



ZHC492C JSON Application Guidance

LTE Cat 1 Modbus RTU

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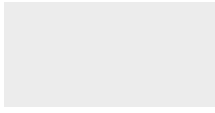
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1. General description

This document applies to ZHC-CAT1 Series products, support TCP with MQTT Under two different communication modes JSON Protocol interaction. Customers are using JSON When communicating with the protocol and the device, please strictly follow the format requirements of this document.

This document JSON The protocol format specification will not be repeated.

This document JSON The data type of all fields is string-String.

This document applies to ZHC-CAT1 There are many products in the series, and the number of interfaces for each product is different, the corresponding agreement will be slightly different, and the customer needs to adjust the parameters according to the number of interfaces of the target product during use.

Different messages use "msgType" To distinguish, that is, different messages "msgType" different.

The device's uplink data will carry "devId" Field and "timestamp" Field, not listed in the example. "timestamp" It depends on the network time, and it takes a certain amount of time to obtain it, so it cannot be completely relied on. It is for reference only.

It supports setting multiple parameters at one time. If one of the parameters is wrong, the device will return an error code. But the rest of the correct parameters will still be executed. Therefore, the user needs to pay attention to the value range of each parameter to ensure the accuracy of the parameter.



2.DO interface

DO in JSON In the protocol interaction, according to different function points, it is divided into the following sever almsgType:

| Msg Type | Data trend | description |
|----------------|------------------------|--|
| GetDoValue | Server -> Equipment | Request DO status |
| GetDoValueAck | Device -> Server | Reply to request DO status |
| SetDoValue | Server -> Equipment | Control DO status |
| SetDoValueAck | Device -> Server | Control the response of DO status |
| GetDoConfig | Server -> Equipment | Get DO configuration information |
| GetDoConfigAck | Device -> Server | Get the response of DO configuration information |
| SetDoConfig | Server -> Equipment | Modify DO configuration information |
| SetDoConfigAck | Device -> Server | Reply to modify DO configuration information |
| DoValueRpt | Device -> Server | DO parameters are reported actively |

2.1. Request DO status

Request frame format:

| Field | Do you have to | description |
|---------|----------------|--------------|
| MsgType | Yes | Get Do Value |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|----------|----------------|-------------------|
| Msg Type | Yes | GetDoValueAck |
| data | Yes | Data Frame format |

Data Frame format:

| Field | Do you have to | description |
|-------|---|--------------------------|
| DO1 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO2 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO3 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO4 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO5 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO6 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO7 | The number of hardware interfaces | 1:Relay pull 0:Relay off |

| | | |
|-----|---|--------------------------|
| | is determined | |
| DO8 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |

Example:

```
{
  "msgType": "getDoValue",
  "data": ""
}
{
  "msgType": "getDoValueAck",
  "data": {
    "DO1": "0",
    "DO2": "1",
    "DO3": "0",
    "DO4": "1",
    "DO5": "0",
    "DO6": "1",
    "DO7": "0",
    "DO8": "1"
  }
}
```

Note: The instruction will take effect immediately after it is issued.



2.2. Control DO status

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | SetDoValue |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|---|--------------------------|
| DO1 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO2 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO3 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO4 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO5 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO6 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |



| | | |
|-----|---|--------------------------|
| DO7 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |
| DO8 | The number of hardware interfaces is determined | 1:Relay pull 0:Relay off |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|---|
| msgType | Yes | setDoValueAck |
| data | Yes | 0:success 1:Parameter error 2:Field error |

Example:

```

{
  "msgType":"setDoValue",
  "data": {
    "DO1": "0",
    "DO2": "1",
    "DO3": "0",
    "DO4": "1",
    "DO5": "0",
    "DO6": "1",
    "DO7": "0",
    "DO8": "1"
  }
}
{
  "msgType": "setDoValueAck",
  "data":"0"
}
*****
{
  "msgType":"setDoValue",
  "data": {
    "DO1": "1",
    "DO2": "3",
    "DO3": "0",

```



```

        "DO4": "1",
        "DO5": "0",
        "DO6": "1",
        "DO7": "0",
        "DO8": "1"
    }
}
{
    "msgType": "setDoValueAck",
    "data": "1"
}
    
```

Note: The instruction will take effect immediately after it is issued.

Note: One or several relays can be controlled independently.

2.3. Get DO configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getDoConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getDoConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|--|
| enRpt | no | 1: Enable active reporting 0: Disable active reporting |

| | | |
|-----------|----|---|
| rstStatus | no | 1: Keep DO state when power off 0: Do not keep when power off |
| holdTime1 | no | 0-65535, relay1Output hold time, unit second |
| HoldTime2 | no | 0-65535, relay 2 output holding time, unit second |
| holdTime3 | no | 0-65535, relay 3 output holding time, unit second |
| holdTime4 | no | 0-65535, relay 4 output holding time, unit second |
| holdTime5 | no | 0-65535, relay 5 output holding time, unit second |
| holdTime6 | no | 0-65535, relay 6 output holding time, unit second |
| holdTime7 | no | 0-65535, relay 7 output holding time, unit second |
| holdTime8 | no | 0-65535, relay 8 output holding time, unit second |
| turnTime1 | no | 0-65535, relay 1 cycle turning time, unit second |
| turnTime2 | no | 0-65535, relay2Cycle rollover time, in seconds |
| turnTime3 | no | 0-65535, relay3Cycle rollover time, in seconds |
| turnTime4 | no | 0-65535, relay4Cycle rollover time, in seconds |
| turnTime5 | no | 0-65535, relay5Cycle rollover time, in seconds |
| turnTime6 | no | 0-65535, relay6Cycle rollover time, in seconds |
| turnTime7 | no | 0-65535, relay7Cycle rollover time, in seconds |
| turnTime8 | no | 0-65535, relay8Cycle rollover time, in seconds |

Example:

```
{
  "msgType": "getDoConfig",
  "data":""
}
{
  "msgType": "getDoConfigAck",
  "data": {
    "enRpt": "1",
    "rstStatus": "0",
```

```

    "holdTime1": "0",
    "holdTime2": "0",
    "holdTime3": "0",
    "holdTime4": "0",
    "holdTime5": "0",
    "holdTime6": "0",
    "holdTime7": "0",
    "holdTime8": "0",
    "turnTime1": "0",
    "turnTime2": "0",
    "turnTime3": "0",
    "turnTime4": "0",
    "turnTime5": "0",
    "turnTime6": "0",
    "turnTime7": "0",
    "turnTime8": "0"
  }
}

```

Note: The instruction will take effect immediately after it is issued.

