



Chengdu Ebyte Electronic Technology Co.,Ltd

# Wireless Modem

## User Manual

### Ebyte Cloud Device Communication Protocol

**E870-E0**

**E870-E1**

**E870-W1**



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# 1. Device data read and write interface

## 1.1. Data reading

Platform issued

| Fields     | type         | illustrate |                                                                                                                                                                                                              |
|------------|--------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      | String       | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          | String       | must       | SN                                                                                                                                                                                                           |
| method     | String       | must       | Method field : device.state.get                                                                                                                                                                              |
| bizContent | String Array | must       | Contents to be read: AI1 , DI1 , AO1, DO1 , location , IMEI, ICCID, FW, CSQ one or more                                                                                                                      |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.state.get",
  "bizContent": ["DI1", "DO1", "AI1", "location", "IMEI", "ICCID", "FW", "CSQ"]
}
```

Device response

| Fields      | type                             | illustrate     |                                                                                     |
|-------------|----------------------------------|----------------|-------------------------------------------------------------------------------------|
| msgId       | String                           | must           | Message ID field, which is consistent with the ID of the message being responded to |
| s           | String                           | must           | SN                                                                                  |
| method      | String                           | must           | Method field: device.state.get .resp                                                |
| respCode    | Integer                          | must           | 0 Success                                                                           |
| respContent | Object<br>Fields                 | Element type   | Data message, composed of one or more sub-objects, key-value pairs                  |
|             | DI 1 ~DI <sub>n</sub>            | Integer        | 0-off 1-on                                                                          |
|             | DO 1 ~DO <sub>n</sub>            | Integer        | 0-off 1-on                                                                          |
|             | AI 1 ~AI <sub>n</sub>            | Floating point | AI collection value                                                                 |
|             | AO 1 -AO <sub>n</sub>            | Floating point | A0 output value                                                                     |
|             | location                         | String         | Location Information                                                                |
|             | CSQ                              | Integer        | Signal Strength                                                                     |
|             | SOCKSTA<br>-SOCKSTA <sub>n</sub> | 0<br>Integer   | Socket connection status, 0 means disconnected, other means connected               |

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.state.get.resp",
}
```

```
"respCode":0,  
"respContent":{  
    "IMEI":"869516059823851",  
    "ICCID":"898602B6102080010532",  
    "CSQ":0,  
    "FW":"9024-0-11"}  
}
```

## 1.2. Active data reporting

| Fields      |                       | type           | illustrate |                                                                                                                                                                                                                  |
|-------------|-----------------------|----------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId       |                       | String         | must       | The message ID field is calculated using the 14-digit data of the current time plus a 6-digit random number. For example, if the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s           |                       | String         | must       | SN                                                                                                                                                                                                               |
| method      |                       | String         | must       | Method field: device.state.autoUp                                                                                                                                                                                |
| biz Content | Object Element Fields | type           |            | Data message, composed of one or more sub-objects, key-value pairs                                                                                                                                               |
|             | DI 1 ~DIIn            | Integer        |            | 0-off 1-on                                                                                                                                                                                                       |
|             | DO 1 ~DOIn            | Integer        |            | 0-off 1-on                                                                                                                                                                                                       |
|             | AI 1 ~AIIn            | Floating point |            | AI collection value                                                                                                                                                                                              |
|             | AO 1 ~AOIn            | Floating point |            | AO output value                                                                                                                                                                                                  |
|             | UART0~UARTn           | String         |            | The serial port reports data in the format of ascii hexadecimal. For example, the string 123 reports data of 313233.                                                                                             |

```
{
  "msgId": " 202202111411244031 " ,
  "sn":"12345678901234567895",
  "method":"device.state.autoUp",
  " bizContent ":{" CSQ ":23}
}
```

### 1.3. Data delivery

| Fields      |                                             | type              | illustrate |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|---------------------------------------------|-------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId       |                                             | String            | must       | The message ID field is calculated using the 14-digit data of the current time plus a 6-digit random number. For example, if the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323                                                                                                                                                                                                                                                                                                                        |
| s           |                                             | String            | must       | SN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| method      |                                             | String            | must       | Method field : device.state.set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| biz Content | Object<br>Element Fields                    | type              | must       | Data message, composed of one or more sub-objects, key-value pairs                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|             | DO 1 ~DO <sub>n</sub>                       | Integer           |            | 0-off 1-on                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|             | AO 1 ~AO <sub>n</sub>                       | Floating<br>point |            | AO output value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|             | UART0~UART <sub>n</sub> (not supported yet) | String            |            | The serial port reports data in the format of ascii hexadecimal. For example, the string 123 reports data of 313233.                                                                                                                                                                                                                                                                                                                                                                                                                 |
|             | Data point name                             | String            |            | It can contain multiple data point names. The device has the data point and contains writable attributes. All data points legally return 0. The data point value will generally pass through the downward formula. If there is no downward formula, the DO type register will be output as 0 and non-zero, the register will be held, the floating point number will be converted to an integer, and the integer will be rounded. If it exceeds the limit, an error will be reported directly, and the rest will be output directly. |

```
{
  "msgId": " 202201241610366046 ",
  "sn": " 2022022300200010c039 ",
  "method": "device.state.set",
  "bizContent": { "DO 1 ": 1, " DO 2 ": 0, "uart 0 ": " 303132 " }
}
```

Device response

| Fields   | type    | illustrate |                                                                                     |
|----------|---------|------------|-------------------------------------------------------------------------------------|
| msgId    | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        | String  | must       | SN                                                                                  |
| method   | String  | must       | Method field : device.state.set.resp                                                |
| respCode | Integer | must       | 0 Success                                                                           |

```
{
  "msgId": " 202201241610366046 ",
  "sn": "12345678901234567895",
  "method": "device.state.set.resp",
  "respCode": 0
}
```

}

## 1.4. Registration package submission

The device will send

| Fields     |                           | type   | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String | must       | SN                                                                                                                                                                                                           |
| method     |                           | String | must       | Method field : device.report.register                                                                                                                                                                        |
| bizContent | Object sub-element fields | Object | must       | Parameter fields                                                                                                                                                                                             |
|            | data                      | String |            | Custom data, when reported to the platform, there is no such field                                                                                                                                           |
|            | ICCID                     | String |            | ICCID Number                                                                                                                                                                                                 |
|            | IMEI                      | String |            | IMEI number                                                                                                                                                                                                  |
|            | CSQ                       | String |            | Signal Strength                                                                                                                                                                                              |
|            | FW                        | String |            | Firmware number, for example: FW-9002-1-10                                                                                                                                                                   |

```
{
  "msgId": " 202202111349484414 ",
  "sn": "12345678901234567895",
  "method": "device.report.register",
  "bizContent": {"data": "Regist", "ICCID": "898602B6102080010532", "IMEI": "869516059823851", "CSQ": 19}
}
```

## 1.5. Heartbeat packet reporting

The device sends periodically, and the sending time will be reset if there is an uplink message on the link

| Fields     |                           | type   | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String | must       | SN                                                                                                                                                                                                           |
| method     |                           | String | must       | Method field : device.report.keepAlive                                                                                                                                                                       |
| bizContent | Object sub-element fields | Object | must       | Parameter fields                                                                                                                                                                                             |
|            | data                      | String |            | Custom data, when reported to the platform, there is no such field                                                                                                                                           |
|            | ICCID                     | String |            | ICCID Number                                                                                                                                                                                                 |
|            | IMEI                      | String |            | IMEI number                                                                                                                                                                                                  |
|            | CSQ                       | String |            | Signal Strength                                                                                                                                                                                              |
|            | FW                        | String |            | Firmware number, for example: FW-9002-1-10                                                                                                                                                                   |
|            | ...                       | String |            | ...(Different devices have different types, add or delete according to the needs of the device)                                                                                                              |

```
{
  "msgId": " 202202111351484414 ",
  "sn":"12345678901234567895",
  "method":"device.report.keepAlive",
  "bizContent":{"data":"KeepAlive","ICCID":"898602B6102080010532","IMEI":"869516059823851","CSQ":19}
}
```

## 2. Device parameter read and write interface

### 2.1. UART parameter settings

When the device is online or its parameters are changed, this interface is used to send data to the platform . The platform also uses this interface to set the device serial port parameters.

