ACP Test Server HTTP Interface Specification

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Revisions

| 1.0 | 07/13/09 | Initial release |
|-----|----------|--|
| 1.1 | 07/24/09 | Described allowed integer formats. Added entity_id parameter description to send_track_cmd |
| 1.2 | 07/28/09 | Added documentation of TCU-side commands. Renamed REST interface to HTTP interface to avoid confusion. Renamed VTS to TCU to use ACP 245 standard terms. |
| 1.3 | 08/12/09 | Added remarks about commands and parameter name case sensitivity. Added ZPL license information for RestrictedPython. |

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ACP Test Server

HTTP Interface Specification,

Document Version: 1.3

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1 References

| [ACP245] | ACP 245 – Application Communication Protocol v 1.2.1 http://www.denatran.gov.br/download/ACP 245 V1 2 1 19 05 09.pdf |
|----------|---|
| [ACP_HD] | High level PDU Library Documentation, TCU ACP Server, EDANTECH Suite 13005_ACPSRV_HD_1_3.pdf |
| [ACP_UG] | ACP Test Server User Guide. 13003_ACPSRV_UG_2_2.pdf |

1.1 HTTP Interface Specification

The HTTP interface provides a high-level interface that allows external applications to perform operations on the ACP Server (creation, sending of messages, receiving of results, etc.).

The operations supported by the HTTP interface are based on the interactions supported by the ACP protocol according to [ACP245].

1.1.1 Invoking a HTTP Operation

To invoke a HTTP operation, the external application must perform an HTTP GET operation against the ACP suite specifying the operation ID and parameters.

Request example:

```
GET /cmd_name?p1=<...>&...&pN=<...>&[user=<...>&password=<...>]
```

Where <code>cmd_name</code> is the name of the command to execute, <code>p1..N</code> are the parameters specified for each operation, and <code>user</code> and <code>password</code> are optional parameters that must be provided if the gateway requires authentication to send commands. Notice that the <code>cmd_name</code> and parameter names are case sensitive, you must provide them exactly as it's described on this document.

Every query will return a result that includes a 'result' field that will report OK, ERROR, or TIMEOUT depending if the request was successfully performed. If an ERROR result is returned, the additional result fields specified for each request type will not be present, instead a single error field will be included with a descriptive error message.

Response example:

```
HTTP/1.1 200 OK
Content-type: text/plain
result=OK&par1=<...>&par2=<....>&...&parN=<...>
```

Where result includes the command result (OK, ERROR or TIMEOUT), parl..N are the parameters specified for each operation result. These results can be easily parsed and interpreted using a HTTP library, available in almost all computing languages.

The TIMEOUT result indicates that the server didn't received the expected the event in the specified

timeout, as described in the Operation Timeout section.

Other HTTP response codes are reserved for cases in which there's a server malfunction or invalid or unauthorized HTTP requests.

1.1.2 Authentication and Security

The server can be configured to require that a user and password fields are included on each command. If the provided user and password don't match the ones configured on the server, the command will fail with a 401 HTTP error.

Additionally, the server supports SSL connections on a different port to encrypt the data sent and received from the ACP Test Server.

The server can be instructed to listen and open connections to different IPs and port numbers to test a specific TCUs/SOs, however, for security reasons, these IPs and ports must be previously been enabled by a server administrator. Please read the ACP User Guide [ACP_UG] for additional information.

1.1.3 Supported Operations

The following operations represent granular interactions that the server can perform with the TCU.

For each operation, the URL of the operation and its parameters are provided. All the parameters, except user and password when required, are optional, sensible default values will be used if they are not provided (generally 0).

The URL should be appended to the server hostname and port on an HTTP request, for example http://server_ip>:<server_port>/<URL>.

The following parameter types are accepted:

- **Time**: A number of millisecond since epoch.
- String: A string of characters.
- Integer: An integer number.

The number can be provided as a decimal number or as an hexadecimal number by prefixing '0x' to the value. For examples, "15" and "0xF" will both represent the integer 15.

Alternatively, on some cases, when an integer value is accepted, you can use a symbolic name instead of a number. For example, for the <code>send_func_cmd</code> gateway command, you can specify "DISABLE", "3" or "0x03" in the function_command parameter, and they all will refer to the value 3 (DISABLE) defined in the ACP 245 specification.

When an integer is sent as response to a command, it always be represented as a decimal value, or, if defined, as the symbolic constant that represents that value.

- **Hexadecimal String**: A hexadecimal string representing a binary value. For example, "BC" will represent the binary 10111100.
- **Lists**: A comma separated list of values of one of the previous types.