2.4. Modify DO configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setDoConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-----------|----------------|--|
| enRpt | no | 1: Enable active reporting 0: Disable active reporting |
| rstStatus | no | 1: Keep DO state when power off 0: Do not keep |

| | | when power off |
|-----------|----|---|
| holdTime1 | no | 0-65535, relay1Output hold time, unit second |
| HoldTime2 | no | 0-65535, relay 2 output holding time, unit second |
| holdTime3 | no | 0-65535, relay 3 output holding time, unit second |
| holdTime4 | no | 0-65535, relay 4 output holding time, unit second |
| holdTime5 | no | 0-65535, relay 5 output holding time, unit second |
| holdTime6 | no | 0-65535, relay 6 output holding time, unit second |
| holdTime7 | no | 0-65535, relay 7 output holding time, unit second |
| holdTime8 | no | 0-65535, relay 8 output holding time, unit second |
| turnTime1 | no | 0-65535, relay 1 cycle turning time, unit second |
| turnTime2 | no | 0-65535, relay2Cycle rollover time, in seconds |
| turnTime3 | no | 0-65535, relay3Cycle rollover time, in seconds |
| turnTime4 | no | 0-65535, relay4Cycle rollover time, in seconds |
| turnTime5 | no | 0-65535, relay5Cycle rollover time, in seconds |
| turnTime6 | no | 0-65535, relay6Cycle rollover time, in seconds |
| turnTime7 | no | 0-65535, relay7Cycle rollover time, in seconds |
| turnTime8 | no | 0-65535, relay8Cycle rollover time, in seconds |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|---|
| msgType | Yes | setDoConfigAck |
| data | Yes | 0:success 1:Parameter error 2:Field error |

Example:

```
{
  "msgType": "setDoConfig",
  "data": {
    "enRpt": "1",
    "rstStatus": "1",
    "holdTime1": "0",
```

```
        "holdTime2": "0",
        "holdTime3": "0",
        "holdTime4": "0",
        "holdTime5": "0",
        "holdTime6": "0",
        "holdTime7": "0",
        "holdTime8": "0",
        "turnTime1": "0",
        "turnTime2": "0",
        "turnTime3": "0",
        "turnTime4": "0",
        "turnTime5": "0",
        "turnTime6": "0",
        "turnTime7": "0",
        "turnTime8": "0"
    }
}
{
    "msgType": "setDoConfigAck",
    "data": "0"
}
*****
{
    "msgType": "setDoConfig",
    "data": {
        "enRpt": "3",
        "rstStatus": "1",
        "holdTime1": "0",
        "holdTime2": "0",
        "holdTime3": "0",
        "holdTime4": "0",
        "holdTime5": "0",
        "holdTime6": "0",
        "holdTime7": "0",
        "holdTime8": "0",
        "turnTime1": "0",
        "turnTime2": "0",
        "turnTime3": "3",
        "turnTime4": "0",
        "turnTime5": "0",
        "turnTime6": "0",
        "turnTime7": "0",
        "turnTime8": "0"
    }
}
```



```

}
{
  "msgType": "setDoConfigAck",
  "data": "1"
}

```

Note: The instruction will take effect immediately after it is issued.

2.5. DO voluntarily report

Active reporting frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | doValueRpt |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|--|--------------------------|
| DO1 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO2 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO3 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO4 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO5 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |

| | | |
|-----|--|--------------------------|
| DO6 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO7 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |
| DO8 | Determined by the number of interfaces | 1:Relay pull 0:Relay off |

Example:

```
{
  "msgType": "doValueRpt",
  "data": {
    "DO1": "0",
    "DO2": "1",
    "DO3": "0",
    "DO4": "1",
    "DO5": "0",
    "DO6": "1",
    "DO7": "0",
    "DO8": "1"
  }
}
```

Note: The server does not need to reply when actively reporting instructions.



3. DI interface

DIinJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|----------------|------------------------|--|
| getDiValue | Server -> Equipment | requestDIstatus |
| getDiValueAck | Device -> Server | requestDIStatus reply |
| getDiConfig | Server -> Equipment | ObtainDIConfiguration information |
| getDiConfigAck | Device -> Server | ObtainDIReply to configuration information |
| setDiConfig | Server -> Equipment | modifyDIConfiguration information |
| setDiConfigAck | Device -> Server | modifyDIReply to configuration information |
| diValueRpt | Server -> Equipment | DIActive parameter reporting |

3.1. Request DI status

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getDiValue |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|-------|----------------|-------------|
|-------|----------------|-------------|

| | | |
|---------|-----|------------------|
| msgType | Yes | getDiValueAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|---|--|
| DI1 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI2 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI3 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI4 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI5 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI6 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI7 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |
| DI8 | The number of hardware interfaces is determined | 1: With input signal 0: Without input signal |



| | | |
|--|---------------|--|
| | is determined | |
|--|---------------|--|

Example:

```

{
  "msgType": "getDiValue",
  "data": ""
}
{
  "msgType": "getDiValueAck",
  "data": {
    "DI1": "0",
    "DI2": "1",
    "DI3": "0",
    "DI4": "1",
    "DI5": "0",
    "DI6": "1",
    "DI7": "0",
    "DI8": "1"
  }
}
    
```

Note: The instruction will take effect immediately after it is issued.

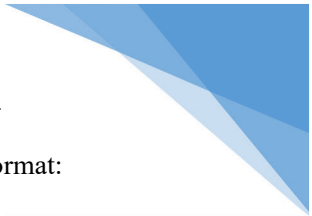
3.2. Get DI configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|----------------|
| msgType | Yes | getDiConfigAck |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getDiConfigAck |
| data | Yes | dataFrame format |



dataFrame format:

| Field | Do you have to | description |
|-------|----------------|--|
| enRpt | no | 1: Turn on periodic reporting 0: Turn off periodic reporting |
| cyc | no | 0-65535:DIState reporting period, in seconds |

Example:

```

{
  "msgType": "getDiConfig",
  "data":""
}
{
  "msgType": "getDiConfigAck",
  "data": {
    "enRpt": "0",
    "cyc": "10"
  }
}
    
```

Note: The instruction will take effect immediately after it is issued.