| Fields     |                     | type         | illustrate |                                                                                                                                                                                                              |
|------------|---------------------|--------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                     | String       | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                     | String       | must       | SN                                                                                                                                                                                                           |
| method     |                     | String       | must       | Method field:<br>device.config.uart.set                                                                                                                                                                      |
| bizContent | Array object fields | Arrays       | must       | Parameter message, consisting of one or more serial port parameter objects                                                                                                                                   |
|            | index               | Integer      | must       | Serial port number, range: 1-2                                                                                                                                                                               |
|            | baud                | Integer      | must       | Baud rate: Default is 115200, Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 187500(G1),                                                                                     |
|            | parity              | String       | must       | Check digit: NONE, ODD, EVEN                                                                                                                                                                                 |
|            | stop                | String       | must       | Stop bits: 1,2                                                                                                                                                                                               |
|            | dataBits            | Array Object | must       | Data bits: 8, 7 (the corresponding values may be different for different devices)                                                                                                                            |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.uart.set",
  "bizContent": [{"index": 0,"baud": 115200,"parity": "NONE","stop": 1,"dataBits": 8}]
}
```

The device answers :

| Fields   | type    | illustrate |                                                                                     |
|----------|---------|------------|-------------------------------------------------------------------------------------|
| msgId    | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        | String  | must       | SN                                                                                  |
| method   | String  | must       | Method field:<br>device.config.uart.set.resp                                        |
| respCode | Integer | must       | Error code, 0 means success                                                         |

```
{
  "msgId": " 202201241610366046 ",
  "sn":"12345678901234567895",
  "method":"device.config.uart.set.resp",
  "respCode":0
}
```

## 2.2. UART parameter acquisition

Platform sends:

| Fields     |                           | type    | illustrate      |                                                                                                                                                                                                              |
|------------|---------------------------|---------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String  | must            | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String  | must            | SN                                                                                                                                                                                                           |
| method     |                           | String  | must            | Method: device.config.uart.get field                                                                                                                                                                         |
| bizContent | Object sub-element fields | Object  | Segment Default | Parameter fields                                                                                                                                                                                             |
|            | index                     | Integer | must            | uart number, value range 1,2                                                                                                                                                                                 |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.uart.get",
  "bizContent": {
    "index": 1
  }
}
```

The device responds and returns the parameters of all serial ports. The message is as follows:

| Fields      |                           | type         | illustrate |                                                                                                                          |
|-------------|---------------------------|--------------|------------|--------------------------------------------------------------------------------------------------------------------------|
| msgId       |                           | String       | must       | Message ID field, which is consistent with the ID of the message being responded to                                      |
| s           |                           | String       | must       | SN                                                                                                                       |
| method      |                           | String       | must       | Method field:<br>device.config.uart.get.resp                                                                             |
| respCode    |                           | Integer      | must       | Error code, 0 means success                                                                                              |
| respContent | Object sub-element fields | Array Object | must       | Response parameter message array, consisting of one or more serial port parameter objects                                |
|             | index                     | Integer      |            | Number of channels, range: 1-2                                                                                           |
|             | baud                      | Integer      |            | Baud rate: Default is 115200, Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 187500(G1), |
|             | parity                    | String       |            | Check digit: NONE, ODD, EVEN                                                                                             |
|             | stop                      | String       |            | Stop bits: 1,2                                                                                                           |
|             | dataBits                  | Array Object |            | Data bits: 8, 7                                                                                                          |

```
{
  "msgId": "202201241610366046",
```

```
"sn":"12345678901234567895",  
"method":"device.config.uart.get.resp",  
"respCode":0,  
"respContent":  
{  
  "index":0,"baud":115200,"parity":"NONE","stop":1,"dataBits":8},  
  {"index":1,"baud":9600,"parity":"NONE","stop":1,"dataBits":8}  
}
```

## 2.3. SOCKET parameter configuration

When the device is online or its parameters are changed, it uses the interface to send messages to the platform . The platform also uses this interface to configure device parameters. The message is as follows:

| Fields     |                           |                           | type                      | illustrate         |                                                                                                                                                                                                                      |                                                                                                                         |
|------------|---------------------------|---------------------------|---------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           |                           | String                    | must               | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br><br>For example, the current time is 2021/09/18-16/35/29,<br><br>The message ID is 20210918163529 916323 |                                                                                                                         |
| s          |                           |                           | String                    | must               | SN                                                                                                                                                                                                                   |                                                                                                                         |
| method     |                           |                           | String                    | must               | Method field:<br>device.config.socket.set                                                                                                                                                                            |                                                                                                                         |
| bizContent | Object sub-element fields |                           | Object                    | must               | Parameter fields                                                                                                                                                                                                     |                                                                                                                         |
|            | index                     |                           | Integer                   | must               | Value range 0, 1, 2, 3                                                                                                                                                                                               |                                                                                                                         |
|            | enable                    |                           | Integer                   | must               | Link Enable                                                                                                                                                                                                          |                                                                                                                         |
|            | protocol                  |                           | String                    | must               | Protocol TCP, UDP, HTTP, MQTT                                                                                                                                                                                        |                                                                                                                         |
|            | desAddr                   |                           | String                    | must               | Target Address                                                                                                                                                                                                       |                                                                                                                         |
|            | desPort                   |                           | Integer                   | must               | Destination Port                                                                                                                                                                                                     |                                                                                                                         |
|            | dataReportMode            |                           | Integer                   | must               | 0-modbus to json, 1-Alibaba cloud modbus to json , 2- Ebit Cloud modbus to json, 3-no report,                                                                                                                        |                                                                                                                         |
|            | cache                     |                           | Integer                   | Segment<br>Default | 0-disable offline cache, 1-enable offline cache (for E870-G1)                                                                                                                                                        |                                                                                                                         |
|            | keepAlive                 | Object sub-element fields | Sub-objects               | Segment<br>Default | Heartbeat Packet                                                                                                                                                                                                     |                                                                                                                         |
|            |                           | period                    |                           | Integer            | must                                                                                                                                                                                                                 | Heartbeat cycle, in seconds (s), 0 means off                                                                            |
|            |                           | data                      |                           | String             | must                                                                                                                                                                                                                 | Custom heartbeat data                                                                                                   |
|            |                           | dataMode                  | Object sub-element fields | Sub-objects        | must                                                                                                                                                                                                                 | Report data enable object. The following data varies from device to device. Please refer to the specific device manual. |
|            |                           |                           | data                      | Integer            | must                                                                                                                                                                                                                 | Custom data: 1 for on, 0 for off                                                                                        |
|            |                           |                           | ICCID                     | Integer            | must                                                                                                                                                                                                                 | ICCID: 1 to enable, 0 to disable                                                                                        |
|            |                           |                           | IMEI                      | Integer            | must                                                                                                                                                                                                                 | IMEI: 1 to enable, 0 to disable                                                                                         |
|            |                           |                           | CSQ                       | Integer            | must                                                                                                                                                                                                                 | CSQ: 1 to enable, 0 to disable                                                                                          |
|            |                           |                           | FW                        | Plastic surgery    | must                                                                                                                                                                                                                 | FW: 1 to enable, 0 to disable                                                                                           |
|            |                           |                           | LOC                       | Plastic surgery    | must                                                                                                                                                                                                                 | LOC: 1 on, 0 off (E870_G1)                                                                                              |
|            |                           |                           | RTC                       | Plastic surgery    | must                                                                                                                                                                                                                 | RTC: 1 on, 0 off (E870-G1)                                                                                              |
|            | regist                    | Object sub-element        | Sub-objects               | Segment            | Registration Package                                                                                                                                                                                                 |                                                                                                                         |