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1.1.3.1 Test Bench Commands

| Start New Test | | |
|----------------|--|---------------------------------|
| URL | gateway/start_test | |
| Description | This operation signals the ACP Test Server that a new test is starting. It should be used so the ACP Server can later show the messages exchanged during a certain test. | |
| Parameters | | |
| Name | Type Notes | |
| name | String | A descriptive name for the test |

| Stop current test | |
|-------------------|---|
| URL | gateway/stop_test |
| | This operation signals the ACP Test Server that a |
| | test has finished it's execution. It should be used |
| Description | so the ACP Server knows when a given test has |
| | ended. If it's not called, the ACP Test Server will |
| | assume that a test ends when the next one starts. |

1.1.3.2 Service Operator (Server) Commands

| Start Server | | | | |
|--|---|--|--|--|
| URL | gateway/server/ | gateway/server/start | | |
| | | Starts a new server that listens to the specified | | |
| Description The ports that can be used to list must have been previously con- | | used to listen connections ously configured on the ACP | | |
| | Test Server, otherwise the command will fail. | | | |
| Parameters | Parameters | | | |
| Name | Туре | Notes | | |
| | | Port number. If not | | |
| | | provided, the server will | | |
| port | Integer 1025-65535 | listen to a default port | | |
| | | configured on the ACP | | |
| | | Test Server. | | |

| Stop Server | | |
|-------------|--|--|
| URL | gateway/server/stop | |
| Description | Stops the running server. Clients that are | |
| Description | currently connected will not be disconnected | |

| Disconnect TCU | |
|----------------|-------------------------------|
| URL | gateway/server/disconnect_tcu |

| Description | | Disconnect the connected TCU. If no TCU is connected, blocks until a TCU connects to the server and then immediately disconnects it. | | |
|-------------|-----------------|--|--|--|
| Response | Response | | | |
| Name | Туре | Notes | | |
| host | String | TCU IP or host name | | |
| port | Integer 0-65535 | TCU Port number | | |

| Pop Alarm Keepalive | | | |
|---------------------|---|-------|--|
| URL | gateway/server/pop_alarm_ka | | |
| | Gets and removes the first KeepAlive message queued by | | |
| Description | the server. The operation blocks until there's an available | | |
| | message. | | |
| Response | | | |
| Name | Туре | Notes | |
| hdr_msg_ctrl | Integer 0-255 or one of the following string | | |
| | constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| vin_number | String | | |
| tcu_serial_number | String | | |
| imei_number | String | | |
| sim_card_id | String | | |
| authorization_key | Hexadecimal String | | |

| Pop Alarm Notification | | | |
|------------------------|--|-------|--|
| URL | gateway/server/pop_alarm_notif | | |
| 1 - | Gets and removes the first Alarm Notification message queued by the server. The operation blocks until there's an available message. | | |
| Response | | | |
| Name | Туре | Notes | |
| | Integer 0-255 or one of the following string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| major_hardware_release | Integer 0-255 | | |
| major_software_release | Integer 0-255 | | |
| timestamp | Number of seconds since epoch (01/01/1970 00:00:00). | | |
| curr_area | Integer 0-255 | | |

| curr_location | Integer 0-255 | |
|-------------------|-----------------------------|--|
| curr_lat | Integer 0-4294967296 | |
| curr_lon | Integer 0-4294967296 | |
| curr_alt | Integer 0-65535 | |
| curr_velocity | Integer 0-255 | |
| curr_heading | Integer 0-255 | |
| curr_pos_uncert | Integer 0-255 | |
| curr_sats | comma separated list of int | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| sources | comma separated list of int | |
| sensor | Integer 0-255 | |
| data | Hexadecimal String | |
| info_type | Integer 0-255 | |
| info_data | Hexadecimal String | |
| - | | |

| Pop Track Position | | |
|------------------------|--|-------|
| URL | gateway/server/pop_track_pos | |
| Description | Gets and removes the first Track Position message queued by the server. The operation blocks until there's an available message. | |
| Response | minute income | |
| | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| timestamp | Number of seconds since epoch (01/01/1970 00:00:00). | |
| curr_area | Integer 0-255 | |
| curr_location | Integer 0-255 | |
| curr_lat | Integer 0-4294967296 | |
| curr_lon | Integer 0-4294967296 | |
| curr_alt | Integer 0-65535 | |
| curr_velocity | Integer 0-255 | |
| curr_heading | Integer 0-255 | |

| curr_pos_uncert | Integer 0-255 |
|-------------------|-----------------------------|
| curr_sats | comma separated list of int |
| vin_number | String |
| tcu_serial_number | String |
| imei_number | String |
| sim_card_id | String |
| authorization_key | Hexadecimal String |
| sources | comma separated list of int |
| sensor | Integer 0-255 |
| data | Hexadecimal String |
| info_type | Integer 0-255 |
| info_data | Hexadecimal String |