3.3. Modify DI configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setDiConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|--|
| enRpt | no | 1: Enable active reporting 0: Disable active reporting |
| cyc | no | 0-65535:DIStatus reporting period, unit second |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setDiConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```

{
  "msgType": "setDiConfig",
  "data": {
    "enRpt": "1",
    "cyc": "10"
  }
}
{
  "msgType": "setDiConfigAck",
  "data": "0"
}
*****
{
  "msgType": "setDiConfig",
  "data": {
    "enRpt": "3",
    "cyc": "10"
  }
}
{
  "msgType": "setDiConfigAck",
  "data": "1"
}

```

Note: The instruction will take effect immediately after it is issued.

3.4.DI actively report

Active reporting frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | diValueRpt |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|--|--|
| DI1 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI2 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI3 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI4 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI5 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI6 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI7 | Determined by the number of interfaces | 1: With input signal 0: Without input signal |
| DI8 | Determined by the | 1: With input signal 0: Without input signal |

| | | |
|--|-------------------------|--|
| | number of interfaces | |
|--|-------------------------|--|

Example:

```
{  
  "msgType": "diValueRpt",  
  "data": {  
    "DI1": "0",  
    "DI2": "1",  
    "DI3": "0",  
    "DI4": "1",  
    "DI5": "0",  
    "DI6": "1",  
    "DI7": "0",  
    "DI8": "1"  
  }  
}
```

Note: The server does not need to reply when actively reporting instructions.



4.PI interface

In the protocol interaction, according to different function points, it is divided into the following several msgType:

| msgType | Data trend | description |
|----------------|------------------------|-----------------------|
| getPiValue | Server -> Equipment | requestPIstatus |
| getPiValueAck | Device -> Server | requestPIStatus reply |
| setPiConfig | Server -> Equipment | EmptyPIPulse data |
| setPiConfigAck | Device -> Server | EmptyPIPulse data |

4.1. Request PI count

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getPiValue |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getPiValueAck |
| data | Yes | dataFrame format |

dataFrame format:



| Field | Do you have to | description |
|-------|---|------------------------------|
| PI1 | The number of hardware interfaces is determined | 0-65535 pulse 1 count signal |
| PI2 | The number of hardware interfaces is determined | 0-65535 pulse 2 count signal |

Example:

```
{
  "msgType": "getPiValue",
  "data": ""
}
{
  "msgType": "getPiValueAck",
  "data": {
    "PI1": "0-65535",
    "PI2": "0-65535"
  }
}
```

Note: The instruction will take effect immediately after it is issued.

4.2. Clear PI count

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setPiConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|-------------|
|-------|----------------|-------------|

| | | |
|----------|----|----------|
| resetPi1 | no | 1: Empty |
| resetPi2 | no | 1: Empty |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setPiConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```

{
  "msgType":"setPiConfig",
  "data": {
    "resetPi1": "1",
    "resetPi2": "1"
  }
}
{
  "msgType": "setPiConfigAck",
  "data": "0"
}
*****
{
  "msgType":"setPiConfig",
  "data": {
    "resetPi1": "2",
    "resetPi2": "1"
  }
}
{
  "msgType": "setPiConfigAck",
  "data": "1"
}

```

Note: The instruction will take effect immediately after it is issued.



5.AI interface

AIinJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|----------------|------------------------|--|
| getAiValue | Server -> Equipment | requestAIstatus |
| getAiValueAck | Device -> Server | requestAIStatus reply |
| getAiConfig | Server -> Equipment | ObtainAIConfiguration information |
| getAiConfigAck | Device -> Server | ObtainAIReply to configuration information |
| setAiConfig | Server -> Equipment | modifyAIConfiguration information |
| setAiConfigAck | Device -> Server | modifyAIReply to configuration information |
| aiValueRpt | Server -> Equipment | AIActive parameter reporting |

5.1. Request AI status

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getAiValue |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|-------|----------------|-------------|
|-------|----------------|-------------|

| | | |
|---------|-----|------------------|
| msgType | Yes | getAiValueAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|---|--|
| AI1 | The number of hardware interfaces is determined | 0-20000 AI1 input current value, unit uA |
| AI2 | The number of hardware interfaces is determined | 0-20000 AI2 input current value, unit uA |
| AI3 | The number of hardware interfaces is determined | 0-20000 AI3 input current value, unit uA |
| AI4 | The number of hardware interfaces is determined | 0-20000 AI4 input current value, unit uA |
| AI5 | The number of hardware interfaces is determined | 0-20000 AI5 input current value, unit uA |
| AI6 | The number of hardware interfaces is determined | 0-20000 AI6 input current value, unit uA |
| AI7 | The number of hardware interfaces is determined | 0-20000 AI7 input current value, unit uA |
| AI8 | The number of hardware interfaces is determined | 0-20000 AI8 input current value, unit uA |



| | | |
|--|---------------|--|
| | is determined | |
|--|---------------|--|

Example:

```

{
  "msgType": "getAiValue",
  "data": ""
}
{
  "msgType": "getAiValueAck",
  "data": {
    "AI1": "4000",
    "AI2": "5000",
    "AI3": "6000",
    "AI4": "7000",
    "AI5": "8000",
    "AI6": "9000",
    "AI7": "10000",
    "AI8": "20000"
  }
}
    
```

Note: The instruction will take effect immediately after it is issued.

