	Title	Author	Date
CHARGE AMPS	Halo fw187 release notes	Erik Wallin	2025-10-06
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	Not controlled	CADEV-###	1

Charge Amps Halo fw187

Release notes and OCTT tests

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Changes

Version	Author	Date	Updates
v1	Erik Wallin	2025-10-06	First edition

Important!

Firmware version FW171 and FW173 have a fault which can cause upgrades to permanently disrupt the functionality. This may happen if an upgrade is performed after a previously failed upgrade indicated by FirmwareStatusNotification message DownloadFailed, InstallationFailed or stuck at *Downloading*. To safely upgrade from firmware version FW171 or FW173, make sure to reboot the device immediately before the operation *UpdateFirmware*.

Firmware version FW161 and FW168 have a fault that causes upgrade to versions FW161 to FW168 to clear the AuthorizationKey if it is set. Avoid upgrading to any version between FW161 and FW168 if AuthorizationKey if it is set. Upgrade to version FW169 or higher preserves the AuthorizationKey.

Version 187

Release date 2025-10-06

New features

- Support additional ciphers for TLS on Ethernet. The following ciphers are supported in addition to the ones required in *Improved security for OCPP 1.6-J edition 3:*
    - ECDHE_RSA_WITH_AES_256_GCM_SHA384
    - ECDHE_RSA_WITH_AES_128_GCM_SHA256
    - ECDHE_ECDSA_WITH_AES_256_CBC_SHA384
    - ECDHE_ECDSA_WITH_AES_128_CBC_SHA256
    - ECDHE_RSA_WITH_AES_256_CBC_SHA384
    - ECDHE_RSA_WITH_AES_128_CBC_SHA256

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- New ocpp config key ReportWeldCheck. This reports weld check data even if relay weld was not detected. This helps diagnose relay weld identification issues.

Changed behavior

Improvements

- Use wss in LMI when protocol is https. This enables connection to LMI over https proxy
- Add to DataTransfer ChargingLimitations StateRestriction
- Improve sampling of relay weld
- Improve criteria for relay weld detection. This avoids false relay weld detection
- Improve PWM sample logging. Increase change limit for CP signal to handle noisy CP signal
- Increase delay between OCPP connection attempts when LMI has an active connection. This improves LMI stability
- Correct German translation in LMI

Bug fixes

- Changing freeCharging should be possible when another connector has a transaction
- Stay in C1_WAIT_STOP even if glitch to CarStateD
- Allow comma (,) in WiFi SSID and password
- Improve LMI handling on socket close. This improves the stability of LMI connections and avoids stalling the LMI
- Add keepalive of WS in LMI. This resolves issues of LMI disconnecting if inactive for 30 seconds

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 186

Release date 2025-06-27

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New features

Changed behavior

Improvements

Bug fixes

- Improve robustness in i2c communication
- Reset mode_change_pending in B1 and C1 – resolves issue with charger not leaving preparing state when a previous session ended with a phase change
- Changing freeCharging should be possible when another connector has a transaction

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 185

Release date 2025-05-07

New features

- New DataTransfer MessageId RelayWeld with information about what relay is welded
- Send more temperature measurements in MeterValues. Temperatures are reported per location. The charger now reports temperatures from each connector (Outlet), the main board (Body) and CPU (Inlet).
- Temperature for Body is sent with decimal values. The measurement resolution is 0,125 degrees Celsius

Changed behavior

- Report 0 A and 0 W in MeterValues when charging is suspended

Improvements

- WiFi stability improvements
- Update LMI to new version
- Send StatusNotification with error when relay weld is detected
- Queue StatusNotifications with errors when offline and send when going online

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- Set timestamp on StatusNotification with errors
- Queue DataTransfer messages with errors when offline
- Zero memory on boot and reboot. This improves stability when restarting the charger without a power cycle