|      |                              |              |                                     |                        |                                                                                                               |                                                                                                                         |
|------|------------------------------|--------------|-------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|      |                              | fields       |                                     | jects                  | t<br>Default                                                                                                  |                                                                                                                         |
|      |                              | enable       |                                     | Integer                | must                                                                                                          | Enable: 0 means off, 1 means on                                                                                         |
|      |                              | data         |                                     | String                 | must                                                                                                          | Custom heartbeat data                                                                                                   |
|      |                              | dataM<br>ode | Object<br>sub-ele<br>ment<br>fields | Sub-ob<br>jects        | must                                                                                                          | Report data enable object. The following data varies from device to device. Please refer to the specific device manual. |
|      |                              |              | data                                | Integer                | must                                                                                                          | Custom data: 1 for on, 0 for off                                                                                        |
|      |                              |              | ICCID                               | Integer                | must                                                                                                          | ICCID: 1 to enable, 0 to disable                                                                                        |
|      |                              |              | IMEI                                | Integer                | must                                                                                                          | IMEI: 1 to enable, 0 to disable                                                                                         |
|      |                              |              | CSQ                                 | Integer                | must                                                                                                          | CSQ: 1 to enable, 0 to disable                                                                                          |
|      |                              |              | FW                                  | Plastic<br>surgery     | must                                                                                                          | FW: 1 to enable, 0 to disable                                                                                           |
|      |                              |              | LOC                                 | Plastic<br>surgery     | must                                                                                                          | LOC: 1 on, 0 off (E870_G1)                                                                                              |
|      |                              |              | RTC                                 | Plastic<br>surgery     | must                                                                                                          | RTC: 1 on, 0 off (E870-G1)                                                                                              |
| mqtt | Object sub-element<br>fields |              | Sub-ob<br>jects                     | Segmen<br>t<br>Default | MQTT Fields                                                                                                   |                                                                                                                         |
|      | mqttType                     |              | Charac<br>ter                       | must                   | 0 represents Alibaba Cloud, 1 represents oneNET,<br>2 represents Baidu Cloud, and 3 represents standard MQTT. |                                                                                                                         |
|      | clientId                     |              | Charac<br>ter                       | must                   | MQTT device clientId                                                                                          |                                                                                                                         |
|      | username                     |              | Charac<br>ter                       | must                   | MQTT server account                                                                                           |                                                                                                                         |
|      | password                     |              | Charac<br>ter                       | must                   | Password for the MQTT server                                                                                  |                                                                                                                         |
|      | subTopic                     |              | Charac<br>ter                       | must                   | Subscribe to a topic                                                                                          |                                                                                                                         |
|      | subQos                       |              | Integer                             | must                   | Subscription Tiers                                                                                            |                                                                                                                         |
|      | subSw                        |              | Integer                             |                        | Subscription enable (not supported by E1)                                                                     |                                                                                                                         |
|      | pubTopic                     |              | Charac<br>ter                       | must                   | Publish a topic                                                                                               |                                                                                                                         |
|      | pubQos                       |              | Integer                             | must                   | Release level                                                                                                 |                                                                                                                         |
|      | pubSw                        |              | Integer                             |                        | Release enable (not supported by E1)                                                                          |                                                                                                                         |

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.config.socket.set",
  "bizContent ": {
    "index": 0,
    "enable": 1,
```

```

"protocol": "TCP",
"desAddr": "112.54.89.224",
"desPort": 8756,
"dataReportMode": 2,
"keepAlive": {
    "period": 120,
    "data": "KeepAlive",
    "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
},
"regist": {
    "enable": 0,
    "data": "Regist",
    "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
}
}
}

```

#### Device Answer

| Fields | type   | illustrate |                                                                                     |
|--------|--------|------------|-------------------------------------------------------------------------------------|
| msgId  | String | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s      | String | must       | SN                                                                                  |
| method | String | must       | Method field:<br>device.config.socket.set.resp                                      |

```

{
    "msgId": " 202201241610366046 " ,
    "sn": "12345678901234567895",
    "method": "device.config.uart.set.resp",
    "respCode": 0
}

```

## 2.4. SOCKET parameter query

Platform sends:

| Fields     |                           | type    | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|---------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String  | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String  | must       | SN                                                                                                                                                                                                           |
| method     |                           | String  | must       | Method field: device.config.socket.get,                                                                                                                                                                      |
| bizContent | Object sub-element fields | Object  | must       | Parameter fields                                                                                                                                                                                             |
|            | index                     | Integer | must       | Socket number, value range 0, 1, 2, 3                                                                                                                                                                        |

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.config.socket.get",
  "bizContent": {"index": 0}
}
```

The device answers:

| Fields      |                           | type            | illustrate      |                                                                                               |
|-------------|---------------------------|-----------------|-----------------|-----------------------------------------------------------------------------------------------|
| msgId       |                           | String          | must            | Message ID field, which is consistent with the ID of the message being responded to           |
| s           |                           | String          | must            | SN                                                                                            |
| method      |                           | String          | must            | Method field:<br>device.config.socket.get.resp,                                               |
| respCode    |                           | Integer         | must            | Error code, 0 means success                                                                   |
| respContent | Object sub-element fields | Object          | must            | Parameter fields                                                                              |
|             | index                     | Integer         | must            | Value range 0, 1, 2, 3                                                                        |
|             | enable                    | Integer         | must            | Link Enable                                                                                   |
|             | protocol                  | String          | must            | Protocol TCP, UDP, HTTP, MQTT                                                                 |
|             | des Addr                  | String          | must            | Target Address                                                                                |
|             | desPort                   | Integer         | must            | Destination Port                                                                              |
|             | data Report Mode          | Integer         | must            | 0-modbus to json, 1-Alibaba cloud modbus to json , 2- Ebit Cloud modbus to json, 3-no report, |
|             | cache                     | Plastic surgery | must            | 0-disable offline cache, 1-enable offline cache (for E870-G1)                                 |
| keep Alive  | Object sub-element fields | Sub-objects     | Segment Default | Heartbeat Packet                                                                              |

|  |        |                              |                                     |                    |                    |                                                                                                                         |
|--|--------|------------------------------|-------------------------------------|--------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------|
|  |        | period                       |                                     | Integer            | must               | Heartbeat cycle, in seconds (s), 0 means off                                                                            |
|  |        | data                         |                                     | String             | must               | Custom heartbeat data                                                                                                   |
|  |        | dataM<br>ode                 | Object<br>sub-ele<br>ment<br>fields | Sub-objec<br>ts    | must               | Report data enable object. The following data varies from device to device. Please refer to the specific device manual. |
|  |        |                              | data                                | Integer            | must               | Custom data: 1 for on, 0 for off                                                                                        |
|  |        |                              | ICCID                               | Integer            | must               | ICCID: 1 to enable, 0 to disable                                                                                        |
|  |        |                              | IMEI                                | Integer            | must               | IMEI: 1 to enable, 0 to disable                                                                                         |
|  |        |                              | CSQ                                 | Integer            | must               | CSQ: 1 to enable, 0 to disable                                                                                          |
|  |        |                              | FW                                  | Integer            | must               | FW: 1 to enable, 0 to disable                                                                                           |
|  |        |                              | LOC                                 | Plastic<br>surgery | must               | LOC: 1 on, 0 off (E870_G1)                                                                                              |
|  |        |                              | RTC                                 | Plastic<br>surgery | must               | RTC: 1 on, 0 off (E870-G1)                                                                                              |
|  | regist | Object<br>sub-element fields |                                     | Sub-objec<br>ts    | Segment<br>Default | Registration Package                                                                                                    |
|  |        | enable                       |                                     | Integer            | must               | Enable: 0 means off, 1 means on                                                                                         |
|  |        | data                         |                                     | String             | must               | Custom heartbeat data                                                                                                   |
|  |        | dataM<br>ode                 | Object<br>sub-ele<br>ment<br>fields | Sub-objec<br>ts    | must               | Report data enable object. The following data varies from device to device. Please refer to the specific device manual. |
|  |        |                              | data                                | Integer            | must               | Custom data: 1 for on, 0 for off                                                                                        |
|  |        |                              | ICCID                               | Integer            | must               | ICCID: 1 to enable, 0 to disable                                                                                        |
|  |        |                              | IMEI                                | Integer            | must               | IMEI: 1 to enable, 0 to disable                                                                                         |
|  |        |                              | CSQ                                 | Integer            | must               | CSQ: 1 to enable, 0 to disable                                                                                          |
|  |        |                              | FW                                  | Plastic<br>surgery | must               | FW: 1 to enable, 0 to disable                                                                                           |
|  |        |                              | LOC                                 | Plastic<br>surgery | must               | LOC: 1 on, 0 off (E870_G1)                                                                                              |
|  |        |                              | RTC                                 | Plastic<br>surgery | must               | RTC: 1 on, 0 off (E870-G1)                                                                                              |
|  | mqtt   | Object<br>sub-element fields |                                     | Sub-objec<br>ts    | Segment<br>Default | MQTT Fields                                                                                                             |
|  |        | mqttType                     |                                     | Character          | must               | 0 represents Alibaba Cloud, 1 represents oneNET,<br>2 represents Baidu Cloud, and 3 represents standard MQTT.           |
|  |        | clientID                     |                                     | Character          | must               | MQTT device clientID                                                                                                    |
|  |        | username                     |                                     | Character          | must               | MQTT server account                                                                                                     |
|  |        | password                     |                                     | Character          | must               | Password for the MQTT server                                                                                            |
|  |        | subTopic                     |                                     | Character          | must               | Subscribe to a topic                                                                                                    |
|  |        | subQos                       |                                     | Integer            | must               | Subscription Tiers                                                                                                      |
|  |        | subSw                        |                                     | Integer            | must               | Subscription enable (not supported by E1)                                                                               |
|  |        | pubTopic                     |                                     | Character          | must               | Publish a topic                                                                                                         |
|  |        | pubQos                       |                                     | Integer            | must               | Release level                                                                                                           |
|  |        | pubSw                        |                                     | Integer            | must               | Release enable (not supported by E1)                                                                                    |

```
{
  "msgId": " 202201241610366046 ",
  "sn": "12345678901234567895",
  "method": "device.config.socket.get.resp",
  "respCode": 0,
  "respContent": {
    "index": 0,
    "enable": 1,
    "protocol": "TCP",
    "desAddr": "112.54.89.224",
    "desPort": 8756,
    "dataReportMode": 2,
    "keepAlive": {
      "period": 120,
      "data": "KeepAlive",
      "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
    },
    "regist": {
      "enable": 0,
      "data": "Regist",
      "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
    }
  }
}
```