5.2. Request AI configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getAiConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getAiConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|----------|----------------|--|
| enRpt | no | 1: Turn on periodic reporting 0: Turn off periodic reporting |
| cyc | no | 0-65535: DI status reporting cycle, in seconds |
| rptRule1 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin1 | no | 0-20000, minimum threshold value, unit uA |
| rptMax1 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule2 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin2 | no | 0-20000, minimum threshold value, unit uA |
| rptMax2 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule3 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin3 | no | 0-20000, minimum threshold value, unit uA |
| rptMax3 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule4 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin4 | no | 0-20000, minimum threshold value, unit uA |
| rptMax4 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule5 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin5 | no | 0-20000, minimum threshold value, unit uA |
| rptMax5 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule6 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin6 | no | 0-20000, minimum threshold value, unit uA |
| rptMax6 | no | 0-20000, the maximum threshold value, unit uA |

| | | |
|----------|----|--|
| rptRule7 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin7 | no | 0-20000, minimum threshold value, unit uA |
| rptMax7 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule8 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin8 | no | 0-20000, minimum threshold value, unit uA |
| rptMax8 | no | 0-20000, the maximum threshold value, unit uA |

Example:

```
{
  "msgType": "getAiConfig",
  "data":""
}
{
  "msgType": "getAiConfigAck",
  "data": {
    "enRpt": "0",
    "cyc": "10",
    "rptRule1": "2",
    "rptMin1": "4000",
    "rptMax1": "4000",
    "rptRule2": "0",
    "rptMin2": "4000",
    "rptMax2": "4000",
    "rptRule3": "2",
    "rptMin3": "4000",
    "rptMax3": "4000",
    "rptRule4": "0",
    "rptMin4": "4000",
    "rptMax4": "4000",
    "rptRule5": "0",
    "rptMin5": "4000",
    "rptMax5": "4000",
    "rptRule6": "0",
    "rptMin6": "4000",
    "rptMax6": "4000",
    "rptRule7": "0",
    "rptMin7": "4000",
    "rptMax7": "4000",
```

```

    "rptRule8": "2",
    "rptMin8": "4000",
    "rptMax8": "4000"
  }
}

```

Note: The instruction will take effect immediately after it is issued.

5.3. Modify AI configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setAiConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|----------|----------------|--|
| enRpt | no | 1: Turn on periodic reporting 0: Turn off periodic reporting |
| cyc | no | 0-65535: DI status reporting cycle, in seconds |
| rptRule1 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin1 | no | 0-20000, minimum threshold value, unit uA |
| rptMax1 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule2 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin2 | no | 0-20000, minimum threshold value, unit uA |
| rptMax2 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule3 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin3 | no | 0-20000, minimum threshold value, unit uA |

| | | |
|----------|----|--|
| rptMax3 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule4 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin4 | no | 0-20000, minimum threshold value, unit uA |
| rptMax4 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule5 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin5 | no | 0-20000, minimum threshold value, unit uA |
| rptMax5 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule6 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin6 | no | 0-20000, minimum threshold value, unit uA |
| rptMax6 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule7 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin7 | no | 0-20000, minimum threshold value, unit uA |
| rptMax7 | no | 0-20000, the maximum threshold value, unit uA |
| rptRule8 | no | 0: Turn off the threshold reporting 1: Within the threshold 2: Outside the threshold |
| rptMin8 | no | 0-20000, minimum threshold value, unit uA |
| rptMax8 | no | 0-20000, the maximum threshold value, unit uA |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setAiConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```
{
  "msgType": "setAiConfig",
  "data": {
    "enRpt": "0",
    "cyc": "10",
    "rptRule1": "2",
    "rptMin1": "4000",
    "rptMax1": "4000",
    "rptRule2": "0",
    "rptMin2": "4000",
    "rptMax2": "4000",
    "rptRule3": "2",
    "rptMin3": "4000",
    "rptMax3": "4000",
    "rptRule4": "0",
    "rptMin4": "4000",
    "rptMax4": "4000",
    "rptRule5": "0",
    "rptMin5": "4000",
    "rptMax5": "4000",
    "rptRule6": "0",
    "rptMin6": "4000",
    "rptMax6": "4000",
    "rptRule7": "0",
    "rptMin7": "4000",
    "rptMax7": "4000",
    "rptRule8": "2",
    "rptMin8": "4000",
    "rptMax8": "4000"
  }
}
{
  "msgType": "setAiConfigAck",
  "data": "0"
}
*****
{
  "msgType": "setAiConfig",
  "data": {
    "enRpt": "0",
    "cyc": "10",
    "rptRule1": "2",
    "rptMin1": "4000",
    "rptMax1": "4000",
```

```

        "rptRule2": "0",
        "rptMin2": "4000",
        "rptMax2": "4000",
        "rptRule3": "2",
        "rptMin3": "4000",
        "rptMax3": "4000",
        "rptRule4": "0",
        "rptMin4": "4000",
        "rptMax4": "4000",
        "rptRule5": "0",
        "rptMin5": "4000",
        "rptMax5": "4000",
        "rptRule6": "0",
        "rptMin6": "4000",
        "rptMax6": "4000",
        "rptRule7": "0",
        "rptMin7": "4000",
        "rptMax7": "4000",
        "rptRule8": "6",
        "rptMin8": "4000",
        "rptMax8": "4000"
    }
}
{
    "msgType": "setAiConfigAck",
    "data": "1"
}

```

Note: The instruction will take effect immediately after it is issued.

5.4. AI actively reports

Active reporting frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | aiValueRpt |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|-------------|
|-------|----------------|-------------|

| | | |
|-----|--|--|
| AI1 | Determined by the number of interfaces | 0-20000 AI1 input current value, unit uA |
| AI2 | Determined by the number of interfaces | 0-20000 AI2 input current value, unit uA |
| AI3 | Determined by the number of interfaces | 0-20000 AI3 input current value, unit uA |
| AI4 | Determined by the number of interfaces | 0-20000 AI4 input current value, unit uA |
| AI5 | Determined by the number of interfaces | 0-20000 AI5 input current value, unit uA |
| AI6 | Determined by the number of interfaces | 0-20000 AI6 input current value, unit uA |
| AI7 | Determined by the number of interfaces | 0-20000 AI7 input current value, unit uA |
| AI8 | Determined by the number of interfaces | 0-20000 AI8 input current value, unit uA |

Example:

```
{  
  "msgType": "aiValueRpt",  
  "data": {  
    "AI1": "4000",  
    "AI2": "5000",
```