Bug fixes

- Allow RemoteStartTransaction when FreeCharging is set. This resolves issues with not being able to start a new transaction after a transaction was stopped with RemoteStopTransaction
- Allow Ioffset and Voffset calibration values to be -1 (0xffff). This resolves issues of charger sending StatusNotification InternalError with vendorErrorCode 0x100 or 0x40 on boot
- Send Unavailable after StopTransaction if Inoperative is scheduled
- Charger goes to preparing when changeAvailablity from Unavailable to Available and car is plugged in. This resolves an issue with not being able to start a transaction after changing availability
- Fix issue with white screen on first LMI load
- Go to booted even if there are state restrictions. This resolves issue of StatusNotifications not being sent on boot if the charger is faulted
- Update timestamp on SecurityEventNotification when clock is set
- Fix crash when requesting DataTransfer ChargingLimitations

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 184

Release date 2025-02-03

Bug fixes

- Improve stability when i2c communication times out
- Remove legacy OCPP key LoadBalanced – this resolves issues with chargers failing to assign current when this key was incorrectly set true

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- Report 0A and 0W when connector is suspended – this resolves issues with wrong metervalues if Schuko is charging while the connector has a suspended session

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 183

Release date 2025-01-03

New features

- Troubleshooting: DataTransfer chargingLimitations will reply with limitations based on configuration, profiles, and internal limitations

Changed behavior

- Send MeterValues if transaction is active even when suspended

Improvements

- Send StatusNotifications with vendor specific error messages errorCode: OtherError and vendorErrorCode: PWMVoltageError, B1NoDiode and DStateNotSupported. Change from vendorErrorCode to info for volatile flags error. Add info field with PWM voltage levels.

Bug fixes

- Only set CP signal PWM when in charging states. Stay in B1_NO_DIODE until cable is unplugged. Improve detection of CP signal grounded.
- Stability improvements to USB and I2C drivers. This avoids reboots due to busy wait triggering watchdog reset.
- Fix power loss detection. This resolves issues with lost StopTransaction messages on power loss. Ensure that power loss always reboots the charger in a controlled manner when power dip is longer than 40 ms.
- Fix race condition when calculating current limit from CPMax charging profile. This resolves issues with spurious SuspendedEVSE. This could happen even without using CPMax profiles.
- When StartTransaction returns Invalid, make sure the charger goes to SuspendedEVSE

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- Resolve issue with overcurrent triggering on CON1 after Schuko connector draws more than CON1 current limit. This resolve issues with charging not starting on CON1 after a Schuko session.
- Charging profiles are now stored with 1 second precision. Charging profile periods were rounded to the nearest 10 seconds. This resolves issues with charging profile periods shorter than 10 seconds and periods not starting when expected.

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 182

Release date 2024-08-08

Improvements

- Only include idTag in StopTransaction.req when tag is used to stop transaction
- Omit transactionId in MeterValues if no transaction active
- Include transactionId in MeterValues when sending ClockAligned

Bug fixes

- Correct for bad current measurement gain values for 7.4kW Halo
- Correct for wrong value of installation connector current which is not configurable

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 180

Release date 2024-06-14

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New features

- Add configuration Key MessageTimeout – handle message timeouts according to OCPP Standard
- Add Measurand 'Frequency'

Changed behavior

- Remove configuration key StopTransactionOnEVSideDisconnect (optional key from Errata v4.0 3.79)

Improvements

- Addition to LMI of OCPP ChargepointID Authorization, Wi-Fi SSID list
- Stop resending tx related messages after multiple callError replies
- Change chargingProfileId to be int32 as in OCPP standard
- Reject RemoteStartTransaction when connector is Unavailable
- The Wi-Fi defaults to 802.11b/g – enable 802.11n

Bug fixes

- Use -1 for temporary transaction id and send StopTransaction in shutdown values if it has temporary id
- Use transactionId -1 when CS sends 0
- Use transactionId -1 if no StartTransaction reply was received
- Send reason Reboot in StopTransaction when charger crashed
- Keep saved transaction data from shutdown until sent
- BootNotification resend at reject and pending
- Avoid using installation offline current when active schedule
- Charger should go to SuspendedEVSE after timeout when 0A on transaction start
- Reset internal variable which could cause stuck-in-preparing

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 178

Release date 2024-04-10

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Changed behavior

- Use intallationPhases as default if phases is missing in schedule
- Send first MeterValues within 5 seconds of transaction start
- AssignedCurrent is ignored when SmartCharging profile is active
- Empty WiFi password is now allowed. This is for backwards compatibility with CAPI chargers. Using open WiFi networks is *strongly* discouraged
- OCPP connection watchdog activated by default. The default for HlSuperv and HlSupervCharge are changed as follows. If the charger has not set these parameters they will be upgraded to the default values.
  HlSuperv: 3600
  HlSupervCharge: 86400
- Send diagnostic info using CALLERROR when InstallCertificate fails to parse the certificate
- Charger will only use serial number when connecting to Charge Amps production cloud. ChargepointID ocpp configuration variable is not used.