## 2.5. Edge computing parameter acquisition

Platform sends:

| Fields                    | type         | illustrate |                                                                                                                                                                                                              |
|---------------------------|--------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId                     | String       | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s                         | String       | must       | SN                                                                                                                                                                                                           |
| method                    | String       | must       | method:<br>device.config.emc.get fields                                                                                                                                                                      |
| bizContent                | String Array | must       | [ "", "", "" ] Maximum 10 groups                                                                                                                                                                             |
| Object sub-element fields | Object       |            | Parameter field (both built-in and external data points can be obtained at the same time. Some parameters of built-in data points will be defaulted. For details, refer to IO parameter acquisition)         |

```
{
  "msgId": " 202201241610366046 ",
  "sn": "2022022300200010c039",
  "method": "device.config.emc.get",
  "bizContent": ["data1"]
}
```

The device answers:

| Fields      |               |                           | type             | illustrate |                                                                                                                                                                                   |
|-------------|---------------|---------------------------|------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId       |               |                           | String           | must       | Message ID field, which is consistent with the ID of the message being responded to                                                                                               |
| s           |               |                           | String           | must       | SN                                                                                                                                                                                |
| method      |               |                           | String           | must       | Method field:<br>device.config.emc.get.resp                                                                                                                                       |
| respCode    |               |                           | Integer          | must       | Error code, 0 means success                                                                                                                                                       |
| respContent | Object fields | sub-element               | Object           | must       | Reply message                                                                                                                                                                     |
|             | table         | Object sub-element fields | Array of objects | must       | Supports up to 10 groups                                                                                                                                                          |
|             |               | name                      | String           | must       | JSON upload unique identifier, keyword , string length is up to 16                                                                                                                |
|             |               | if                        | Integer          |            | Execution interface: 0-serial port , 1-network                                                                                                                                    |
|             |               | ifpara                    | String/Integer   |            | if=1: place network parameters ip:port (string)<br>if=0: place the serial port number 1 or 2 (integer type)                                                                       |
|             |               | address                   | Integer          | must       | Modbus slave address , range 0-247                                                                                                                                                |
|             |               | reghead                   | Integer          | must       | Register Type:<br>0-Coil (datatype must be 0)<br>1-Discrete quantity (datatype must be 0)<br>2-Holding register (datatype must be > 0)<br>3-Input register (datatype must be > 0) |
|             |               | regaddr                   | Integer          | must       | Register address (range 0 - 65535)                                                                                                                                                |

|  |  |          |                |      |                                                                                                                                                                                                                                                                                                   |
|--|--|----------|----------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | datatype | Integer        | must | Data Type:<br>0 means 1 bit<br>1 means 16-bit signed<br>2 means 16-bit unsigned<br>3 means 32-bit signed ABCD<br>4 means 32-bit signed CDAB<br>5 means 32-bit unsigned ABCD<br>6 means 32-bit unsigned CDAB<br>7 represents 32-bit floating point ABCD<br>8 represents 32-bit floating point CDAB |
|  |  | repmode  | Integer        | must | 0- No report<br>1 - Periodic report<br>2 - Change report<br>3 - Change report + periodic report                                                                                                                                                                                                   |
|  |  | period   | Integer        | must | Reporting time (unit: minutes, default: 1) (range: 0-65535)                                                                                                                                                                                                                                       |
|  |  | range    | floating point | must | Range of variation, acting on the value calculated by the calculation formula ( platform side data ) 0 - $3.4 \times 10^{38}$                                                                                                                                                                     |
|  |  | point    | Integer        | must | Decimal places (0 - 5)                                                                                                                                                                                                                                                                            |
|  |  | readtype | Integer        | must | Read-write attribute 0-read only 1-read and write 2-write only                                                                                                                                                                                                                                    |
|  |  | mathup   | String         | must | Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                            |
|  |  | mathdown | String         | must | Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                         |

```

{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config_emc.get.resp",
  "respCode": 0,
  "respContent": {
  }
}

```

## 2.6. Edge computing parameter settings

Platform sends:

| Fields     |                           |                           | type             | illustrate |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------|---------------------------|---------------------------|------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           |                           | String           | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323                                                                                                                                                                                                                                                        |
| s          |                           |                           | String           | must       | SN                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| method     |                           |                           | String           | must       | Method field:<br>device.config.emc.set                                                                                                                                                                                                                                                                                                                                                                                                                              |
| bizContent | Object sub-element fields |                           | Object           | must       | Reply message                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|            | cmd                       |                           | Integer          | must       | 0 - Add rules 1 - Update rules 2 - Delete rules 3 - Clear rules 4 - Clear and add rules                                                                                                                                                                                                                                                                                                                                                                             |
|            | table                     | Object sub-element fields | Array of objects | must       | Supports up to 10 groups                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|            |                           | name                      | String           | must       | JSON upload unique identifier, keyword , string length is up to 16<br><br>( Both built-in and external data points can be obtained at the same time. Some parameters of built-in data points will be defaulted. For the built-in part, please refer to the IO parameter settings )                                                                                                                                                                                  |
|            |                           | if                        | Integer          |            | Execution interface: 0 - serial port , 1 - network                                                                                                                                                                                                                                                                                                                                                                                                                  |
|            |                           | ifpara                    | String/Integer   |            | if=1: place network parameters ip:port (string)<br>if=0: place the serial port number 1 or 2 (integer type)                                                                                                                                                                                                                                                                                                                                                         |
|            |                           | address                   | Integer          | must       | Modbus slave address , range 1 -247                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|            |                           | reghead                   | Integer          | must       | Register Type:<br>1-Coil (datatype must be 0)<br>3-Discrete quantity (datatype must be 0)<br>4-Holding register (datatype must be > 0)<br>3-Input register (datatype must be > 0)                                                                                                                                                                                                                                                                                   |
|            |                           | regaddr                   | Integer          | must       | Register Address                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|            |                           | datatype                  | Integer          | must       | Data Type:<br>0 means 1 bit<br>1 means 16-bit signed<br>2 means 16-bit unsigned<br>3 means 32-bit signed ABCD<br>4 means 32-bit signed CDAB<br>5 means 32-bit unsigned ABCD<br>6 means 32-bit unsigned CDAB<br>7 represents 32-bit floating point ABCD<br>8 represents 32-bit floating point CDAB<br>(The data point type and register type must match, otherwise it will not take effect. Coils and discrete quantities support 0, and holding registers and input |

|  |  |          |                |      |                                                                                                                                                                                                                                                                                                                                           |
|--|--|----------|----------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |          |                |      | registers support 1-8)                                                                                                                                                                                                                                                                                                                    |
|  |  | repmode  | Integer        | must | 0-Not reporting (not checking period and range)<br>1-Periodic reporting (check period>0, range not checked)<br>2-2-Change reporting (Check range>0, period is not checked)<br>3-3-Change reporting + periodic reporting, (range>0, period>0)                                                                                              |
|  |  | period   | Integer        | must | Reporting time (unit: minutes, default: 1) (range: 0-65535)                                                                                                                                                                                                                                                                               |
|  |  | range    | floating point | must | Range of variation, acting on the value calculated by the calculation formula ( platform side data ) 0 - 3.4*10^38                                                                                                                                                                                                                        |
|  |  | point    | Integer        | must | Decimal places (0 - 5)                                                                                                                                                                                                                                                                                                                    |
|  |  | readtype | Integer        | must | Read-write attribute 0-read only 1-read-write 2-write only (When the data point read-write attribute includes readable, it will participate in data point acquisition. If it includes writable, it supports data downlink. Coils and holding registers support reading and writing, and discrete quantities and input registers support.) |
|  |  | mathup   | String         | must | Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                                                                    |
|  |  | mathdown | String         | must | Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                                                                 |

```
{
  "msgId": "202201241610366046",
  "sn": "2022022300200010c039",
  "method": "device.config.emc.set",
  "bizContent": {
    "cmd": 0,
    "table": [
      {
        "name": "data0",
        "address": 1,
        "reghead": 0,
        "regaddr": 2,
        "datatype": 0,
        "repmode": 2,
        "period": 0,
        "range": 0,
        "point": 0,
        "readtype": 0,