```
"AI3": "6000",  
"AI4": "7000",  
"AI5": "8000",  
"AI6": "9000",  
"AI7": "10000",  
"AI8": "20000"  
}  
}
```

Note: The server does not need to reply when actively reporting instructions.



6.AO interface

AOinJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|----------------|------------------------|-----------------------------|
| getAoValue | Server -> Equipment | ReadAO output value |
| getAoValueAck | Device -> Server | ReadAO output value reply |
| setAoConfig | Server -> Equipment | Set upAO output value |
| setAoConfigAck | Device -> Server | Set upAO output value reply |

6.1. Get AO output

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-------------|
| msgType | Yes | getAoValue |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getAoValueAck |
| data | Yes | dataFrame format |

dataFrame format:



| Field | Do you have to | description |
|-------|---|---------------------------------------|
| AO1 | The number of hardware interfaces is determined | 4000-20000, AO1 output value, unit uA |
| AO2 | The number of hardware interfaces is determined | 4000-20000, AO2 output value, unit uA |

Example:

```
{
  "msgType": "getAoValue",
  "data": ""
}
{
  "msgType": "getAoValueAck",
  "data": {
    "AO1": "20000",
    "AO2": "20000"
  }
}
```

Note: The instruction will take effect immediately after it is issued.

6.2. Set AO output

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setAoConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|-------------|
|-------|----------------|-------------|

| | | |
|-----|----|---------------------------------------|
| AO1 | no | 4000-20000, AO1 output value, unit uA |
| AO2 | no | 4000-20000, AO1 output value, unit uA |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setAoConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```

{
  "msgType": "setAoValue",
  "data": {
    "AO1": "4000-20000",
    "AO2": "4000-20000"
  }
}
{
  "msgType": "setAoValueAck",
  "data": "0"
}
*****
{
  "msgType": "setAoValue",
  "data": {
    "AO1": "11000",
    "AO2": "1000"
  }
}
{
  "msgType": "setAoValueAck",
  "data": "1"
}

```

Note: The instruction will take effect immediately after it is issued.



7. RS485

RS485inJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|-------------------|------------------------|--|
| setRs485Value | Server -> Equipment | Server sends data through 485 |
| setRs485ValueAck | Device -> Server | Device 485 receives data and reports actively |
| rs485ValueRpt | Device -> Server | Device 485 receives data and reports actively |
| getRs485Config | Server -> Equipment | Request RS485 configuration information |
| getRs485ConfigAck | Device -> Server | Reply to request RS485 configuration information |
| setRs485Config | Server -> Equipment | Modify RS485 configuration information |
| setRs485ConfigAck | Device -> Server | Reply to modify RS485 configuration information |

7.1. Send data to RS485

Request frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setRs485Value |
| data | Yes | Hexadecimal string, maximum 1024 bytes |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setRs485ValueAck |

| | | |
|------|-----|--|
| data | Yes | 0: Success 1: Parameter error 2: Field error |
|------|-----|--|

Example:

```
{
  "msgType": "setRs485Value",
  "data": "68010203040506681104333333331416"
}
{
  "msgType": "setRs485ValueAck",
  "data": "0"
}
```

7.2. RS485 active reporting

Active reporting frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | rs485ValueRpt |
| data | Yes | Hexadecimal string, maximum 1024 bytes |

Example:

```
{
  "msgType": "rs485ValueRpt",
  "data": "68010203040506681104333333331416"
}
```

7.3. Get RS485 configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|----------------|
| msgType | Yes | getRs485Config |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|-------------------|
| msgType | Yes | getRs485ConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|--------|----------------|--|
| br | no | 115200 baud rate |
| wl | no | 8/9 data bits |
| sb | no | 1/1.5/2 stop bit |
| parity | no | NONE/ODD/EVEN parity bit |
| pkg1 | no | The string in hexadecimal not more than 32 bytes |
| len1 | no | Instruction length |
| cyc1 | no | Instruction cycle |
| pkg2 | no | The string in hexadecimal not more than 32 bytes |
| len2 | no | Instruction length |
| cyc2 | no | Instruction cycle |
| pkg3 | no | The string in hexadecimal not more than 32 bytes |
| len3 | no | Instruction length |
| cyc3 | no | Instruction cycle |
| pkg4 | no | The string in hexadecimal not more than 32 bytes |
| len4 | no | Instruction length |
| cyc4 | no | Instruction cycle |

Example:

```
{
  "msgType": "getRs485Config",
  "data":""
}
{
  "msgType": "getRs485ConfigAck",
```

```

    "data": {
      "br": "115200",
      "wl": "8",
      "sb": "1",
      "parity": "NONE",
      "pkg1": "1234567890",
    "len1": "5",
      "cyc1": "30",
      "pkg2": "1234567890",
    "len2": "5",
      "cyc2": "30",
      "pkg3": "1234567890",
      "len3": "5",
      "cyc3": "30",
      "pkg4": "1234567890",
    "len4": "5",
      "cyc4": "30"
    }
  }
}

```

Note: The instruction will take effect immediately after it is issued.

7.4. Modify RS485 configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setRs485Config |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|--------|----------------|--|
| br | no | 115200 baud rate |
| wl | no | 8/9 data bits |
| sb | no | 1/1.5/2 stop bit |
| parity | no | NONE/ODD/EVEN parity bit |
| pkg1 | no | The string in hexadecimal not more than 32 bytes |

| | | |
|------|----|--|
| Len1 | no | Instruction length |
| cyc1 | no | Instruction cycle |
| pkg2 | no | The string in hexadecimal not more than 32 bytes |
| len2 | no | Instruction length |
| cyc2 | no | Instruction cycle |
| pkg3 | no | The string in hexadecimal not more than 32 bytes |
| len3 | no | Instruction length |
| cyc3 | no | Instruction cycle |
| pkg4 | no | The string in hexadecimal not more than 32 bytes |
| len4 | no | Instruction length |
| cyc4 | no | Instruction cycle |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setRs485ConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```
{
  "msgType": "setRs485Config",
  "data": {
    "br": "115200",
    "wl": "8",
    "sb": "1",
    "parity": "NONE",
    "pkg1": "1234567890",
    "len1": "5",
    "cyc1": "30",
    "pkg2": "1234567890",
    "len2": "5",
    "cyc2": "30",
    "pkg3": "1234567890",
    "len3": "5",
    "cyc3": "30",
```

