EMV Gate Heartbeat – HTTP Spec (EN)

Version: 1.0  
**Last updated:** 2025-08-14

# 1. Overview

Each device periodically POSTs a small JSON heartbeat to the server so that the monitoring UI can show real-time status. This document defines the endpoint, request/response formats, and timing rules (stale/offline).

# 2. Endpoint

**URL:** POST /hb

**Content-Type:** application/json

## 2.1 Request Body (JSON)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Field | Type | Required | Example | Notes |
| id | string | Yes | G1-01 | Unique device ID. |
| ip | string | Yes | 192.168.1.101 | Device IP (IPv4/IPv6). |
| status | string (enum) | Yes | online | online | offline | maintenance | fault |
| ts | string (ISO8601 UTC) | Yes | 2025-08-14T12:34:56Z | Server uses this for staleness checks. |
| message | string | No | Reader OK | Free-form message for quick diagnostics. |
| deviceType | string | No | reader | Optional device type label. |
| side | string (enum) | No | north | north | south |
| gateId | string | No | G1 | Gate group or lane ID. |
| stationId | string | No | ST-13 | Station identifier. |

## 2.2 Example Request

POST http://<server-host>:<port>/hb  
Content-Type: application/json  
  
{  
 "id": "G1-01",  
 "ip": "192.168.1.101",  
 "status": "online",  
 "ts": "2025-08-14T12:34:56Z",  
 "message": "Reader OK",  
 "deviceType": "reader",  
 "side": "north",  
 "gateId": "G1",  
 "stationId": "ST-13"  
}

# 3. Response

Success (HTTP 200):

{"ok": true}

Error (HTTP 400/500):

{"ok": false, "error": "message"}

# 4. Timing & Staleness Rules

Recommended heartbeat interval: every 5–15 seconds.

**Stale:** If last heartbeat older than 60s → status becomes STALE.

**Offline:** If last heartbeat older than 5 minutes → status becomes OFFLINE.

In the UI, an effective status may combine the reported status with a TCP probe (e.g., port 22). If the device heartbeat is old but TCP is reachable, it may be shown as FAULT to differentiate network reachability from app-layer heartbeat.

# 5. Storage Format

The Electron main process maintains a JSON file (configurable via config.json → deviceCommunicationPath). The file stores an array of device objects with latest heartbeat fields. Example structure:

[  
 {  
 "id": "G1-01", "name": "Entry Reader 01", "side": "north", "gateId": "G1",  
 "deviceIp": "192.168.1.101", "status": "online", "lastHeartbeat": "2025-08-14T13:31:52Z"  
 }  
]

# 6. Security

**Recommended:**

- Bind heartbeat server to a trusted network interface only.

- Firewall/block external access to the port.

- Optionally whitelist source IPs from known devices.

- Consider adding a shared secret header or HMAC if the network is not trusted.

# 7. Postman Testing

Use the included Postman collection and environment. Set variables:  
- baseUrl (e.g., http://127.0.0.1:3070)  
- deviceId, deviceIp  
Then run the “Send Heartbeat (OK)” request.

# 8. cURL Quick Start

curl -sS -X POST http://127.0.0.1:3070/hb \  
 -H "Content-Type: application/json" \  
 -d '{"id":"G1-01","ip":"192.168.1.101","status":"online","ts":"2025-08-14T12:34:56Z"}'

Siam Infinity Solution Co., Ltd.