| Send Alarm Reply | | | |
|------------------------|---|-------|--|
| URL | gateway/server/send_alarm_reply | | |
| | Sends an Alarm Reply message to a connected TCU. | | |
| Description | If no TCU is connected, this operation will block | | |
| - | until one connects. | | |
| Parameters | | | |
| Name | Гуре | Notes | |
| hdr meg etrl | Integer 0-255 or one of the following string | | |
| hdr_msg_ctrl | constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| major_hardware_release | | | |
| major_software_release | | | |
| error | Integer 0-255 | | |
| | Integer 0-255 or one of the following string | | |
| confirmation | constants: ACCEPTED, | | |
| | START_TRACKING, TURN_SPEAKER | | |
| | Integer 0-255 or one of the following string | | |
| transmit_unit | constants: HOUR, MINUTE, | | |
| LI AIISIIITE_UIITE | ONE_MORE_TIME, ONLY_ONE, | | |
| | SECOND | | |
| | Integer 0-255 or one of the following string | | |
| ocall undato | constants: CANCEL_ALARM, | | |
| ecall_update | DISABLE_VOICE_CALL, | | |
| | RESEND_REQUEST | | |

| Send Configuration Update 24 | 5 |
|------------------------------|---------------------------------|
| URL | gateway/server/send_cfg_upd_245 |

| | Sends a Configuration Update 245 mes | sage to a | |
|---|---|------------------------|--|
| | connected TCU. If no TCU is connected, this | | |
| Description | operation will block until one connects. | . The operation | |
| - | waits for a reply and returns it, discardi | ng every other | |
| | received message which is not a reply t | 0 | |
| Parameters | | | |
| Name | Туре | Notes | |
| belie wood object | Integer 0-255 or one of the following | | |
| hdr_msg_ctrl | string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| major_hardware_release | | | |
| major_software_release | | | |
| target_application_id | Integer 0-255 | | |
| | Integer 0-255 or one of the following | | |
| action | string constants: ACTIVATE, | | |
| | CHANGE, DEACTIVATE, QUERY | | |
| atort time | Number of seconds since epoch | | |
| start_time | (01/01/1970 00:00:00). | | |
| and time | Number of seconds since epoch | | |
| end_time | (01/01/1970 00:00:00). | | |
| grace time | Number of seconds since epoch | | |
| grace_time | $(01/01/1970\ 00:00:00).$ | | |
| device_id | Integer 0-255 | | |
| version_id | Integer 0-255 | | |
| vin_number | String | | |
| tcu_serial_number | String | | |
| imei_number | String | | |
| sim_card_id | String | | |
| authorization_key | Hexadecimal String | | |
| p_cnt | Integer(32) | Number of "p" elements | |
| cod | Integer 0-255 | р следиель | |
| val | Hexadecimal String | | |
| Response | | | |
| Name | Туре | Notes | |
| | Integer 0-255 or one of the following | | |
| hdr_msg_ctrl | string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| _ = =================================== | L | | |

| Integer 0-255 | |
|--------------------|--|
| String | |
| String | |
| String | |
| String | |
| Hexadecimal String | |
| Integer 0-255 | |
| | Number of |
| Integer(32) | "errors" |
| | elements |
| Integer 0-255 | |
| Hexadecimal String | |
| Integer 0-255 | |
| | String String String Hexadecimal String Integer 0-255 Integer(32) Integer 0-255 Hexadecimal String |

| Send Function Command | | |
|------------------------|--|------------|
| URL | gateway/server/send_func_cmd | |
| Description | Sends a Function Command message to a connected TCU. If no TCU is connected, this operation will block until one connects. The operation waits for a reply and returns it, discarding every other received message which is not a reply to this one. | |
| Parameters | - | . . |
| | JF - | Notes |
| | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| | Integer 0-255 | |
| major_hardware_release | | |
| major_software_release | Integer 0-255 | |
| entity_id | Integer 0-255 | |
| transmit_unit | Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND | |
| transmit_interval | Integer 0-255 | |
| function_command | Integer 0-255 or one of the following string constants: DISABLE, ENABLE, PERMIT, REJECT, REQUEST | |
| | Hexadecimal String | |
| vin_number | String | |

| tcu_serial_number | String | |
|------------------------|---|-------|
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| Response | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| error | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| entity_id | Integer 0-255 | |
| transmit_unit | Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND | |
| transmit_interval | Integer 0-255 | |
| function_status | Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED | |
| raw_data | Hexadecimal String | |
| | | |

| Send Provision Update | | |
|-----------------------|--|---|
| URL | gateway/server/send_prov_up | d |
| Description | Sends a Provision Update message to a c TCU. If no TCU is connected, this opera block until one connects. The operation v reply and returns it, discarding every oth message which is not a reply to this one. | tion will waits for a er received |
| Parameters | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |

| hdr_version | Integer 0-255 | |
|---|--|-------|
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| target_application_id | Integer 0-255 | |
| | Integer 0-255 or one of the following | |
| action | string constants: ACTIVATE, CHANGE, | |
| | DEACTIVATE, QUERY | |
| start_time | Number of seconds since epoch | |
| | (01/01/1970 00:00:00). | |
| end_time | Number of seconds since epoch | |
| | (01/01/1970 00:00:00). | |
| device_id | Integer 0-255 | |
| version_id | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| | | |
| sim_card_id | String | |
| sim_card_id authorization_key | String Hexadecimal String | |
| | | |
| authorization_key | | Notes |
| authorization_key Response Name | Hexadecimal String | Notes |
| authorization_key Response | Hexadecimal String Type | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag | Hexadecimal String Type Integer 0-255 or one of the following | Notes |
| authorization_key Response Name hdr_msg_ctrl | Hexadecimal String Type Integer 0-255 or one of the following string constants: RESP_EXP | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error | Hexadecimal String Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version | Hexadecimal String Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-255 Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-255 Integer 0-255 Integer 0-255 Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id action | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id vin_number | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id action vin_number tcu_serial_number | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-100000000000000000000000000000000000 | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id vin_number | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-100 Integer 0-255 In | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id action vin_number tcu_serial_number | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-100 of the following string constants: ACTIVATE, CHANGE, DEACTIVATE, QUERY String String | Notes |
| authorization_key Response Name hdr_msg_ctrl hdr_test_flag hdr_version error target_application_id action vin_number tcu_serial_number imei_number | Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: ACTIVATE, CHANGE, DEACTIVATE, QUERY String String String | Notes |

| Send Track Command | |
|--------------------|---|
| URL | gateway/server/send_track_cmd |
| Description | Sends a Track Command message to a connected |
| | TCU. If no TCU is connected, this operation will |
| | block until one connects. The operation waits for a |
| | reply and returns it, discarding every other received |

| | message which is not a reply to this one. | |
|------------------------|--|-------|
| Parameters | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| entity_id | Integer 0-255 | |
| | Integer 0-255 or one of the following string | |
| transmit_unit | constants: HOUR, MINUTE, | |
| ci alisiiitt_uliit | ONE_MORE_TIME, ONLY_ONE, | |
| | SECOND | |
| transmit_interval | Integer 0-255 | |
| | Integer 0-255 or one of the following string | |
| function_command | constants: DISABLE, ENABLE, PERMIT, | |
| | REJECT, REQUEST | |
| raw_data | Hexadecimal String | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| Response | - | |
| Name | Туре | Notes |
| hdr med etrl | Integer 0-255 or one of the following string | |
| hdr_msg_ctrl | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | | |
| major_software_release | | |
| | Number of seconds since epoch | |
| timestamp | (01/01/1970 00:00:00). | |
| curr_area | Integer 0-255 | |
| curr_location | Integer 0-255 | |
| curr_lat | Integer 0-4294967296 | |
| curr_lon | Integer 0-4294967296 | |
| curr_alt | Integer 0-65535 | |
| curr_velocity | Integer 0-255 | |
| | | |

| curr_heading | Integer 0-255 |
|-------------------|-----------------------------|
| curr_pos_uncert | Integer 0-255 |
| curr_sats | comma separated list of int |
| vin_number | String |
| tcu_serial_number | String |
| imei_number | String |
| sim_card_id | String |
| authorization_key | Hexadecimal String |
| sources | comma separated list of int |
| sensor | Integer 0-255 |
| data | Hexadecimal String |
| info_type | Integer 0-255 |
| info_data | Hexadecimal String |

| Send Track Reply | | |
|------------------------|---|-------|
| URL | gateway/server/send_track_reply | |
| Description | Sends a Track Reply message to a connected TCU. If no TCU is connected, this operation will block until one connects. | |
| Parameters | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | | |
| major_software_release | Integer 0-255 | |
| error | Integer 0-255 | |
| confirmation | Integer 0-255 or one of the following string constants: ACCEPTED, START_TRACKING, TURN_SPEAKER | |
| transmit_unit | Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND | |
| ecall_update | Integer 0-255 or one of the following string constants: CANCEL_ALARM, DISABLE_VOICE_CALL, RESEND_REQUEST | |

Wait for TCU connection

| URL | gateway/server/wait_for_connection | | | |
|-------------|--|--|--|--|
| Description | Blocks until a connection is established from a TCU. If a connection | | | |
| Description | is already established, the opera | is already established, the operation returns immediately. | | |
| Response | Response | | | |
| Name | Type Notes | | | |
| host | String TCU IP or host name | | | |
| port | Integer 0-65535 | TCU Port number | | |

| Wait for TCU disconnection | | | |
|----------------------------|---|---------------------|--|
| URL | gateway/server/wait_for_disconnection | | |
| | Blocks until a TCU disconnects from the server. If a TCU is not | | |
| Description | connected, the operation blocks until one connects and then | | |
| | disconnects. | | |
| Response | Response | | |
| Name | Type Notes | | |
| host | String | TCU IP or host name | |
| port | Integer 0-65535 | TCU Port number | |