```
        "pkg4": "1234567890",
    "len4": "5",
        "cyc4": "30"
    }
}
{
    "msgType": "setRs485ConfigAck",
    "data": "0"
}
*****
{
    "msgType": "setRs485Config",
    "data": {
        "br": "115200",
        "w1": "8",
        "sb": "1",
        "parity": "NONE",
        "pkg1": "1234567890",
        "len1": "10",
        "cyc1": "30",
        "pkg2": "1234567890",
        "len2": "10",
        "cyc2": "30",
        "pkg3": "1234567890",
        "len3": "10",
        "cyc3": "30",
        "pkg4": "1234567890",
        "len4": "10",
        "cyc4": "30"
    }
}
{
    "msgType": "setRs485ConfigAck",
    "data": "1"
}
}
```

Note: The instruction will take effect immediately after it is issued.



8.Logic

Logic includes local logic and inter-device logic, inJSONIn protocol interaction, it is divided into the following msgTypes according to different function points:

| msgType | Data trend | description |
|-------------------|------------------------|---|
| getLogicConfig | Server -> Equipment | Server reads logical configuration information |
| getLogicConfigAck | Device -> Server | Server reads the reply of logical configuration information |
| setLogicConfig | Device -> Server | Server modify logical configuration information |
| setLogicConfigAck | Server -> Equipment | Reply of the server to modify the logical configuration information |

8.1. Read logic configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|----------------|
| msgType | Yes | getLogicConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|-------------------|
| msgType | Yes | getLogicConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|--|
| rule1 | no | Parameter 1 0 close logic 1 follow forward 2 follow reverse |
| rule2 | no | 3 simulation follow 4 greater than or equal to 5 less than or equal to |
| rule3 | no | Parameter 2 0-255, logical modbus address between devices |
| rule4 | no | Parameter 3 0-65535 input register address, expressed in decimal |
| rule5 | no | Parameter 4 1 Relay output 2 Analog output |
| rule6 | no | Parameter 5 0-65535 output register address, decimal representation |
| rule7 | no | Parameter 6 1 open 2 close 3 flip relay output mode |
| rule8 | no | Parameter 7 Comparison threshold Parameter 8 output threshold |

Example:

```
{
  "msgType": "getLogicConfig",
  "data": ""
}
{
  "msgType": "getLogicConfigAck",
  "data": {
    "rule1": "0,1,0001,1,0001,1,4001,4002",
    "rule2": "0,1,0001,1,0001,1,4001,4002",
    "rule3": "0,1,0001,1,0001,1,4001,4002",
    "rule4": "0,1,0001,1,0001,1,4001,4002",
    "rule5": "0,1,0001,1,0001,1,4001,4002",
    "rule6": "0,1,0001,1,0001,1,4001,4002",
    "rule7": "0,1,0001,1,0001,1,4001,4002",
    "rule8": "0,1,0001,1,0001,1,4001,4002"
  }
}
```

Note: The instruction will take effect immediately after it is issued.

8.2. Modify logical configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setLogicConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|--|
| rule1 | no | Parameter 1 0 close logic 1 follow forward 2 follow reverse 3 simulation follow 4 greater than or equal to 5 less than or equal to Parameter 2 0-254, logical modbus address between devices Parameter 3 0-65535 input register address, expressed in decimal Parameter 4 1 Relay output 2 Analog output Parameter 5 0-65535 output register address, decimal representation Parameter 6 1 open 2 close 3 flip relay output mode Parameter 7 Comparison threshold Parameter 8 output threshold |
| rule2 | no | |
| rule3 | no | |
| rule4 | no | |
| rule5 | no | |
| rule6 | no | |
| rule7 | no | |
| rule8 | no | |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setLogicConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```
{
  "msgType": "setLogicConfig",
  "data": {
```

```
        "rule1": "0,1,0001,1,0001,1,4001,4002",
        "rule2": "0,1,0001,1,0001,1,4001,4002",
        "rule3": "0,1,0001,1,0001,1,4001,4002",
        "rule4": "0,1,0001,1,0001,1,4001,4002",
        "rule5": "0,1,0001,1,0001,1,4001,4002",
        "rule6": "0,1,0001,1,0001,1,4001,4002",
        "rule7": "0,1,0001,1,0001,1,4001,4002",
        "rule8": "0,1,0001,1,0001,1,4001,4002"
    }
}
{
    "msgType": "setLogicConfigAck",
    "data": "0"
}
```

Note: The instruction will take effect immediately after it is issued.

9. System parameters

System parameters are configured inJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|--------------------|------------------------|--|
| getDeviceConfig | Server -> Equipment | Server reads system parameter configuration information |
| getDeviceConfigAck | Device -> Server | The server reads the reply of the system parameter configuration information |
| setDeviceConfig | Device -> Server | Server modify system parameter configuration information |
| setDeviceConfigAck | Server -> Equipment | Reply of the server to modify the system parameter configuration information |

9.1. Get system parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|-----------------|
| msgType | Yes | getDeviceConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--------------------|
| msgType | Yes | getDeviceConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-----------|----------------|---|
| devAddr | no | 1-254 modbus communication address code |
| devID | no | The unique identifier of the vertical and horizontal product, the length is fixed at 16 bytes |
| devPW | no | Maximum 20 bytes, product password, used by connecting to the cloud platform |
| verion | no | 0-65535, firmware version number |
| rptDrec | no | Data reporting method, 0-65535 |
| groupMode | no | 0 off 1 on |
| groupType | no | 1(A) 2(B) |
| groupSN | no | Maximum 20 bytes, group name |
| groupPW | no | Maximum 20 bytes, group password |
| clock1 | no | Parameter 1 1 Turn on the alarm 0 Turn off the alarmbell |
| Clock2 | no | |
| Clock3 | no | Parameter 2 Time-Hour 0-23 |
| Clock4 | no | Parameter 3 time-minute 0-59 |
| Clock5 | no | Parameter 4 time-seconds 0-59 |
| Clock6 | no | Parameter 5 Action classification 1 Control DO 2 |
| Clock7 | no | Restart device |
| Clock8 | no | Parameter 6 Action body 1(DO1)...8(DO8) Parameter 7 Action content 1 open 2 close |

Example:

```

{
  "msgType": "getDeviceConfig",
  "data": ""
}
{
  "msgType": "getDeviceConfigAck",
  "data": {

```

```

    "devAddr": "1",
    "devID": "4921200723009898",
    "devPW": "123456",
    "vERSION": "1024",
    "rptDrec": "256",
    "groupMode": "0",
    "groupType": "1",
    "groupSN": "1AEQ1231313132",
    "groupPW": "123456",
    "clock1": "1,7,30,00,1,1,1",
    "clock2": "1,8,30,00,1,1,1",
    "clock3": "1,9,30,00,1,2,1",
    "clock4": "1,10,30,00,1,2,1",
    "clock5": "1,11,30,00,1,4,1",
    "clock6": "1,12,30,00,1,1,1",
    "clock7": "1,13,30,00,1,2,1",
    "clock8": "1,14,30,00,1,2,1"
  }
}

```

Note: The instruction will take effect immediately after it is issued.