Improvements

- Boot order adjustments
- Stability improvements
- Support for ISO15118 BCB wakeup. This resolves issues with cars that are trying to activate the ISO15118 modem and get confused when the charger starts the charging session before the wakeup sequence is done. Prolonged B2->C2 timing for ISO15118 Wakeup. This is to handle cars that try to wake up the 15118 modem by sending short 200-400 ms pulses of B-C-B transitions.
- Allow UserCurrentLimit zero
- HlSuperv will never be smaller than HeartbeatInterval. This resolves an issue where the charger would reboot every HlSuperv seconds when idle if HeartbeatInterval is larger than HlSuperv.

Bug fixes

- TXDefaultProfile applied immediately even if StartPeriod = 0
- DataTransfer vendorId and messageId should be case insensitive
- Fix crash when reconnecting network, and improve OCPP message queue stability
- Fix issue with 1 phase 32A Halo2 reporting wrong measurements
- Fix connection failure on first attempt using WiFi

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Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 174

Release date 2023-12-01

Bug fixes

- Block update with same version as installed. This avoids bricking chargers under certain conditions.
- Protection against OCPP queue overwriting fw upgrade in flash scratch area. This fixes a rare case where charger would get bricked on fw upgrade.
- FW upgrade improvements and bug fixes.
- Protect against writing fw upgrade outside the dedicated flash area. This fixes a bug that would brick chargers when the same firmware upgrade is attempted twice.
- Handle restarted fw download correctly after a failure to upgrade.
- Fix validation on restarted fw upgrade. This resolves the issue of fw upgrade always failing when retrying without restarting.
- Fix connect to hidden Wi-Fi.

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 173

Release date 2023-10-12

Improvements

- Add User-Agent header to HTTP request

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Bug fixes

- Correct for Schuko not able to toggle availability at every state
- Correct for RemoteDebug log under some conditions

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 171

Release date 2023-09-29

Upgrading instructions

Important!

FW169 and older can fail to upgrade when connected to OCPP using TLS (wss://server), and very long certificate chains. One or more of the following methods may be required:

- Use a shorter certificate chain
- Rebooting the charger immediately before doing the upgrade
- Connect to OCPP without TLS during the FW upgrade (ws://server)
- Contact Charge Amps support

Bug fixes

- Saving shutdown values more than 127 times
- Fix RemoteDebug when USB is not connected
- Correction for RCD problem with 0-calibration of DC-coil for component spread in PCB 9.1

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

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Version 170

Release date 2023-09-25

New features

- Support for B2 Wakeup. Workaround for legacy cars and some newer cars. Enabling with OCPP configuration key WakeupEnable. This will trigger a wakeup procedure if the car does not respond to offered current within 30 seconds.
- DataTransfer with messageId **networkStatus** will return a JSON object with network status
- Improved remote debug logging. This adds a new RemoteDebug OCPP custom key. Sending log messages in DataTransfer is improved. DataTransfer logs and GetDiagnostics logs now have identical contents.

Changed behavior

- Send HTTP Basic Authentication header in first request if enabled. This used to be sent only after receiving a HTTP Status 401
- DeleteCertificate always returns Failed. Since the charger currently only supports one certificate of each type.
- Security Profile 3 not supported, SignChargePointCertificate is rejected
- Not possible to disable LMI in Security Profile > 1
- DebugLevel and RemoteDebugLevel custom OCPP keys removed. This functionality is now unified under the new key RemoteDebug.