1.1.3.3 TCU (Client) Commands

| Start Client | | |
|--------------|---|-------------------------|
| URL | gateway/client/start | |
| Description | Starts a new client that connects to the specified port. The allowed IPs and ports must have been previously configured on the ACP Test Server, otherwise the command will fail. | |
| Parameters | | |
| Name | Туре | Notes |
| port | Integer 1025-65535 | Port number |
| ip | Host name or IP address | Host name or IP address |

| Stop Client | |
|-------------|-------------------------|
| URL | gateway/client/stop |
| Description | Disconnects the client. |

| Pop Alarm Reply | |
|-----------------|---|
| URL | gateway/client/pop_alarm_reply |
| Description | Gets and removes the first Alarm Reply message queued by the server. The operation blocks until there's an available message. |
| Response | |

| Name | Туре | Notes |
|------------------------|--|-------|
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| error | Integer 0-255 | |
| | Integer 0-255 or one of the following string | |
| confirmation | constants: ACCEPTED, | |
| | START_TRACKING, TURN_SPEAKER | |
| | Integer 0-255 or one of the following string | |
| transmit_unit | constants: HOUR, MINUTE, | |
| | ONE_MORE_TIME, ONLY_ONE, | |
| | SECOND | |
| | Integer 0-255 or one of the following string | |
| ecall_update | constants: CANCEL_ALARM, | |
| | DISABLE_VOICE_CALL, | |
| | RESEND_REQUEST | |

| Pop Track Reply | | |
|------------------------|---|-------|
| URL | gateway/client/pop_track_reply | |
| Description | Gets and removes the first Track Reply message queued by the server. The operation blocks until there's an available message. | |
| Response | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| error | Integer 0-255 | |
| confirmation | Integer 0-255 or one of the following string constants: ACCEPTED, START_TRACKING, TURN_SPEAKER | |
| transmit_unit | Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, | |

| | SECOND | |
|--------------|---|--|
| ecall update | Integer 0-255 or one of the following string constants: CANCEL_ALARM, DISABLE VOICE CALL, | |
| | RESEND_REQUEST | |

| gateway/client/send_alarm_notif | | |
|---|--|--|
| Sends an Alarm Notification message to a connec | | |
| SO. If no SO is connected, this operation | n will block | |
| until one connects. | | |
| | | |
| Туре | Notes | |
| Integer 0-255 or one of the following | | |
| string constants: RESP_EXP | | |
| Integer 0-255 | | |
| Number of seconds since epoch | | |
| (01/01/1970 00:00:00). | | |
| Integer 0-255 | | |
| Integer 0-255 | | |
| Integer 0-4294967296 | | |
| Integer 0-4294967296 | | |
| Integer 0-65535 | | |
| Integer 0-255 | | |
| Integer 0-255 | | |
| Integer 0-255 | | |
| comma separated list of int | | |
| String | | |
| Hexadecimal String | | |
| | | |
| Integer 0-255 | | |
| Hexadecimal String | | |
| Integer 0-255 | | |
| Hexadecimal String | | |
| | Sends an Alarm Notification message to SO. If no SO is connected, this operation until one connects. Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-4294967296 Integer 0-4294967296 Integer 0-4555 Integer 0-255 | |

| Send Track Position | | | |
|------------------------|---|-------|--|
| URL | gateway/client/send_track_pos | | |
| | Sends an Track Position message to a connected SO. If no SO is connected, this operation will block until one connects. | | |
| Description | | | |
| - | | | |
| Parameters | | | |
| Name | Туре | Notes | |
| hdr_msg_ctrl | Integer 0-255 or one of the following | | |
| | string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| major_hardware_release | | | |
| major_software_release | Integer 0-255 | | |
| timestamp | Number of seconds since epoch | | |
| | (01/01/1970 00:00:00). | | |
| curr_area | Integer 0-255 | | |
| curr_location | Integer 0-255 | | |
| curr_lat | Integer 0-4294967296 | | |
| curr_lon | Integer 0-4294967296 | | |
| curr_alt | Integer 0-65535 | | |
| curr_velocity | Integer 0-255 | | |
| curr_heading | Integer 0-255 | | |
| curr_pos_uncert | Integer 0-255 | | |
| curr_sats | comma separated list of int | | |
| vin_number | String | | |
| tcu_serial_number | String | | |
| imei_number | String | | |
| sim_card_id | String | | |
| authorization_key | Hexadecimal String | | |
| sources | comma separated list of int | | |
| sensor | Integer 0-255 | | |
| data | Hexadecimal String | | |
| info_type | Integer 0-255 | | |
| info_data | Hexadecimal String | | |

| Send alarm keepalive | |
|----------------------|--|
| URL | gateway/client/send_alarm_ka |
| Description | Sends an Alarm Keepalive message to a connected SO. If no SO is connected, this operation will block until one connects. |
| Parameters | |

| Name | Гуре | Notes |
|-------------------|--|-------|
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |

| Wait for Configure Update 245 | | | |
|-------------------------------|--|--------------|--|
| URL | gateway/client/wait_for_cfg_ | _upd245 | |
| | Waits for a Configure Update 245 messa | | |
| Description | a Configure Reply to the connected SO. 7 | | |
| | parameters of this command indicate the | field values | |
| | of the reply. | | |
| Parameters | | | |
| Name | <u> </u> | Notes | |
| hdr_msg_ctrl | Integer 0-255 or one of the following | | |
| | string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| tcu_manufacturer_id | Integer 0-255 | | |
| major_hardware_release | Integer 0-255 | | |
| major_software_release | Integer 0-255 | | |
| target_application_id | Integer 0-255 | | |
| vin_number | String | | |
| tcu_serial_number | String | | |
| imei_number | String | | |
| sim_card_id | String | | |
| authorization_key | Hexadecimal String | | |
| error | Integer 0-255 | | |
| Response | | | |
| Name | Туре | Notes | |
| hdr_msg_ctrl | Integer 0-255 or one of the following | | |
| 101_ 159_0011 | string constants: RESP_EXP | | |
| hdr_test_flag | Integer 0-255 | | |
| hdr_version | Integer 0-255 | | |
| car_manufacturer_id | Integer 0-255 | | |
| | Integer 0-255 | | |
| major_hardware_release | Integer 0-255 | | |