9.2. Modify system parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setDeviceConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|---------|----------------|---|
| devAddr | no | 1-254 modbus communication address code |
| devID | no | The unique identifier of the vertical and horizontal product, the length is fixed at 16 bytes |
| devPW | no | Maximum 20 bytes, product password, used by connecting to the cloud platform |

| | | |
|-----------|----|--|
| verion | no | 0-65535, firmware version number |
| rptDrec | no | Data reporting method, 0-65535 |
| groupMode | no | 0 off 1 on |
| groupType | no | 1(A) 2(B) |
| groupSN | no | Maximum 20 bytes, group name |
| groupPW | no | Maximum 20 bytes, group password |
| clock1 | no | Parameter 1 1 Turn on the alarm 0 Turn off the alarmingbell |
| Clock2 | no | |
| Clock3 | no | Parameter 2 Time-Hour 0-23 |
| Clock4 | no | Parameter 3 time-minute 0-59 |
| Clock5 | no | Parameter 4 time-seconds 0-59 |
| Clock6 | no | Parameter 5 Action classification 1 Control DO 2 |
| Clock7 | no | Restart device |
| Clock8 | no | Parameter 6 Action body 1(DO1)...8(DO8) Parameter 7 Action content 1 open 2 close |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setDeviceConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```
{
  "msgType": "setDeviceConfig",
  "data": {
    "devAddr": "1",
    "devPW": "123456",
    "verion": "1024",
    "rptDrec": "256",
    "groupMode": "0",
    "groupType": "1",
    "groupSN": "1AEQ1231313132",
```



```
"groupPW": "123456",
"clock1": "1,7,30,00,1,1,1",
"clock2": "1,8,30,00,1,1,1",
"clock3": "1,9,30,00,1,2,1",
"clock4": "1,10,30,00,1,2,1",
"clock5": "1,11,30,00,1,4,1",
"clock6": "1,12,30,00,1,1,1",
"clock7": "1,13,30,00,1,2,1",
"clock8": "1,14,30,00,1,2,1"
}
}
{
  "msgType": "setDeviceConfigAck",
  "data": "0"
}
```

Note: The instruction will take effect immediately after it is issued.



10. Network basic parameters

The basic network parameters are inJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|-----------------------|---------------------|---|
| getLteNormalConfig | Server -> Equipment | Server reads LTE basic parameter information |
| getLteNormalConfigAck | Device -> Server | The server reads the reply of LTE basic parameters |
| setLteNormalConfig | Device -> Server | The server modifies LTE basic parameter information |
| setLteNormalConfigAck | Server -> Equipment | Reply from server to modify LTE basic parameters |

10.1. Read basic network parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|--------------------|
| msgType | Yes | getLteNormalConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|-----------------------|
| msgType | Yes | getLteNormalConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-------|----------------|-------------------------------|
| ccid | no | Maximum 20 bytes, card number |

| | | |
|----------|----|--|
| qcsq | no | Maximum 40 bytes, signal value |
| apnAddr | no | Maximum 44 bytes, APN, empty by default |
| apnName | no | Maximum 44 bytes, APN-NAME, empty by default |
| apnPass | no | Maximum 44 bytes, APN-PWD, default is empty |
| superCmd | no | 0 off 1 on |
| gpsEN | no | 0 off 1 on |
| gps | no | Maximum 100 bytes, GPS location information |

Example:

```
{
  {
    "msgType": "getLteNormalConfig",
    "data": ""
  }
  {
    "msgType": "getLteNormalConfigAck",
    "data": {
      "ccid": "860523354421544",
      "qcsq": "LTE,68,58,148",
      "apnAddr": "NET",
      "apnName": "",
      "apnPass": "",
      "superCmd": "0",
      "gpsEN": "0",
      "gps": "1-1-1915"
    }
  }
}
```

Note: The instruction will take effect immediately after it is issued.

10.2. Modify basic network parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|--------------------|
| msgType | Yes | setLteNormalConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|----------|----------------|--|
| ccid | no | Maximum 20 bytes, card number |
| qcsq | no | Maximum 40 bytes, signal value |
| apnAddr | no | Maximum 44 bytes, APN, empty by default |
| apnName | no | Maximum 44 bytes, APN-NAME, empty by default |
| apnPass | no | Maximum 44 bytes, APN-PWD, default is empty |
| superCmd | no | 0 off 1 on |
| gpsEN | no | 0 off 1 on |
| gps | no | Maximum 100 bytes, GPS location information |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setLteNormalConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```

{
  "msgType": "setLteNormalConfig",
  "data": {
    "apnAddr": "NET",
    "apnName": "",
    "apnPass": "",
    "superCmd": "1",
    "gpsEN": "1",
    "gps": "1-1-1915"
  }
}
{
  "msgType": "setLteNormalConfigAck",
  "data": "0"
}

```

Note: The instruction will take effect immediately after it is issued.