Improvements

- Disconnect from TLS session when server certificate expires
- Trigger SecurityEventNotification when trying to connect with TLS (Security Profile 2) using Wi-Fi
- Improve handling of OCPP Reset, and reboot from LMI. More graceful shutdown. Try to send queued ocpp message and status messages. Also closes WebSocket gracefully if possible. Reboot will finish as soon as all network activity is done.
- Disable LMI during reboot
- Enable Security Profile 2
- Support for SignedFirwareUpdate
- Better compliance with 61851-1, Annex A, car charging state communication
- Improved debug logging from charging state handling
- Fetch random seed from Random Number Generator in NFC device

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- Improve logging of overtemp

Bug fixes

- Fix bugs in Wi-Fi handling. Increase buffer size for PWD and SSID in Wi-Fi code
- Fix race condition when closing Ethernet sockets
- Memory leak in Ethernet when DNS lookup fails
- Reply with Reject on InstallCertificate with an invalid certificate
- Testing of new certificate in InstallCertificate fails to reject invalid certificate
- Scanning NFC tag from LMI sometimes fails
- FTP sometimes fails due to socket state from wrong level
- Charger sometimes reboots on reconnection to Wi-Fi
- CPMax profiles not working as intended
- Firmware upgrade sometimes fail
- Setting AssignedPhase from LMI incorrectly applies to Schuko connector instead of charger
- Sanitize AssignedPhase setting to map L123 to L1
- OCPP StatusNotifications missing intermittently
- StatusNotification reports HardReset instead of SoftReset
- FTP sometimes fail, due to race condition between data channel and control channel
- FW update success reported with FirmwareUpdateStatusNotification instead of SignedFirmwareStatusNotifcation, when firmware was upgraded using SignedFirmwareUpdate
- GetConfiguration fails to return InstallationPhases when requested explicitly
- Charging state is changing too fast in certain scenarios
- Memory leaks when doing TLS operations
- Certificate installation sometimes fail
- Unable to reconnect using TLS
- FW upgrade fails when using OCPP over TLS and large server certificate chain
- Return Rejected when trying to set MetervaluesSampleData to unsupported measurands
- Avoid deadlock and speed up setting when setting RTC. This also fixes time always behind by 2-4 seconds.
- Time was not set correctly on first boot of new charger
- Delay boot 5 seconds to force always setting the time correctly
- Only send StatusNotifications once on boot
- Fix DataTransfer backwards compatibility with old type vendor id
- Allow data parameter in DataTransfer reply
- Make data field in DataTransfer requests optional

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- Send CALLERROR messages with correct format. CALLERROR messages had a trailing '\0' character that would confuse some implementations, leading to timeouts.

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for Wi-Fi blocked

Version 169

Release date 2023-03-29

Changed behavior

- **IMPORTANT!** This version will sanitize the AuthenticationKey parameter. It enforces the OCPP standard minimum 16 and maximum 20 bytes key length. Keys with length outside these values will be reset.

Bug fixes

- AuthenticationKey that contain 0xFF and 0x00 are now correctly handled
- Revert on connection failure after InstallCertificate
- Accept charging profiles with 3 phase on schuko connector, and make sure the connector is activated on one phase

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for WiFi blocked
- Security Profile 3 not supported

Version 168

Release date 2023-03-23

New features

- Add configurable high level watchdog.
- Support for reading 10 byte NFC tags

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Changed behavior

- Send HTTP Basic Authentication header in first request if enabled
- DeleteCertificate always returns Failed. The charger currently only supports one certificate of each type. It does not make sense to delete it.
- Security Profile 3 not supported. SignChargePointCertificate is rejected.
- Not possible to disable LMI in Security Profile > 1
- Do not send SecurityEventNotification when SecurityProfile is 0
- Allow changing SecurityProfile level without verifying AuthorizationKey. This conforms to the OCPP standard
- Default numberPhases is 3 in a ChargingProfile if not specified. This is according to the OCPP standard
- When switching to Security Profile 1 or 2, ManagementInterface is set to 600 seconds. ManagementInterface can not be disabled in SecurityProfile >=1
- Start NFC Reader earlier after start of charge point

Improvements

- New read only OCPP config keys (default)
  - AdditionalRootCertificateCheck (false)
  - CertificateStoreMaxLength (1)
- Security Profile 1 enabled
- Add load balancing indication to LEDs
- Improved watchdog and exception handling
- Add timeout to LMI server sockets
- AuthorizationKey tested before updated
- Improved sending of WS Pong
- Don’t save Status Notifications when charge point is offline
- NFC reading improvements
- Network improvements