| major_software_release | Integer 0-255 | |
|------------------------|---|---------------------------|
| target_application_id | Integer 0-255 | |
| action | Integer 0-255 or one of the following string constants: ACTIVATE, CHANGE, DEACTIVATE, QUERY | |
| start_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| end_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| grace_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| device_id | Integer 0-255 | |
| version_id | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| p_cnt | Integer(32) | Number of "p" elements |
| cod | Integer 0-255 | |
| val | Hexadecimal String | |

| Wait for Configure Update 245, reply with Reply 245 | | |
|---|---|------------|
| URL | gateway/client/wait_for_cfg_upd_2 45 | 45_reply_2 |
| | Waits for a Configure Update 245 message and se Configure Reply 245 to the connected SO. The pa command indicate the field values of the reply. | |
| Parameters | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_releas e | Integer 0-255 | |
| E | Integer U-255 | |
| target_application_id | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |

| imei_number | String | |
|----------------------------|---|-----------------------------------|
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| errors_cnt | Integer(32) | Number of "errors" elements |
| type | Integer 0-255 | |
| data | Hexadecimal String | |
| code | Integer 0-255 | |
| Response | | , |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_releas e | Integer 0-255 | |
| major_software_releas e | Integer 0-255 | |
| target_application_id | Integer 0-255 | |
| action | Integer 0-255 or one of the following string constants: ACTIVATE, CHANGE, DEACTIVATE, QUERY | |
| start_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| end_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| grace_time | Number of seconds since epoch (01/01/1970 00:00:00). | |
| device_id | Integer 0-255 | |
| version_id | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| p_cnt | Integer(32) | Number of "p" elements |
| cod | Integer 0-255 | |
| val | Hexadecimal String | |

Wait for Function Command

| Name Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-255 | URL | gateway/client/wait_for_func_c | emd | |
|--|--|--|-------|--|
| Parameters of this command indicate the field values of the reply. Parameters Name Type Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, | Waits for a Function Command message and sends | | | |
| Of this command indicate the field values of the reply. Parameters | Description | | | |
| Name | _ | | | |
| Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: HOUR, MINUTE, Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer | Parameters | | 1 7 | |
| Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: HOUR, MINUTE, Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer | Name | Туре | Notes | |
| constants: RESP_EXP Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED FAMILY ONLY ONLY Integer 0-255 or one of the following string constants: RESP_EXP Integer 0-255 Integer 0-25 | hdr mag atri | | | |
| Integer 0-255 error Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 major_software_release Integer 0-255 major_software_release Integer 0-255 win_number String tcu_serial_number String imei_number String sim_card_id String authorization_key Hexadecimal String entity_id Integer 0-255 Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes hdr_msg_ctrl Integer 0-255 hdr_test_flag Integer 0-255 hdr_test_flag Integer 0-255 hdr_version Integer 0-255 major_hardware_release Integer 0-255 entity_id Inte | liur_iiisg_ctri | _ = = | | |
| hdr_version | hdr_test_flag | Integer 0-255 | | |
| car_manufacturer_id | hdr_version | Integer 0-255 | | |
| tcu_manufacturer_id | error | Integer 0-255 | | |
| tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 | car_manufacturer_id | Integer 0-255 | | |
| major_hardware_release Integer 0-255 major_software_release Integer 0-255 vin_number string tcu_serial_number String imei_number String sim_card_id String authorization_key Hexadecimal String entity_id Integer 0-255 Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Iype Notes hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer | tcu_manufacturer_id | | | |
| major_software_release Integer 0-255 vin_number | major_hardware_release | Integer 0-255 | | |
| vin_number tcu_serial_number string imei_number string sim_card_id authorization_key Hexadecimal String entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 entity_id Integer 0-255 lnteger 0-255 lnteger 0-255 entity_id Integer 0-255 lnteger 0-255 ln | major_software_release | Integer 0-255 | | |
| tcu_serial_number String S | vin_number | | | |
| imei_number | tcu_serial_number | 3 | | |
| authorization_key entity_id Integer 0-255 Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 Integer 0-255 Integer 0-255 Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Integer 0-255 or one of the following string constants: RESP_EXP hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | imei_number | | | |
| authorization_key entity_id | sim_card_id | | | |
| Integer 0-255 Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | authorization_key | | | |
| Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 function_status Completed, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | entity_id | | | |
| transmit_unit constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Car_manufacturer_id Integer 0-255 car_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 Int | | | | |
| ONE_MORE_TIME, ONLY_ONE, SECOND transmit_interval Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes Integer 0-255 or one of the following string constants: RESP_EXP hdr_msg_ctrl Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 one of the following string constants: HOUR, MINUTE, | transmit unit | | | |
| SECOND transmit_interval Integer 0-255 Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Car_manufacturer_id Integer 0-255 car_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: RESP_EXP hdr_software_release Integer 0-255 In | Cransmill_unit | ONE_MORE_TIME, ONLY_ONE, | | |
| Integer 0-255 or one of the following string constants: COMPLETED, DISABLED, ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Notes Integer 0-255 or one of the following string constants: RESP_EXP hdr_msg_ctrl Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | | | | |
| function_status | transmit_interval | Integer 0-255 | | |
| function_status | | Integer 0-255 or one of the following string | | |
| ENABLED, PERMITTED, REJECTED raw_data Hexadecimal String Response Name Type Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | function_status | | | |
| Response Name Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag hdr_version car_manufacturer_id tcu_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | | • | | |
| Name hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag Integer 0-255 hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | raw_data | Hexadecimal String | | |
| Name hdr_msg_ctrl Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 or one of the following string constants: HOUR, MINUTE, | Response | | • | |
| Integer 0-255 or one of the following string constants: RESP_EXP hdr_test_flag | | Туре | Notes | |
| constants: RESP_EXP hdr_test_flag | | Integer 0-255 or one of the following string | | |
| hdr_version Integer 0-255 car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | 101_ 159_011 | constants: RESP_EXP | | |
| car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | hdr_test_flag | Integer 0-255 | | |
| car_manufacturer_id Integer 0-255 tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | hdr_version | Integer 0-255 | | |
| tcu_manufacturer_id Integer 0-255 major_hardware_release Integer 0-255 major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | car_manufacturer_id | | | |
| major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | tcu_manufacturer_id | Integer 0-255 | | |
| major_software_release Integer 0-255 entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | | | | |
| entity_id Integer 0-255 transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | | | | |
| transmit_unit Integer 0-255 or one of the following string constants: HOUR, MINUTE, | entity_id | - | | |
| constants: HOUR, MINUTE, | transmit_unit | | | |
| | | | | |
| | | ONE_MORE_TIME, ONLY_ONE, | | |

