OpenGarage Firmware 1.1.2 API Document [Jan 31, 2021]

1. Overview

This document describes OpenGarage (OG) Firmware 1.1.2 API.

- Note: this firmware has modified/added several options. Changes are highlighted in green.
- A new section is added at the end about the **MQTT** feature.
- When device key is required, use **dkey=xxx**. At factory reset, the default device key is opendoor.
- The device IP address is referred to as **devip**
- For most commands, parameters are optional and the order of parameters does not matter.
- **Return values** are all formatted in JSON, for example: **`{"result":1}`**
- **Return error code**:
  - 1 Success
  - 2 Unauthorized (e.g. missing device key or device key is incorrect)
  - 3 Mismatch (e.g. new device key and confirmation key do not match)
  - 16 Data Missing (e.g. missing required parameters)
  - 17 Out of Range (e.g. value exceeds the acceptable range)
  - 18 Data Format Error (e.g. provided data does not match required format)
  - 32 Page Not Found (e.g. page not found or requested file missing)
  - 48 Not Permitted (e.g. cannot operate on the requested station)
  - 64 Upload failed (e.g. OTA firmware update failed)

2. Get Controller Variables: `http://devip/jc`

Returned JSON variables:

- dist: distance sensor value (unit: cm)
- sn2: switch sensor value (only if switch sensor is enabled)
- door: door status (binary, 1 means open, 0 means closed)
- vehicle: vehicle status (1 means vehicle detected, 0 no, 2 means unknown)
- rcnt: read count (increments every time distance sensor is read)
- fwv: firmware version
- name: device name
- mac: MAC address
- cid: WiFi chip ID
- rssi: WiFi signal strength (dBm)
- temp: temperature reading (Celcius), only if T/H sensor is enabled
- humid: humidity reading (relative percentage), only if T/H sensor is enabled

3. Change Controller Variables:

`http://devip/cc?dkey=xxx&click=1&close=1&open=1&reboot=1&apmode=1`

Parameters:

- dkey: (required) device key (factory default device key is opendoor)
- click/close/open: (optional) trigger relay click / close door / open door
- reboot/apmode: (optional) reboot device / reset device in AP mode (to reconfigure WiFi settings)

Examples:

- http://devip/cc?dkey=xxx&click=1 trigger relay click (i.e. toggle door)
- http://devip/cc?dkey=xxx&close=1 close door (ignored if the door is already closed)
- http://devip/cc?dkey=xxx&reboot=1 reboot device

4. Get Options: `http://devip/jo`

Returned JSON variables: (factory default values indicated in bold font)

- fwv: firmware version (read-only)
- sn1: sn1 (distance sensor) mounting type (**0: ceiling mount**; 1: side mount)
- sn2: sn2 (switch sensor) type (**0: none**; 1: normally closed; 1: normally open)
- sno: sensor logic -- door 'open' status is determined by: (**0: use sn1 only**; 1: sn2 only; 2: sn1 AND sn2; 3: sn1 OR sn2)
- dth: door distance threshold (unit: cm, used to detect if door is open)
- vth: vehicle distance threshold (unit: cm, used to detect if vehicle is present)
- riv: status check and report interval (unit: second, default **5**)
- alm: alarm (0: no alarm; **1: 5-second alarm**; 2: 10-second alarm)
- aoo: alarm on opening (**0: no**; 1: yes)
- lsz: log size (i.e. 50 means the controller keeps the most recent 50 records)
- tsn: temperature/humidity sensor (**0:none**; 1:AM2320; 2:DT11; 3:DHT22; 4:DS18B20)
- htp: http port (default **80**)
- cdt: click delay time (unit: ms, default **1000**)
- dri: distance reading interval (unit: ms, default **500**)
- sfi: sensor filtering method (0: median; **1: consensus**)
- cmr: consensus margin for the consensus method (unit: cm, default **10**)
- sto: sensor timeout option (**0: ignore**; 1: cap to maximum value)
- ati: automation time a (unit: minutes, detect if door is open for longer than ati)
- ato: automation option a (bit 0: notify; bit 1: auto-close)
- atib: automation time b (unit: UTC hour, detect if door is open after atib)
- atob: automation option b (bit 0: notify; bit 1: auto-close)
- noto: notification options (bit 0: door open events; bit 1: door close events)
- usi: use static IP (**0: use DHCP**; 1: use static IP)
  when usi=1, three additional string options are available: dvip, gwip, subn, which represent the custom device IP, gateway IP, subnet mask
- auth: cloud authorization token
- bdmn: Blynk domain name (default: blynk-cloud.com)
- bprt: Blynk server port (default: 80)
- name: device name (default "**My OpenGarage**")
- iftt: IFTTT maker channel token
- ssid: the WiFi network OG is connected to currently
- mqtt: mqtt server url (IP or domain name both allowed)
- mqpt: mqtt port (default is 1883)
- mqur: mqtt server user name (optional, if authentication is required)
- mqpw: mqtt password (this is NOT sent over /jo; instead, it can be changed by /co command)
- mqtp: mqtt topic (optional, if empty it will use the device name as topic)
- ntp1: NTP server url (optional, if customizing NTP server)
- host: Custom Host name (using mDNS feature: the full host name is host**.local/**, for example if host is 'testog' then the full host name should be **testog.local/**)
- dvip/gwip/subn: device ip / gateway ip / subnet mask (when in static IP mode)