```

```
"mathup": "0",
    "mathdown": "0"
}
]
```

Device response:

| Fields   | type    | illustrate |                                                                                       |
|----------|---------|------------|---------------------------------------------------------------------------------------|
| msgId    | String  | must       | Message ID field, which is consistent with the ID of the message being responded to   |
| s        | String  | must       | SN                                                                                    |
| method   | String  | must       | Method field: device.config . emc.set.resp                                            |
| respCode | Integer | must       | Error code, 0 means success , 1 means the number of rules is full and cannot be added |

```
{
    "msgId": "202201241610366046",
    "sn": "12345678901234567895",
    "method": "device.config .emc .set.resp",
    "respCode": 0
}
```

## 2.7. Linkage parameter settings

Platform sends:

| Fields     |                           | type                      | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|---------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String                    | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String                    | must       | SN                                                                                                                                                                                                           |
| method     |                           | String                    | must       | Method field:<br>device.config.correlate.set                                                                                                                                                                 |
| bizContent | Object sub-element fields | Array<br>Object           | must       | Parameter array, consisting of one or more objects, up to 10 groups.                                                                                                                                         |
|            | index                     | Integer                   | must       | Serial number                                                                                                                                                                                                |
|            | enable                    | String                    | must       | Linkage switch 1 on 0 off                                                                                                                                                                                    |
|            | source                    | Object sub-element fields | must       | Original data object                                                                                                                                                                                         |
|            | s                         | String                    | must       | Linkage source sn                                                                                                                                                                                            |
|            |                           | Integer                   | must       | 0:DI , 1: DO , 2 :AI , 3: AO                                                                                                                                                                                 |
|            |                           | Integer                   | must       | IO Number                                                                                                                                                                                                    |
|            |                           | Integer                   | must       | Trigger conditions: 0- off, 1- on, 2-greater than max , 3-less than min , 4-between max and min                                                                                                              |
|            |                           | Integer                   | must       | AI/AO threshold max                                                                                                                                                                                          |
|            |                           | Integer                   | must       | AI/AO threshold min                                                                                                                                                                                          |
|            | action                    | Object sub-element fields | must       | Target action data object                                                                                                                                                                                    |
|            |                           | Integer                   | must       | 0:DO , 1:AO                                                                                                                                                                                                  |
|            |                           | Integer                   | must       | IO Number                                                                                                                                                                                                    |
|            |                           | Integer                   | must       | Execution method: 0- off 1- on 2-forward follow 3-reverse follow 4-AO follow                                                                                                                                 |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.correlate.set",
  "bizContent": [{
    "index": 0,
    "enable": 0,
    "source": {
      "sn": "12345678901234567895",
      "type": 0,
      "ioNum": 0,
      "condition": 0,
```

```

        "max": 0,
        "min": 0
    },
    "action": {
        "type": 0,
        "ioNum": 0,
        "method": 0
    }
}
}

```

The device answers :

| Fields   | type    | illustrate |                                                                                     |
|----------|---------|------------|-------------------------------------------------------------------------------------|
| msgId    | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        | String  | must       | SN                                                                                  |
| method   | String  | must       | Method field:<br>device.config.correlate.set.resp                                   |
| respCode | Integer | must       | Error code, 0 means success                                                         |

```

{
    "msgId": "202201241610366046",
    "sn": "12345678901234567895",
    "method": "device.config.correlate.set.resp",
    "errCode": 0
}

```

## 2.8. Linkage parameter acquisition

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method: device.config.correlate.get field                                                                                                                                                                    |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": " device.config.correlate.get "
}
```

The device answers:

| Fields      |                           |                           | type            | illustrate |                                                                                                  |
|-------------|---------------------------|---------------------------|-----------------|------------|--------------------------------------------------------------------------------------------------|
| msgId       |                           |                           | String          | must       | Message ID field, which is consistent with the ID of the message being responded to              |
| s           |                           |                           | String          | must       | SN                                                                                               |
| method      |                           |                           | String          | must       | Method field:<br>device.config.correlate.get.resp                                                |
| respCode    |                           |                           | Integer         | must       | Error code, 0 means success                                                                      |
| respContent | Object sub-element fields |                           | Array<br>Object | must       | Parameter array, consisting of one or more objects, up to 10 groups.                             |
|             | index                     |                           | Integer         | must       | Serial number                                                                                    |
|             | enable                    |                           | String          | must       | Linkage switch 1 on 0 off                                                                        |
|             | source                    | Object sub-element fields | Object          | must       | Original data object                                                                             |
|             |                           | s                         | String          | must       | Linkage source sn                                                                                |
|             |                           | type                      | Integer         | must       | 0:DI , 1: DO , 2 :AI , 3: AO                                                                     |
|             |                           | ionum                     | Integer         | must       | IO Number                                                                                        |
|             |                           | condition                 | Integer         | must       | Trigger condition: 0 - Off 1 - On 2 - Greater than max 3 - Less than min 4 - Between max and min |
|             |                           | max                       | Integer         | must       | AI/AO threshold max                                                                              |
|             |                           | min                       | Integer         | must       | AI/AO threshold min                                                                              |
|             | action                    | Object sub-element fields | Object          | must       | Target action data object                                                                        |
|             |                           | type                      | Integer         | must       | 0:DO , 1:AO                                                                                      |
|             |                           | ionum                     | Integer         | must       | IO Number                                                                                        |
|             |                           | method                    | Integer         | must       | Execution method: 0- off 1- on 2-forward follow 3-reverse follow 4-AO follow                     |

```
{
  "msgId": "202201241610366046",
```

```
"sn": "12345678901234567895",
"method": "device.config.correlate.set",
"bizContent": [{
  "index": 0,
  "enable": 0,
  "source": {
    "sn": "12345678901234567895",
    "type": 1,
    "ioNum": 0,
    "condition": 1,
    "max": 0,
    "min": 0
  },
  "action": {
    "type": 0,
    "ioNum": 1,
    "method": 1
  }
}]
}
```

## 2.9. Cloud networking parameter settings

Platform sends:

| Fields     |                           | type             | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String           | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String           | must       | SN                                                                                                                                                                                                           |
| method     |                           | String           | must       | Method field:<br>device.config.m2m.set                                                                                                                                                                       |
| bizContent | Object sub-element fields | Array of objects | must       | Parameter array, consisting of one or more objects, with a maximum of 50                                                                                                                                     |
|            | index                     | Integer          | must       | Serial number                                                                                                                                                                                                |
|            | enable                    | String           | must       | Device networking switch 1 on 0 off                                                                                                                                                                          |
|            | SN                        | String           | must       | Target device SN                                                                                                                                                                                             |
|            | PWD                       | String           | must       | Target device password                                                                                                                                                                                       |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.set",
  "bizContent": [{"index": 0,"enable": 0,"sn": "", "PWD": ""}]
}
```

Note: There can be one or more channel fields.

The device answers :

| Fields   |  | type    | illustrate |                                                                                     |
|----------|--|---------|------------|-------------------------------------------------------------------------------------|
| msgId    |  | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        |  | String  | must       | SN                                                                                  |
| method   |  | String  | must       | Method field:<br>device.config.m2m.set.resp                                         |
| respCode |  | Integer | must       | Error code, 0 means success                                                         |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.set.resp",
  "respCode": 0
}
```

## 2.10. Obtaining cloud networking parameters

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method: device.config.m2m.get field                                                                                                                                                                          |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.m2m. g et "
}
```

The device answers:

| Fields       |                           | type         | illustrate |                                                                                     |
|--------------|---------------------------|--------------|------------|-------------------------------------------------------------------------------------|
| msgId        |                           | String       | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s            |                           | String       | must       | SN                                                                                  |
| respCode     |                           | Integer      | must       | Error code, 0 means success                                                         |
| method       |                           | String       | must       | Method field:<br>device.config.m2m.get.resp                                         |
| resp Content | Object sub-element fields | Array Object | must       | Parameter array, consisting of one or more objects, with a maximum of 50 groups.    |
|              | index                     | Integer      | must       | Serial number                                                                       |
|              | enable                    | String       | must       | Device networking switch 1 on 0 off                                                 |
|              | SN                        | String       | must       | Target device SN                                                                    |
|              | PWD                       | String       | must       | Target device password                                                              |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.get.resp",
  "respCode": 0,
  "respContent": [{
    "index": 0,
    "enable": 0,
    "sn": "",
    "PWD": ""
  }]
}
```