| | SECOND | |
|-------------------|--|---|
| transmit_interval | Integer 0-255 | |
| function_command | Integer 0-255 or one of the following string constants: DISABLE, ENABLE, PERMIT, REJECT, REQUEST | |
| raw_data | Hexadecimal String | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | · |

| Wait for Provision Request | | |
|----------------------------|--|------------|
| URL | gateway/client/wait_for_prov_ | upd |
| | Waits for a Provision Request message and | sends a |
| Description | Provision Reply to the connected SO. The p | |
| | of this command indicate the field values of | the reply. |
| Parameters | | |
| Name | JF - | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| | Integer 0-255 | |
| target_application_id | Integer 0-255 | |
| | Integer 0-255 or one of the following string | |
| action | constants: ACTIVATE, CHANGE, | |
| | DEACTIVATE, QUERY | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| Response | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| | Integer 0-255 | |
| | Integer 0-255 | |
| major_hardware_release | | |
| major_software_release | Integer 0-255 | |

| target_application_id | Integer 0-255 | |
|-----------------------|--|--|
| | Integer 0-255 or one of the following string | |
| action | constants: ACTIVATE, CHANGE, | |
| | DEACTIVATE, QUERY | |
| start_time | Number of seconds since epoch | |
| | (01/01/1970 00:00:00). | |
| end_time | Number of seconds since epoch | |
| | (01/01/1970 00:00:00). | |
| device_id | Integer 0-255 | |
| version_id | Integer 0-255 | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |

| Wait for Track Command | | |
|------------------------|--|------------|
| URL | gateway/client/wait_for_track_ | cmd |
| | Waits for a Track Command message and se | nds a |
| Description | Track Position to the connected SO. The para | ameters |
| | of this command indicate the field values of | the reply. |
| Parameters | | |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string | |
| | constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | | |
| major_software_release | Integer 0-255 | |
| timestamp | Number of seconds since epoch (01/01/1970 | |
| Linestamp | 00:00:00). | |
| curr_area | Integer 0-255 | |
| curr_location | Integer 0-255 | |
| curr_lat | Integer 0-4294967296 | |
| curr_lon | Integer 0-4294967296 | |
| curr_alt | Integer 0-65535 | |
| curr_velocity | Integer 0-255 | |
| curr_heading | Integer 0-255 | |
| curr_pos_uncert | Integer 0-255 | |
| curr_sats | comma separated list of int | |
| vin_number | String | |