Bug fixes

- Fix problem with schuko not turning on after reboot
- Drop connection on HTTP Status 4xx
- Increase delay when changing phases on schuko, and charging connector
- Fix problem with sending LMI communication on closed sockets
- Case insensitive comparison of RFID tags
- Ethernet stability, reset connection on websocket loss
- Unexpected server HTTP responses drops connection
- Report correct stop reason on Reset Soft

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- Missing StatusNotification on Reset Soft
- Fix user:pass parse from uri
- Improved error handling of WebSocket handshake
- Disable reservation implementation which could cause RemoteStartTransaction to return Blocked
- Corrected wrong transaction id on StopTransaction when offline
- Fix problem with open connections not being closed
- Fix issue with rejected chargingprofiles
- Make sure StopTx is saved until sent to central system on multiple reboots
- Correct spelling of LoadBalanced configuration parameter
- Fix issue with setting AssignedPhase to L123
- Correct setting of phase when phaseToUse is specified in chargingprofile
- Set L123 if numberPhases is 3 in charging profile
- Fix for offline transaction upload that sometimes uses wrong transaction ID
- Remove bogus StatusNotification Faulted on boot
- Handle connection failure on cached DNS
- Always restart transport when connection fails
- Make sure correct TxId is sent after power loss in SuspendedEV
- Network stability improvements

Known issues

- Reservation not supported
- OCPP Improved security features are only partly supported
- Security Profile 2 for WiFi blocked
- Security Profile 3 not supported

Version 158

Release date 2022-09-22

New features

- Add capability for 7.4 kW, 1 phase 32 A
- New config keys (default)
  - RetryBackOffRandomRange (10)
  - RetryBackOffWaitMinimum (30)
  - RetryBackOffRepeatTimes (5)

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Improvements

- Add check for present smart charging profile id
- Connection reconnect/back-off improvements. Implemented according to behaviour in OCPP 2.0.1.
- Stabilize BootNotification resends and timeout

Bug fixes

- Fix connectors install current when calculating charging current
- Fix issues with FTP communication socket closure
- Inhibit firmware upgrade during active transaction
- Corrected FreeCharging behaviour when vehicle disconnects
- Quoting of non-printable characters in JSON

Known issues

- Reservation not supported
- Requires upgrade from firmware version 152 or later (changed firmware file format from .zfw to .img)

Version 153

Release date 2022-08-17

Improvements

- Schuko integration for measurement and smart charging
- Hardening smart charging functionality
- Check connectors' install current when calculating charging current

Bug fixes

- Smart charging schedule evaluation fixed for future schedules
- Fixed intermittent fails with NFC read

Known issues

- Reservation not supported
- Requires upgrade from firmware version 152 or later (changed firmware file format from .zfw to .img)

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Version 152

Release date 2022-06-30

New features

- Schuko connector enabled
- New firmware update format, .img. Upgrade from version before fw150 need to be updated with a .zfw update file

Improvements

- Improved network stability
- More robust handling of trigger messages
- Handle concatenated OCPP messages
- Exception information logged
- Improved firmware update

Bug fixes

- 21829 RemoteStop works with tags of length 20
- 20241 Power.Active.Import added to measurement values
- 14430 Set Current.Import without phase information
- 19647 Report correct units for measurement values
- 18334 web socket ping/pong corrected
- Fix connecting to service networks
- Smart charging handles stack levels correctly
- Factory reset removes charging profiles and tag cache
- Multiple OCPP fixes, see OCTT below

Known issues

- Limited tests on schuko
- Glitch in metervalues when changing connector
- RFID reader may fail to initiate, reboot required
- Reservation not supported

Version 132

Release date 2022-02-18

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New features

Improvements

- Charging
- Network
    - 12272 – Support sending WS PING
    - New config key **`WebSocketPingInterval`**
- System

Bug fixes

- Charging
- Network
    - 12379 - Heartbeat is off by 1 second
    - 12272 – WS Protocol corrections (WS PONG)
    - 14081 – Local Management Interface (LMI) does not start when no SSID is configured
    - 14211 – Failure to connect to Wi-Fi if there are hidden networks
- System

