now command (Operative) |
| Unavailable | 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 Change Availability command, the status MAY change immediately or the change MAY be scheduled. When scheduled, the Status Notification shall be send when the availability change becomes effective (Inoperative) |
| Faulted | 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. |

85

| Value | Description |
|--------------|--|
| ConcurrentTx | Identifier is already involved in another transaction and multiple transactions are not allowed. (Only relevant for a StartTransaction.req) |

4.3 CP 傳送失敗處理

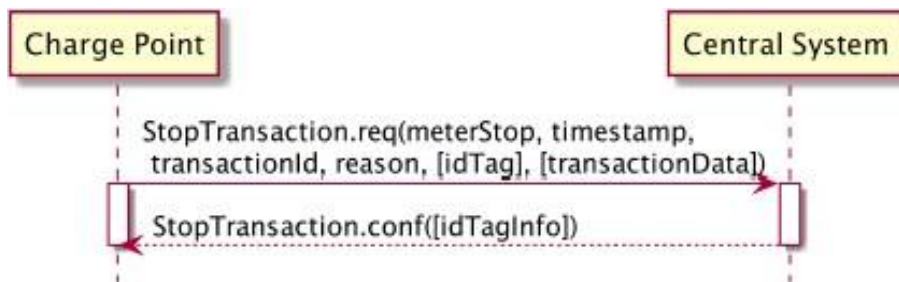
| 傳送失敗處理 | Interval | 次數 | 說明 |
|----------------------------------|----------|-----|--|
| CP→CS 1 st 傳送 re-try | 5S | 5 | |
| CP→CS 1 st re-connect | 60S | 10 | 1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req |
| CP→CS 2nd re-connect | 600S | 無限次 | 1.關閉 web stock 連線，重新建立 web stock 連線 2.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

5. Stop Transaction

5.1 說明

停止充電樁充電服務(當車端充飽電或者停止充電時)

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) |

102

| 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 StartTransaction.conf |

5.3 CP 傳送失敗處理

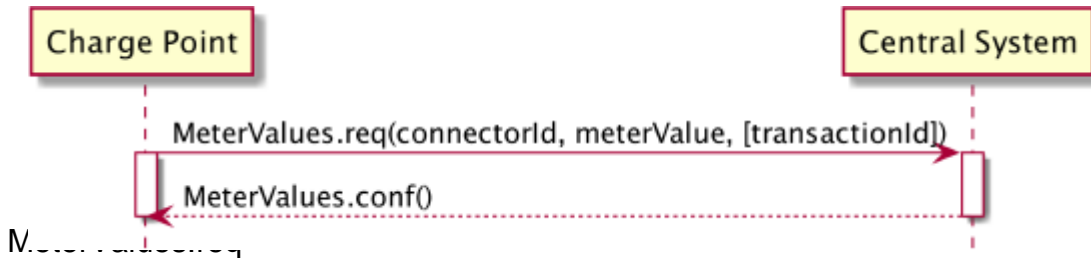
| 傳送失敗處理 | Interval | 次數 | 說明 |
|---|----------|-----|--|
| CP→CS 1 st 傳送 re-try | 5S | 5 | Re-try 5 次之後，不再重傳 |
| CP→CS 1 st re-connect | 60S | 10 | 1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req |
| CP→CS 2nd re-connect | 600S | 無限次 | 1.關閉 web stock 連線，重新建立 web stock 連線 2.重傳 bootnotification.req |
| 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



| 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 | SampledValue | 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 |
|------------------|--------------------------------|-------|--|
| value | 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. |
| context | ReadingContext | 0..1 | Optional. Type of detail value: start, end or sample. Default = "Sample.Periodic" |
| format | ValueFormat | 0..1 | Optional. Raw or signed data. Default = "Raw" |
| measurand | Measurand | 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 |
|---------------------------|---|
| Interruption.Begin | Value taken at start of interruption. |
| Interruption.End | Value taken when resuming after interruption. |
| Other | Value for any other situations. |
| Sample.Clock | Value taken at clock aligned interval. |
| Sample.Periodic | Value taken as periodic sample relative to start time of transaction. |
| Transaction.Begin | Value taken at end of transaction. |
| Transaction.End | Value taken at start of transaction. |
| Trigger | Value taken in response to a TriggerMessage.req |

6.3 CP 傳送失敗處理

| 傳送失敗處理 | Interval | 次數 | 說明 |
|----------------------------------|----------|-----|--|
| CP→CS 1 st 傳送 re-try | 5S | 5 | |
| CP→CS 1 st 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 |

7.其他說明

CP = Charging Pile , CS = Charging Server

| MessageTypes | Example |
|-------------------|---|
| CALL | MessageTypeId=2 UniqueId="12312313" Action= "StartTransaction " Payload = "..." |
| CALLRESULT | MessageTypeId=3 UniqueId="12312313" Payload = "..." |
| CALLERROR | MessageTypeId=4 UniqueId="12312313" ErrorCode = ProtocError ErrorDescription = "..." |