## 2.11. Python Script Settings

Platform sends:

| Fields     |                           | type   | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String | must       | SN                                                                                                                                                                                                           |
| method     |                           | String | must       | Method field:<br>device.config.python.set                                                                                                                                                                    |
| bizContent | Object sub-element fields | Object | must       | Parameter fields                                                                                                                                                                                             |
|            | enable                    | String | must       | Enable: 1-enable, 2-disable                                                                                                                                                                                  |
|            | pyData                    | String | must       | Python Script                                                                                                                                                                                                |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.python.set",
  "bizContent": {
    "enable": 0,
    "pyData": ""
  }
}
```

The device answers :

| Fields   |  | type    | illustrate |                                                                                     |
|----------|--|---------|------------|-------------------------------------------------------------------------------------|
| msgId    |  | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        |  | String  | must       | SN                                                                                  |
| method   |  | String  | must       | Method field:<br>device.config.python.set.resp                                      |
| respCode |  | Integer | must       | Error code, 0 means success                                                         |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.python.set.resp",
  "respCode": 0
}
```

## 2.12. Python script to obtain

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method field:<br>device.config.python.get                                                                                                                                                                    |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config. python . g et "
}
```

The device answers:

| Fields       |                           | type    | illustrate |                                                                                     |
|--------------|---------------------------|---------|------------|-------------------------------------------------------------------------------------|
| msgId        |                           | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s            |                           | String  | must       | SN                                                                                  |
| method       |                           | String  | must       | Method field:<br>device.config.python.g et .resp                                    |
| respCode     |                           | Integer | must       | Error code, 0 means success                                                         |
| resp Content | Object sub-element fields | Object  | must       | Parameter fields                                                                    |
|              | enable                    | String  | must       | Enable: 1-enable, 2-disable                                                         |
|              | pyData                    | String  | must       | Python Script                                                                       |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.python.get.resp",
  "respCode": 0,
  "respContent": {
    "enable": 0,
    "pyData": ""
  }
}
```

## 2.13. IO parameter settings

### Platform Send

| Fields     |                           |                           | type             | illustrate |                                                                                                                                                                                                                                            |
|------------|---------------------------|---------------------------|------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           |                           | String           | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323                               |
| s          |                           |                           | String           | must       | SN                                                                                                                                                                                                                                         |
| method     |                           |                           | String           | must       | Method field: device.config. io. set                                                                                                                                                                                                       |
| bizContent | Object sub-element fields |                           | Array of objects | must       | Parameter array, consisting of one or more objects                                                                                                                                                                                         |
|            | table                     | Object sub-element fields | Array of objects | must       |                                                                                                                                                                                                                                            |
|            |                           | name                      | String           | must       | JSON upload unique identifier, the keyword is fixed to the corresponding built-in IO:<br>AI1~AIX<br>DI1~DIX<br>AO1~AOX<br>DO1~DOX                                                                                                          |
|            |                           | repmode                   | Integer          | must       | 1-Not reporting (not checking period and range)<br>4-Periodic reporting (check period>0, range not checked)<br>5-2-Change reporting (Check range>0, period is not checked)<br>3-Change reporting + periodic reporting, (range>0, period>0) |
|            |                           | period                    | Integer          | must       | Reporting time (unit: minutes, default: 1) (range: 0-65535)                                                                                                                                                                                |
|            |                           | range                     | floating point   | must       | Range of variation, acting on the value calculated by the calculation formula ( platform side data ) 0 - 3.4*10^38                                                                                                                         |
|            |                           | point                     | Integer          | must       | Decimal places (0 - 5)                                                                                                                                                                                                                     |
|            |                           | readtype                  | Integer          | must       | Read-write attribute 0-read only 1-read and write 2-write only                                                                                                                                                                             |
|            |                           | mathup                    | String           | must       | Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                     |
|            |                           | mathdown                  | String           | must       | Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                  |

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.io.set ",
  "bizContent": [
    {
      "name": "DO1",
      "repmode": 2,
      "period": 1,
      "range": 0,
      "point": 3,
      "readtype": 1,
```

```
"mathup": "sadf",
"mathdown": "4asdf56"
}
]
```

Device response

| Fields   | type    | illustrate |                                                                                     |
|----------|---------|------------|-------------------------------------------------------------------------------------|
| msgId    | String  | must       | Message ID field, which is consistent with the ID of the message being responded to |
| s        | String  | must       | SN                                                                                  |
| method   | String  | must       | Method field : device.config . io.set.resp                                          |
| respCode | Integer | must       | 0 Success                                                                           |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.io.set.resp " ,
  "respCode": 0
}
```

## 2.14. IO parameter acquisition

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method field : device.config.io.get                                                                                                                                                                          |

```
{
    "msgId": "202201241610366046" ,
    "sn": "12345678901234567895",
    "method": " device.config.io. g et ",
    " bizContent ": ["DO1","DI1","AI1"]
}
```

Device response

| Fields      |                           |                           | type             | illustrate |                                                                                                                                                                                                                  |
|-------------|---------------------------|---------------------------|------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId       |                           |                           | String           | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br><br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s           |                           |                           | String           | must       | SN                                                                                                                                                                                                               |
| method      |                           |                           | String           | must       | Method field : device.config.io.get.resp                                                                                                                                                                         |
| respCode    |                           |                           | Integer          | must       | Error code, 0 means success                                                                                                                                                                                      |
| respContent | Object sub-element fields |                           | Array of objects | must       | Parameter array, consisting of one or more objects                                                                                                                                                               |
|             | table                     | Object sub-element fields | Array of objects | must       |                                                                                                                                                                                                                  |
|             |                           | name                      | String           | must       | JSON upload unique identifier, the keyword is fixed to the corresponding built-in IO:<br>AI1~AIX<br>DI1~DIX<br>AO1~AOX<br>DO1~DOX                                                                                |
|             |                           | repmode                   | Integer          | must       | 0- periodic report 1- change report 2-change report + periodic report                                                                                                                                            |
|             |                           | period                    | Integer          | must       | Reporting time (unit: minutes, default: 1) (range: 0-65535)                                                                                                                                                      |
|             |                           | range                     | floating point   | must       | Range of variation, acting on the value calculated by the calculation formula ( platform side data ) 0 - 3.4*10^38                                                                                               |
|             |                           | point                     | Integer          | must       | Decimal places (0 - 5)                                                                                                                                                                                           |
|             |                           | readtype                  | Integer          | must       | Read-write attribute 0-read only 1-read and write 2-write only                                                                                                                                                   |
|             |                           | mathup                    | String           | must       | Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)                                                                                                                           |
|             |                           | mathdown                  | String           | must       | Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)                                                                                                                        |

```
{
```

```
"msgId": "202201241610366046" ,
"sn": "12345678901234567895",
"method": "device.config.io.get.resp " ,
"respCode": 0,
"respContent": [
    {"index": 0," repmode ": 0," period ": 1 0 ," range ": 10.5 ," point ": 5 ," readtype ": 1 ," mathup ": *100 ," mathdown ": /
100 },
    {"index": 1," repmode ": 0," period ": 20 ," range ": 32 ," point ": 1 ," readtype ": 1 ," mathup ":
mathdown ": "" }
]
}
```

## 2.15. Serial port split settings

(Only supported by E870-G1)

| Fields     |                           | type                      | illustrate |                                                                                                                                                                                                              |
|------------|---------------------------|---------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String                    | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                           | String                    | must       | SN                                                                                                                                                                                                           |
| method     |                           | String                    | must       | Method field: device.config.io.set                                                                                                                                                                           |
| bizContent | Object sub-element fields | Array of objects          | must       | Parameter array, consisting of one or more objects                                                                                                                                                           |
|            | enable                    | Object sub-element fields | must       | 0-off, 1-on                                                                                                                                                                                                  |
|            | src                       | Object sub-element fields | must       | 0-UART1, 1-UART2                                                                                                                                                                                             |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.set " ,
  "bizContent ": {
    "enable":1,
    "src":0
  }
}
```

Device response

| Fields   |  | type    | illustrate |                                                                                                                                                                                                              |
|----------|--|---------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId    |  | String  | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s        |  | String  | must       | SN                                                                                                                                                                                                           |
| method   |  | String  | must       | Method field: device.config.shunt.set. resp                                                                                                                                                                  |
| respCode |  | Integer | must       | Error code, 0 means success                                                                                                                                                                                  |

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.set.resp " ,
  "respCode":0
}
```