| tcu_serial_number | String | |
|------------------------|---|-------|
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |
| sources | comma separated list of int | |
| sensor | Integer 0-255 | |
| data | Hexadecimal String | |
| info_type | Integer 0-255 | |
| | Hexadecimal String | |
| Response | | • |
| Name | Туре | Notes |
| hdr_msg_ctrl | Integer 0-255 or one of the following string constants: RESP_EXP | |
| hdr_test_flag | Integer 0-255 | |
| hdr_version | Integer 0-255 | |
| car_manufacturer_id | Integer 0-255 | |
| tcu_manufacturer_id | Integer 0-255 | |
| major_hardware_release | Integer 0-255 | |
| major_software_release | Integer 0-255 | |
| entity_id | Integer 0-255 | |
| transmit_unit | Integer 0-255 or one of the following string constants: HOUR, MINUTE, ONE_MORE_TIME, ONLY_ONE, SECOND | |
| transmit_interval | Integer 0-255 | |
| function_command | Integer 0-255 or one of the following string constants: DISABLE, ENABLE, PERMIT, REJECT, REQUEST | |
| raw_data | Hexadecimal String | |
| vin_number | String | |
| tcu_serial_number | String | |
| imei_number | String | |
| sim_card_id | String | |
| authorization_key | Hexadecimal String | |

| Wait for connection | |
|---------------------|---|
| URL | gateway/client/wait_for_connection |
| Description | Waits until the client connects to an SO. |

1.1.4 Operation Timeout

All described operations accept an additional parameter called timeout whose value is an integer that provides a timeout in seconds to execute the operation. If more than timeout seconds elapse since the start of the operation, the operation will abort and result=TIMEOUT will be returned.

1.1.5 Sample Interaction Using an Automated Test Bench

The following interaction represents how to test that the right messages are received by the server upon main battery disconnection. The example represents the expected behavior of the TCU, deviations from this behavior should be considered test failures.

The example is provided to use as a basis for discussion and requirements elicitation, but is not described using any modeling formalism.

! ATTENTION: Additional examples can be provided on request that illustrate how the interface could be used from other programming languages (ie. Java, C#, PHP, Python, etc.).

| Notation | |
|-----------------|---|
| ТВ | The testbench. |
| AS | The ACP Server. |
| [action] | Represents an external action. |
| | These will usually represent actions performed manually by an operator, automatically by the test bench, or by the TCU. |
| X -> Y: content | Represents a message that is being sent from X to Y with the given expected content. |
| | Normally the test bench must check that the content matches the expected one. |
| /* comment */ | A comment implying a condition that should be met before running the test or just as a clarification of the test steps. |

```
/* TCU starts disconnected from the server */
[ Operator executes test case at test bench ]
TB-> AS: start_test("TCU_power_supply")
TB-> AS: start(port=12005)
[ Operator Disconnect TCU power supply ]

TB-> AS: wait_for_connection(timeout=X)
[ TCU initiates a connection to the server ]
AS-> TB: OK, tcu_ip, tcu_port
```

```
TB-> AS: pop_alarm_notif(timeout=X)
[ TCU sends a theft alarm notification to the server ]
AS-> TB: OK, sources=1,0,8,
     sensor=1, data=?0
TB-> AS: pop_alarm_notif(timeout=X)
[ TCU sends a theft alarm notification to the server ]
AS-> TB: OK, sources=2,
     sensor=1, data=?0
repeat for 2 hours:
     /* 2 hours value */
    TB-> AS: pop_track_pos(timeout=track_interval)
    [ TCU sends position to server ]
    AS-> TB: OK,
          timestamp="yyyy-mm-dd hh:mm:ss",
          sensor=1, data=?0
    /* TB should check that messages are received in the
       interval configured in the TCU */
TB-> AS: pop_alarm_notif()
[ Operator Reconnects TCU power supply ]
[ TCU sends theft alarm notification to server ]
AS-> TB: OK, sources=0,0,16, sensor=1, data=?0
TB-> AS: pop_alarm_notif(timeout=X)
[ Operator sets KL15 to ON ]
[ TCU sends theft alarm notification to server ]
AS-> TB: OK, sources=0,64,0, sensor=1, data=?0
TB-> AS: pop_theft_alarm_message(timeout=X)
[ TCU sends theft alarm notification to server ]
AS-> TB: OK, sources=0,0,1,
```

sensor=1,breakdown_data[0x?0]

TB-> AS: stop

TB-> AS: end_test

2 Contacting support

Support is provided under the following conditions:

- An incident must be reported by the Customer to Edantech using email, phone or an alternative mechanism proposed by Edantech (ie. Support. Web site). Contact information will be provided on the commercial proposal.
 - Email contact information: support@edantech.com
- After the incident is reported, Edantech is bound to answer and solve the incident in the terms specified on the commercial proposal (Supplier Statement of Work or Services Contract document).
- Edantech will only resolve incidents relating to the system described on this document or on the base software used on a Edantech installed equipment required to support the system (operating system, database systems, etc.).
- All support will be provided remotely, by establishing a SSH connection to the equipment running the system.
- Once the equipment is installed at the Customer site, network and hardware issues that impede Edantech for connecting to the server must be fixed by the Customer (by reinstalling or replacing the equipment, or fixing their network configuration).

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ZPL 2.1

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