

TT18-4G-M HTTP protocol v1.2

1. Protocol Framework

Request:

```
{  
  "msgtype": 0, //Type to determine different data  
  "hw": "0407", //Hardware model,  
  "fw": "", //Firmware version (format: 0.0.0.0)",  
  "imei": "", //Uniquely identifies (those are IMEI, SN, ID)",  
  "data": "", //Data area",  
  "rtc": "2021/09/09 03:42:04", //Year, month, day, hour, minute, second  
  "sn": //Data serial number, -1 represents empty  
}
```

Response:

```
{  
  "sta": 0, //Status number, 0 represents normal; 1 represents wrong  
  "data": "", //Return data area",  
  "error": "" //If wrong, you can return the error details"  
}
```

2. Get Server Time (MsgType:1)

Request:

```
{  
  "msgtype": 1,  
  "hw": "0407" //Hardware mode",  
  "fw": //Firmware version (format: 0.0.0.0)",  
  "imei": //Uniquely identifies (those are IMEI, SN, ID)",  
  "sn":  
}
```

Response:

```
{  
  "sta": 0,  
  "data": {  
    "servertime": "2021/09/09 03:42:04"  
  },  
  "error": ""  
}
```

Example:

Request: {"msgtype":1,"hw":"0407","fw":"02.00.00.00","imei":"6999999999999999","sn":1}

Response: {"sta":0,"data":{"servertime": "2021/09/10 10:06:53"},"error":""}

3. Standard Data Protocol (MsgType:3)

Request :

```
{
  "msgtype": 3,
  "hw": "0407" // "hardware model",
  "fw": "", // "firmware version (Format: 0.0.0.0)",
  "imei": "", // "unique ID (i.e. IMEI, ID)",
  "data": {
    "gps": [{"latitude": 22.537818, // latitude
             "longitude": 114.537818, // longitude
             "angle": 120, // angle
             "speed": 12.3, // Speed, unit: Knots
             "utc": "2023/02/21 17:11:56" // utc time
            ],
    "lbs": [
      {"MCC": "460", // mobile country code
        "MNC": "01", // mobile network code
        "Lac": "2793", // region code
        "rxlev": -68, // Unit: -dBm, only supported by 2G base stations
        "type": "2G" // base station type, 2G、NB、CATM、LTE
      },
      {"MCC": "460", // mobile country code
        "MNC": "01", // mobile network code
        "Lac": "2793", // region code
        "Cell": "0fa1"
        "pci": 272, // Physical Cell ID, decimal, NB、CATM、LTE support
        "earfcn": 3686, // decimal, NB、CATM、LTE support
        "rsrp": -75, // Current reference signal received power in, unit: -dBm, NB、CATM、LTE
        support
        "rsrq": -8, // The signal reception quality, unit: -dB, NB、CATM、LTE support
        "rssi": -8, // Received signal strength indicator value, unit: -dBm, NB、CATM、LTE
        support
        "type": "LTE" // base station type, 2G、NB、CATM、LTE
      },
      {"MCC": "460", // mobile country code
        "MNC": "01", // mobile network code
        "Lac": "2793", // region code
        "Cell": "12ae", // base station code
        "rxlev": -68, // unit: -dBm, Only supported by 2G base stations
        "type": "2G" // base station type, 2G、NB、CATM、LTE
      }
    ],
    "Alert": "AA", // alarm type, AA - normal data, 10 - low voltage alarm, A0 - temperature and
    humidity alarm, A1 - abnormal temperature and humidity, / / A2 - light sensor
  }
}
```

status change alarm

"Termsta": "00", // terminal information, bit6 flight mode , bit5 LSE abnormal, bit4 button pressed ,

//Bit3 - temperature and humidity abnormal, bit2 - temperature and humidity over limit , Bit1 - low voltage ,

//Bit0 USB connection

"gsm": {
"CSQ": 40, // signal strength
"Sta": "37" // bit5 If MQTT connection established, bit4 if data sending/receiving network is OK, bit3 if it is roaming
// bit2 if network is connected, Bit1 if the SIM card is detected, bit0 - if the device is turned on},

"Bat": 3.6, // battery voltage

"Temp": 33.6, // temperature, unit: 0.1C

"Humi": 58.9, // humidity, unit: 0.1%

"Light": 0 // light sensor status, 0-bright, 1-dark

},

"rtc": "2021/09/09 03:42:04",

"sn": 1

}

Response:

{

"sta": 0,

"data":{

"Ack": 1 // the SN received must be consistent with the SN published by the machine

},

"error": "",

"Errorcode": "" // error code

}

request:

```
{"msgtype":3,"hw":"0407","fw":"03.03.00.00","imei":"6999999999999911","data":{"lbs":{"mcc":"460","mnc":"00","lac":"1D2F","cell":"A7E743F","pci":272,"earfcn":3686,"rsrp":-73,"rsrq":-11,"rssi":-62,"type":"NB"}}, "alert":"AA","termsta":"10","gsm":{"csq":26,"sta":"37"},"bat":4.00,"temp":21.7,"humi":49.8,"light":0},"rtc":"2023/02/21 10:02:45","sn":3}
```