## 2.16. Serial port diversion acquisition

(Only supported by E870-G1)

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method: device.config.shunt.get                                                                                                                                                                              |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.get "
}
```

Device response

| Fields      |                           | type                     | illustrate |                                                                                                                                                                                                             |
|-------------|---------------------------|--------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId       |                           | String                   | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529916323 |
| s           |                           | String                   | must       | SN                                                                                                                                                                                                          |
| method      |                           | String                   | must       | Method field: device.config.shunt.get .resp                                                                                                                                                                 |
| respCode    |                           | Integer                  | must       | Error code, 0 means success                                                                                                                                                                                 |
| respContent | Object sub-element fields | Array of Segment objects | Default    | Parameter array, consisting of one or more objects                                                                                                                                                          |
|             | enable                    | Integer                  | must       | 0-off, 1-on                                                                                                                                                                                                 |
|             | src                       | Integer                  | must       | 0-UART1, 1-UART2                                                                                                                                                                                            |

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.get resp",
  "respCode": 0,
  "respContent": {
    "enable": 1,
    "src": 0
  }
}
```

## 3. Device management interface

### 3.1. System Restart

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method field:<br>device.command.reboot                                                                                                                                                                       |

```
{  
  "msgId":873916323,  
  "sn":"shjEz9B9fayWgfflfGVG",  
  "method":" device.command.reboot ",  
}
```

### 3.2. Factory Reset

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method field:<br>device.command.restore                                                                                                                                                                      |

```
{  
  "msgId":873916323,  
  "sn":"shjEz9B9fayWgfflfGVG",  
  "method":" device.command.restore "  
}
```

### 3.3. Equipment Upgrade

Platform sends:

| Fields | type   | illustrate |                                                                                                                                                                                                              |
|--------|--------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId  | String | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s      | String | must       | SN                                                                                                                                                                                                           |
| method | String | must       | Method field:<br>device.command.update                                                                                                                                                                       |

```
{
  "msgId":873916323,
  "sn":"shjEz9B9fayWgff1fGVG",
  "method": " device.command.update "
  "bizContent":
  {
    "url":"http://www.baidu.com/file/1.bin"
  }
}
```

## 4. Platform parameter interface (for internal use)

### 4.1. Get platform parameters

After the device is turned on, it requests the connection parameters of the management platform from the web server through the HTTP protocol post method.

(<http://cloud.ebyte.com/device/connect>) The request message is as follows:

| Fields     |                             | type    | illustrate |                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-----------------------------|---------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                             | String  | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323                                                                                                                                                                                      |
| s          |                             | String  | must       | SN                                                                                                                                                                                                                                                                                                                                                                                                |
| method     |                             | String  | must       | Method field: device.connect                                                                                                                                                                                                                                                                                                                                                                      |
| bizContent | Object<br>Element<br>Fields | Object  | must       | Parameter message field                                                                                                                                                                                                                                                                                                                                                                           |
|            | ver                         | String  | must       | Protocol version number                                                                                                                                                                                                                                                                                                                                                                           |
|            | mode                        | Integer | must       | Cloud platform: 0 Cloud networking: 1<br>When mode=0: If the device is registered, the link parameters are returned; if the device is not registered, the link parameters are not returned;<br>When mode=1: link parameters are returned, and if the device is registered, edgetotal and edgesign are returned normally; if the device is not registered, edgetotal is 0 and edgesign is default; |

```
{
  "msgId": 20211227130215123456,
  "sn": "shjEz9B9fayWgff1fGVG",
  "method": "device.connect",
  "bizContent": {
    "ver": "1.0",
    "mode": 0
  }
}
```

The web server response message is as follows:

| Fields   |  | type    | illustrate |                                                                                                                                                                                  |
|----------|--|---------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId    |  | String  | must       | Message ID field, which is consistent with the ID of the message being responded to                                                                                              |
| s        |  | String  | must       | SN                                                                                                                                                                               |
| method   |  | String  | must       | Method field: device.connect.resp                                                                                                                                                |
| respCode |  | Integer | must       | Error code, 0 means success, other values mean failure.<br>This error code is different from the "Error Code" section at the end of the article. As long as the device obtains a |

|             |                             |           |                |                                                                  |
|-------------|-----------------------------|-----------|----------------|------------------------------------------------------------------|
|             |                             |           |                | non-zero value, the platform connection process will be stopped. |
| respContent | Object<br>Element<br>Fields | Object    | must           | Response parameter message                                       |
|             | type                        | String    | must           | baidu                                                            |
|             | host                        | Character | must           | MQTT server domain name                                          |
|             | port                        | Integer   | must           | The port number of the MQTT server                               |
|             | clientID                    | Character | must           | MQTT device clientID                                             |
|             | user                        | Character | must           | MQTT server account                                              |
|             | password                    | Character | must           | Password for the MQTT server                                     |
|             | sub                         | Character | must           | Subscribe to a topic by your own "SN"                            |
|             | pub                         | Character | must           | Publish topic, receive "cloud" by platform                       |
|             | edgesign                    | Character | Can be default | Edge configuration check code ()                                 |
|             | edgetotal                   | Integer   | Can be default | Total number of edge configuration nodes                         |

```

{
  "msgId":20211227130215123456,
  "sn": "shjEz9B9fayWgfflfGVG",
  "method": "device.connect.resp",
  "respCode":0,
  "respContent":
  {
    "type":1,
    "host": "https://www.baidu.com",
    "port":1833,
    "user": "fdsafdsafdsa",
    "password": "fdsafdsafdsa",
    "clientId":1234,
    "sub": "subPlatform",
    "pub": "pubPlatform",
    "edgesign": "xxxxxxxxxxxxxxxx",
    "edgetotal":20
  }
}

```

## 4.2. Get edge configuration

The device obtains the connection parameters of the management platform. If the edge computing verification code sent is inconsistent with the verification code stored locally, the device requests the web server to update the edge configuration parameters (<http://cloud.ebyte.com/device/edgeconfig>) through the HTTP protocol post method. The request message is as follows:

| Fields     |                       | type    | illustrate |                                                                                                                                                                                                              |
|------------|-----------------------|---------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                       | String  | must       | The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number.<br>For example, the current time is 2021/09/18-16/35/29,<br>The message ID is 20210918163529 916323 |
| s          |                       | String  | must       | SN                                                                                                                                                                                                           |
| method     |                       | String  | must       | Method field: device.edgeconfig                                                                                                                                                                              |
| bizContent | Object Element Fields | Object  | must       | Parameter message field                                                                                                                                                                                      |
|            | page                  | Integer | must       | Requested page number                                                                                                                                                                                        |
|            | pagesize              | Integer | must       | Number of data points per page                                                                                                                                                                               |

```
{
  "msgId": 20211227130215123456,
  "sn": "shjEz9B9fayWgfflfGVG",
  "method": "device.edgeconfig",
  "bizContent": {
    "page ": 2,
    "pagesize ": 10
  }
}
```