5. Change Options:

`http://devip/co?dkey=xxx&nkey=xxx&ckey=xxx&opname=opvalue...`

Options:

- For the list of option names (opnames), refer to Section 4 above.
- Some option are cannot be modified through the /co command: including `fwv, dkey`. These are either read-only options, or should be set in a different way.
- To change device key, use the `nkey` and `ckey` pairs (new key, and confirm key).

Examples:

- devip/cc?dkey=xxx&nkey=abc&ckey=abc — set device key to 'abc'
- devip/cc?dkey=xxx&dth=75 — set distance threshold to 75cm
- devip/cc?dkey=xxx&cdt=500 — set click delay time to 500ms
- devip/cc?dkey=xxx&auth=0123456789abcdef — set cloud authorization token
- devip/cc?dkey=xxx&htp=8080&riv=5 — set http port to 8080 and read interval to 5 seconds
- devip/cc?dkey=xxx&iftt=xxxx — set IFTTT maker channel token
- devip/cc?dkey=xxx&ati=5&ato=3 — set automation time a to 5 minutes and option to 0b11 (i.e. auto-notify and close if door is open for > 5 minutes).

6. Get Log Data: `http://devip/jl`

Returned JSON variables:

- `name:` device name
- `time:` device time (UTC epoch time)
- `ncols:` number of columns (3 or 4, depending on if sn2_value is attached)
- `logs:` log data - an array of log entries, each entry in the form of [time_stamp, door_status, distance_value, sn2_value]

Note: sn2_value is attached if sensor 2 (SN2) is enabled in options. This is indicated by the ncols parameter: it is 3 if sn2_value is not attached; 4 if it is.

7. Clear Log Data:

`http://devip/clearlog?dkey=xxx`
This command clears the log data.

8. Reset All

`http://devip/resetall?dkey=xxx`
This command resets the device to factory default settings.

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9. MQTT

This firmware supports MQTT. To use it:

- Define MQTT broker (i.e. the 'mqtt' parameter). If authentication is required, you can provide username and password ('mqur' and 'mqpw' parameters).
- You can define a custom MQTT topic ('mqtp' parameter). If left empty, the firmware will use the device name as the topic. In the examples below, it's referred to as OGTOPIC.

- **Published messages**:
  - `/OGTOPIC/OUT/NOTIFY: sent when door has just opened or just closed`
  - `/OGTOPIC/OUT/STATE:  sent every 15 seconds to refresh current state`
  - `/OGTOPIC/OUT/STATUS: report device online offline messages`
  - `/OGTOPIC/OUT/JSON:   sent every 15 seconds with basic controller parameters such as distance value, switch sensor value, temperature/humidity value (if available)`

- **Subscribed messages**:
  - `/OGTOPIC/IN/STATE:   accepts state change request. If payload message is:`
    - `"open" or "close": will trigger action if door is not already in that state`
    - `"click": will trigger action regardless of the state of the door`