Known issues

- 12785 - Schuko connector disabled in this release. It is untested on OCPP and will be enabled in a future release.
- OCPP see below

OCTT (OCPP compliance)

Tests completed

TC_CP_V16_000_RESET - Revert Charge Point to basic reset state

TC_CP_V16_000_STOPTX - General Script - Charge Point - Stop charging session

TC_CP_V16_001 - Cold boot charge point

TC_CP_V16_003 - Regular charging session - plugin first*

TC_CP_V16_004_1 - Regular charging session - identification first

TC_CP_V16_004_2 - Regular charging session - identification first - ConnectionTimeOut

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TC_CP_V16_005_1 - EV side disconnected*

TC_CP_V16_005_2 - EV side disconnected*

TC_CP_V16_007 - Regular start charging session - cached id

TC_CP_V16_008 - Regular start charging session - id in authorization list

TC_CP_V16_010 - Remote start charging session - cable plugged in first

TC_CP_V16_011_1 - Remote Start Charging Session – Remote Start First

TC_CP_V16_011_2 - Remote Start Charging Session - Time Out

TC_CP_V16_012 - Remote stop charging session

TC_CP_V16_013 - Hard reset without transaction

TC_CP_V16_014 - Soft reset without transaction

TC_CP_V16_015 - Hard reset with transaction

TC_CP_V16_016 - Soft reset with transaction

TC_CP_V16_017_2 - Unlock connector - no charging session running (Fixed cable)

TC_CP_V16_021 - Change/Set configuration*

TC_CP_V16_023 - Start charging session - authorize invalid / blocked / expired

TC_CP_V16_026 - Remote start charging session - rejected

TC_CP_V16_027 - Remote start transaction - connector id shall not be 0

TC_CP_V16_028 - Remote stop transaction - rejected

TC_CP_V16_032_2 - Power failure boot charging point-configured to stop transaction(s)

TC_CP_V16_035 - Idle charge point

TC_CP_V16_037_1 - Offline Start Transaction*

TC_CP_V16_037_2 - Offline start transaction

TC_CP_V16_037_3 - Offline start transaction

TC_CP_V16_038 - Offline Stop Transaction

TC_CP_V16_039 - Offline Transaction

TC_CP_V16_040_1 - Configuration keys

TC_CP_V16_040_2 - Configuration keys

TC_CP_V16_042_2 - Get Local List Version (Local Authorization List Empty)

TC_CP_V16_043 - SendLocalAuthorizationList-UpdatedType=Differential & Full

TC_CP_V16_043_2 - SendLocalAuthorizationList-UpdatedStatus=VersionMisMatch

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TC_CP_V16_044_1 - Firmware Update -Download and Install*

TC_CP_V16_044_2 - Firmware Update -Download-failed; Status Notification

TC_CP_V16_044_3 - Firmware Update -Installation-Failed; Status Notification*

TC_CP_V16_045_1 - Get Diagonstics of charge point

TC_CP_V16_045_2 - Get Diagnostics of charge point; Upload failed

TC_CP_V16_054 - Trigger Message

TC_CP_V16_055 - Trigger Message – Rejected

TC_CP_V16_056 - Central Smart Charging – TxDefaultProfile

TC_CP_V16_057 - Central Smart Charging – TxProfile

TC_CP_V16_058_1 - Central Smart Charging - No ongoing transaction

TC_CP_V16_058_2 - Central Smart Charging - Wrong transactionId

TC_CP_V16_059 - Remote Start Transaction with Charging Profile

TC_CP_V16_060 - Remote Start Transaction with Charging Profile - Rejected

TC_CP_V16_061 - Clear Authorization Data in Authorization Cache

TC_CP_V16_067 - Clear Charging Profile

TC_CP_V16_068 - Stop transaction-IdTag stop transaction matches IdTag start transaction

TC_CP_V16_069 - Stop transaction - ParentIdTag in StopTransaction matches ParentIdTag in StartTransaction

TC_CP_V16_082 - The Central System sets a default schedule for a currently ongoing transaction.

* partial compliance

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