The web server response message is as follows:

| Fields     |                           | Integer          | illustrate       |                                                                                                                                                                                                                                                  |
|------------|---------------------------|------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| msgId      |                           | String           | must             | Message ID field, which is consistent with the ID of the message being responded to                                                                                                                                                              |
| s          |                           | String           | must             | SN                                                                                                                                                                                                                                               |
| method     |                           | String           | must             | Method field: device.edgeconfig.resp                                                                                                                                                                                                             |
| respCode   |                           | Integer          | must             | Error code, 0 means success, other values mean failure. This error code is different from the "Error Code Section" at the end of the article. As long as the device obtains a non-zero value, the parameter acquisition process will be stopped. |
| bizContent | Object sub-element fields | Object           | must             | Reply message                                                                                                                                                                                                                                    |
|            | edgetotal                 | Integer          | must             | Total number of data points                                                                                                                                                                                                                      |
|            | page                      | Integer          | must             | Response page number                                                                                                                                                                                                                             |
|            | pagesize                  | Integer          | must             | Number of data points per page                                                                                                                                                                                                                   |
|            | edgesign                  | String           | must             | Verification Code                                                                                                                                                                                                                                |
|            | table                     | Object sub-eleme | Array of objects | must                                                                                                                                                                                                                                             |

|  |  |           |                |      |                                                                                                                                                                                                                                                                                                   |
|--|--|-----------|----------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | nt fields |                |      |                                                                                                                                                                                                                                                                                                   |
|  |  | name      | String         | must | JSON upload unique identifier, keyword , string length is up to 16                                                                                                                                                                                                                                |
|  |  | if        | Integer        | must | Execution interface: 0 - serial port , 1 - network                                                                                                                                                                                                                                                |
|  |  | ifpara    | String/Integer | must | if=1: place network parameters ip:port (string)<br>if=0: place the serial port number 1 or 2 (integer type)                                                                                                                                                                                       |
|  |  | ad dress  | Integer        | must | Modbus slave address , range 0-247                                                                                                                                                                                                                                                                |
|  |  | reghead   | Integer        | must | Register Type:<br>2-Coil (datatype must be 0)<br>5-Discrete quantity (datatype must be 0)<br>6-Holding register (datatype must be > 0)<br>3-Input register (datatype must be > 0)                                                                                                                 |
|  |  | regaddr   | Integer        | must | Register Address                                                                                                                                                                                                                                                                                  |
|  |  | datatype  | Integer        | must | Data Type:<br>0 means 1 bit<br>1 means 16-bit signed<br>2 means 16-bit unsigned<br>3 means 32-bit signed ABCD<br>4 means 32-bit signed CDAB<br>5 means 32-bit unsigned ABCD<br>6 means 32-bit unsigned CDAB<br>7 represents 32-bit floating point ABCD<br>8 represents 32-bit floating point CDAB |
|  |  | repmode   | Integer        | must | 2-Not reporting (not checking period and range)<br>6-Periodic reporting (check period>0, range not checked)<br>7-2-Change reporting (Check range>0, period is not checked)<br>3-Change reporting + periodic reporting, (range>0, period>0)                                                        |
|  |  | period    | Integer        | must | Reporting time (unit: minutes, default: 1) (range: 0-65535)                                                                                                                                                                                                                                       |
|  |  | range     | floating point | must | Range of variation, acting on the value calculated by the calculation formula ( platform side data ) 0 - 3.4*10^38                                                                                                                                                                                |
|  |  | point     | Integer        | must | Decimal places (0 - 5)                                                                                                                                                                                                                                                                            |
|  |  | readtype  | Integer        | must | Read-write attribute 0-read only 1-read and write 2-write only                                                                                                                                                                                                                                    |
|  |  | mathup    | String         | must | Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                            |
|  |  | mathdown  | String         | must | Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)                                                                                                                                                                                                         |
|  |  |           |                |      |                                                                                                                                                                                                                                                                                                   |

{

```
"msgId":20211227130215123456,
"sn":"shjEz9B9fayWgfflfGVG",
"method":"device.connect.resp",
"respCode":0,
"respContent":{
" edgetotal ":0,
    " page ":0,
    " pagesize ":0,
    "edgesign":"xxxxxxxxxxxxxxxx",
"table":[
{
"name":"data0",
"address":1,
"reghead":0,
"regaddr":2,
"datatype":0,
"repmode":2,
"period":0,
"range":0,
"point":0,
"readtype":0,
"mathup":"0",
    "mathdown":"0"
} ,
{
"name":"data 1 ",
"address":1,
"reghead":0,
"regaddr":2,
"datatype": 21 ,
"repmode":2,
"period":0,
"range":0,
"point":0,
"readtype":0,
"mathup":"0",
    "mathdown":"0"
}
]
}
}
```

## 5. Error Code

| Error Code | describe                                                                                                               |
|------------|------------------------------------------------------------------------------------------------------------------------|
| 01         | SN Error                                                                                                               |
| 02         | Method Error                                                                                                           |
| 03         | Parameter range error                                                                                                  |
| 04         | Wrong parameter type                                                                                                   |
| 05         | Field missing                                                                                                          |
| 06         | Unable to parse or other errors (recognized as JSON protocol but unable to obtain valid data or other internal errors) |

## 6. Edge acquisition data point parameter verification rules

### 6.1 Register, read and write mode data type verification table

- The following parameter register types are main parameters. For example, if it is discrete input or input, it will report an error if it is set to write-only or read-write. Other types of registers will be set according to the set value.
- Coil and discrete input can only be bit ( 0 ), holding register supports 1-8 , otherwise an error will be reported  
Read and write modes include 0- read only 1- read and write 2- write only

Data types include

| Register type<br>( reghead )        | Coil      | Discrete<br>input | Holding Registers | Input Register |
|-------------------------------------|-----------|-------------------|-------------------|----------------|
| Read and write mode<br>( readtype ) | all       | Read-only         | all               | Read-only      |
| Data type ( datatype )              | Bit ( 0 ) | Bit ( 0 )         | 1-8               | 1-8            |

0 means 1 bit                                      1 means 16 bits signed  
2 means 16 -bit unsigned                      3 means 32 -bit signed ABCD  
4 means 32 -bit signed CDAB                  5 means 32 -bit unsigned ABCD  
6 represents 32 -bit unsigned CDAB        7 represents 32 -bit floating point ABCD  
8 means 32 -bit floating point

### 6.2 Reporting Mode Period value, range value calibration table

| Reporting mode<br>( repmode ) | Cycle + Change                        | cycle          | change                                 | Not reporting                 |
|-------------------------------|---------------------------------------|----------------|----------------------------------------|-------------------------------|
| period                        | >0,<=65535                            | >0,<=6553<br>5 | Any positive integer<br>value          | Any positive<br>integer value |
| range                         | >0,<= maximum<br>floating point value | Any value      | >0 ,<= maximum<br>floating point value | Any positive<br>value         |

Any value means no verification, the parameter is passed directly, otherwise the parameter can be passed only within the description range, and an error is reported if it exceeds the range

### 6.3 About polling queue:

When the data point read-write attribute contains the read attribute, the current data point participates in the polling  
When the data point reporting mode is periodic, change, or periodic + change, the data point participates in polling

### 6.4 Other calibration parameters

|          |         |                                                                                                      |
|----------|---------|------------------------------------------------------------------------------------------------------|
| point    | Integer | Decimal places (0 - 5)                                                                               |
| mathup   | String  | Operation formula uplink ( + = * / operation ) ( range 32<br>bytes 5- level sequential operation )   |
| mathdown | String  | Operation formula downlink ( + = * / operation ) ( range<br>32 bytes 5- level sequential operation ) |

### 6.5 Interface type verification ( supported by E870-G1 )

| Polling interface type ( if )              | 0 (serial port)                                                                   | 1 (Network)                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------|
| Polling interface parameters<br>( ifpara ) | Serial port number (integer<br>type) is based on the actual serial<br>port number | Place network parameters<br>(string)<br>IP : PORT |

## 7. Revision History

| Version | Modified by  | Modifications                                                                                                                                         | Modified Date |
|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.00    | Gou Zhongqin | Initial release                                                                                                                                       | 2022.2.24     |
| 1.01    | Fan Yong     | 1. Modify the modbus to json protocol part to edge computing<br>2. Unify the IO parameter configuration interface                                     | 2022.4.8      |
| 1.02    | Li Yiheng    | Add field necessity description                                                                                                                       |               |
| 1.03    | Ye Shuai     | Corrected domain name and POST field printing errors                                                                                                  |               |
| 1.04    | Ye Shuai     | Corrected the problem that the slave address does not support 0, improved the parameter description and effective conditions                          | 2022.9.8      |
| 1.05    | Ye Shuai     | Corrected msgid to integer type, corrected serial port configuration interface serial number 0-1 to 12                                                | 2022.9.16     |
| 1.06    | Ye Shuai     | Modify the socket parameters subEn and pubEn to subSw and pubSw, and change them to integer type                                                      | 2022.9.19     |
| 1.07    | Li Yiheng    | Unify msgid description into string, add data point parameter verification rules in Chapter 6                                                         | 2022.09.19    |
| 1.08    | Ye Shuai     | Uart get interface adds index parameter                                                                                                               | 2022.11.13    |
| 1.09    | Ye Shuai     | Add offline cache switch to socket settings                                                                                                           | 2023.1.5      |
| 1.10    | Ye Shuai     | Add serial port shunt interface                                                                                                                       | 2023.1.29     |
| 1.11    | Ye Shuai     | Add LOC and RTC fields to the socket registration packet heartbeat packet, and correct the socket registration packet heartbeat FW field to be shaped | 2023.2.10     |

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