response:

```
{"sta":0,"data":{"ack":3}, "error":"","errorcode":""}
```

request:

```
{"msgtype":3,"hw":"0407","fw":"03.03.00.00","imei":"6999999999999911","data":{"lbs":{"mcc":"460","mnc":"00","lac":"2793","cell":"12CD","rxlev":-71,"type":"2G"},"mcc":"460","mnc":"00","lac":"2793","cell":"12AF","rxlev":-71,"type":"2G"},"mcc":"460","mnc":"00","lac":"2793","cell":"12CC","rxlev":-73,"type":"2G"}}, "alert":"AA","termsta":"10","gsm":{"csq":12,"sta":"37"},"bat":4.00,"temp":22.2,"humi":49.9,"light":1},"rtc":"2023/02/21 10:08:18","sn":10}
```

response:

```
{"sta":0,"data":{"ack",10}, "error":"","errorcode":""}
```

request:

```
{"msgtype":3,"hw":"0407","fw":"03.03.00.00","imei":"6999999999999911","data":{"gps":{"latitude":22.538564,"longitude":114.069624,"angle":0,"speed":0.0,"utc":2023/02/21 10:15:55},"lbs":[{"mcc":"460","mnc":"00","lac":"2793","cell":"12CD","rxlev":-69,"type":"2G"}, {"mcc":"460","mnc":"00","lac":"2793","cell":"12AF","rxlev":-67,"type":"2G"}, {"mcc":"460","mnc":"00","lac":"2793","cell":"0EF8","rxlev":-70,"type":"2G"}],"alert":"AA","termsta":"10","gsm":{"csq":31,"sta":"37"},"bat":2.67,"temp":9.6,"humi":25.6,"light":0},"rtc":"2023/02/21 10:16:01","sn":2}
```

response:

```
{"sta":0,"data":{"ack",2}, "error":"","errorcode":""}
```

request:

```
{"msgtype":3,"hw":"0407","fw":"03.03.00.00","imei":"6999999999999911","data":{"gps":{"latitude":22.538564,"longitude":114.069624,"angle":0,"speed":0.0,"utc":2023/02/21 10:18:21},"lbs":[{"mcc":"460","mnc":"00","lac":"1D2F","cell":"A7E743F","pci":272,"earfcn":3686,"rsrp":-72,"rsrq":-11,"rssi":-61,"type":"NB"}],"alert":"AA","termsta":"00","gsm":{"csq":27,"sta":"37"},"bat":2.66,"temp":11.6,"humi":25.7,"light":0},"rtc":"2023/02/21 10:18:22","sn":4}
```

response:

```
{"sta":0,"data":{"ack",4}, "error":"","errorcode":""}
```

4. Server downward commands setting

Format of server downward commands:

Start bits (1byte) + Type of data (X1) + Delimiter (1byte) + Command (X2) + Delimiter (1byte) + Stop bits (1byte) + End mark (2byte)

1. Start bits: @;
2. Type of data: CMD;
3. Delimiter: , ;
4. Command: refer the commands list below;
5. Delimiter: , ;
6. Stop bits: #;
7. End: \r\n(0x0D,0x0A);

For example: @CMD,*000000,018,10#,#

Set the data upload/ storage interval

Down command instruction: the server should send the down command along with the subscribe

Server down command format:

```
{
  "sta": 0, //Status number, 0 represents normal; 1 represents wrong
  "data": {
    "downcmd": "" //Downward command, such as*000000,008,0000001#
    }, "error": "" //If wrong, you can return the error details"
  }
}
TT18D Base station type format after receiving the downward command
{
  "msgtype": 4, //Type to determine different data
  "hw": "0407", //Hardware mode",
  "fw": "", //Firmware version (format: 0.0.0.0)",
  "imei": "", //Uniquely identifies (those are IMEI, SN, ID)",
  "data": {
    "resdowncmd": {
      "cmd": "", //Received commands, such as*000000,008,0000001#
      "cmdtype": "", //Command type; set is to set command; read is to read
      "sta": "", //Set the command execution result
      "par": "" //Read command result
    }
  },
  "rtc": "2021/09/09 03:42:04",
  "sn": 1
}
```

Example:

Downward:

```
{"sta":0,"data":{"downcmd":"*000000,008,1110000#"},"error":""}
```

Reply:

```
{"msgtype":4,"hw":"0407","fw":"02.00.00.00","imei":"6999999999999999","data":{"resdowncmd":{"cmd":"*000000,008,1110000#","cmdtype":"set","sta":"OK"},"rtc":"2021/09/14 03:26:10","sn":5}}
```

Downward:

```
{"sta":0,"data":{"downcmd":"*000001,008,1110000#"},"error":""}
```

Reply:

```
{"msgtype":4,"hw":"0407","fw":"02.00.00.00","imei":"6999999999999999","data":{"resdowncmd":{"cmd":"*000001,008,1110000#","cmdtype":"set","sta":"Err"},"rtc":"2021/09/14 03:31:10","sn":7}}
```

Downward:

```
{"sta":0,"data":{"downcmd":"*000000,040,008#"},"error":""}
```

Reply:

```
{"msgtype":4,"hw":"0407","fw":"02.00.00.00","imei":"699999999999999","data":{"resdowncmd":{"cmd":"*000000,040,008#","cmdtype":"read","sta":"OK","par":"1110000"}}, "rtc":"2021/09/14 03:40:29","sn":11}
```

Downward:

```
{"sta":0,"data":{"downcmd":"*000000,040,088#"},"error":""}
```

Reply:

```
{"msgtype":4,"hw":"0407","fw":"02.00.00.00","imei":"699999999999999","data":{"resdowncmd":{"cmd":"*000000,040,088#","cmdtype":"read","sta":"invalid"}}, "rtc":"2021/09/14 03:52:58","sn":3}
```