11.Network SOCKET parameters

The internetSOCKETParameters inJSONAccording to the different function points, the protocol interaction is divided into the following:

| msgType | Data trend | description |
|------------------------|------------------------|---|
| getLteSocket1Config | Server -> Equipment | Server read SOCKET1 configuration |
| getLteSocket1ConfigAck | Device -> Server | The server reads the reply from SOCKET1 configuration |
| setLteSocket1Config | Device -> Server | Server modify SOCKET1 configuration |
| setLteSocket1ConfigAck | Server -> Equipment | Reply from the server to modify SOCKET1 configuration |
| getLteSocket2Config | Server -> Equipment | Server read SOCKET2 configuration |
| getLteSocket2ConfigAck | Device -> Server | The server reads the reply from SOCKET2 configuration |
| setLteSocket2Config | Device -> Server | Server modify SOCKET2 configuration |
| setLteSocket2ConfigAck | Server -> Equipment | Reply from server to modify SOCKET2 configuration |
| getLteSocket3Config | Server -> Equipment | Server read SOCKET3 configuration |
| getLteSocket3ConfigAck | Device -> Server | The server reads the reply from SOCKET3 configuration |
| setLteSocket3Config | Device -> Server | Server modify SOCKET3 configuration |
| setLteSocket3ConfigAck | Server -> Equipment | Reply from the server to modify SOCKET3 configuration |
| getLteSocket4Config | Server -> Equipment | Server read SOCKET4 configuration |

| | | |
|------------------------|------------------------|---|
| getLteSocket4ConfigAck | Device -> Server | The server reads the reply from SOCKET4 configuration |
| setLteSocket4Config | Device -> Server | Server modify SOCKET4 configuration |
| setLteSocket4ConfigAck | Server -> Equipment | Reply from the server to modify SOCKET4 configuration |

11.1. Read SOCKET configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|---------------------|
| msgType | Yes | getLteSocket1Config |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|------------------------|
| msgType | Yes | getLteSocket1ConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|---------|----------------|---|
| enable | no | 0 disable 1 enable |
| mode | no | 1 TCPC 4 MQTT |
| desIp | no | Maximum 66 bytes, string |
| desPort | no | 0-65535 |
| regMode | no | 0 Close the registration package 1 Cloud forwarding 2 Custom 3ID 4CCID |
| regPos | no | 1 Connect to send 2 Data carry 3 More than two |



| | | kinds |
|---------|----|--|
| regPkg | no | Hexadecimal string, no more than 200 bytes |
| hbtMode | no | 1 enable 2 close |
| hbtCyc | no | 0-65535 Heartbeat cycle, unit S |
| hbtPkg | no | Hexadecimal string, no more than 40 bytes |

Example:

```

{
  "msgType": "getLteSocket1Config",
  "data": ""
}
{
  "msgType": "getLteSocket1ConfigAck",
  "data": {
    "enable": "1",
    "mode": "1",
    "desIp": "www.iotrouter.com",
    "desPort": "55000",
    "regMode": "1",
    "regPos": "1",
    "regPkg": "492149214921",
    "hbtMode": "1",
    "hbtCyc": "10",
    "hbtPkg": "492149214921"
  }
}

```

Note: The instruction will take effect immediately after it is issued.

11.2. Modify SOCKET configuration

Request frame format:

| Field | Do you have to | description |
|---------|----------------|---------------------|
| msgType | Yes | setLteSocket1Config |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|---------|----------------|---|
| enable | no | 0 disable 1 enable |
| mode | no | 1 TCP 4 MQTT |
| desIp | no | Maximum 66 bytes, string |
| desPort | no | 0-65535 |
| regMode | no | 0 Close the registration package 1 Cloud forwarding 2 Custom 3ID 4CCID |
| regPos | no | 1 Connect to send 2 Data carry 3 More than two kinds |
| regPkg | no | Hexadecimal string, no more than 200 bytes |
| hbtMode | no | 1 enable 2 close |
| hbtCyc | no | 0-65535 Heartbeat cycle, unit S |
| hbtPkg | no | Hexadecimal string, no more than 40 bytes |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setLteSocketIConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```
{
  "msgType": "setLteSocketIConfig",
  "data": {
    "enable": "1",
    "mode": "1",
    "desIp": "www.iotrouter.com",
    "desPort": "55000",
    "regMode": "1",
    "regPos": "2",
    "regPkg": "492149214921",
    "hbtMode": "1",
```



```
        "hbtCyc": "10",
        "hbtPkg": "492149214921"
    }
}
{
    "msgType": "setLteSocket1ConfigAck",
    "data": "0"
}
```

Note: The instruction will take effect immediately after it is issued.

12.MQTT

MQTT parameters are inJSONIn the protocol interaction, according to different function points, it is divided into the following severalmsgType:

| msgType | Data trend | description |
|---------------------|------------------------|---|
| getLteMqttConfig | Server -> Equipment | The server reads MQTT communication parameters |
| getLteMqttConfigAck | Device -> Server | The server reads the reply of MQTT communication parameters |
| setLteMqttConfig | Device -> Server | The server modifies MQTT communication parameters |
| setLteMqttConfigAck | Server -> Equipment | Reply of the server to modify the MQTT communication parameters |

12.1. Get MQTT parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | getLteMqttConfig |
| data | Yes | air |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|---------------------|
| msgType | Yes | getLteMqttConfigAck |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-----------|----------------|---------------------------|
| keepAlive | no | 30-1200 units S |
| clear | no | Currently only supports 1 |
| clientID | no | Maximum 60 bytes, string |
| userName | no | Maximum 60 bytes, string |
| passWord | no | Maximum 60 bytes, string |
| subTopic | no | Maximum 100 bytes, string |
| pubTopic | no | Maximum 100 bytes, string |

Example:

```
{
  "msgType": "getLteMqttConfig",
  "data": ""
}
{
  "msgType": "getLteMqttConfigAck",
  "data": {
    "keepAlive": "30",
    "clear": "1",
    "clientID": "sadfgiaiodjfkasdf",
    "userName": "4921190608225632",
    "passWord": "zhe19141915",
    "subTopic": "/sub/topic/121123wdqwe",
    "pubTopic": "/pub/topic/121123wsad"
  }
}
```

Note: The instruction will take effect immediately after it is issued.

12.2. Modify MQTT parameters

Request frame format:

| Field | Do you have to | description |
|---------|----------------|------------------|
| msgType | Yes | setLteMqttConfig |
| data | Yes | dataFrame format |

dataFrame format:

| Field | Do you have to | description |
|-----------|----------------|---------------------------|
| keepAlive | no | 30-1200 units S |
| clear | no | Currently only supports 1 |
| clientID | no | Maximum 60 bytes, string |
| userName | no | Maximum 60 bytes, string |
| passWord | no | Maximum 60 bytes, string |
| subTopic | no | Maximum 100 bytes, string |
| pubTopic | no | Maximum 100 bytes, string |

Response frame format:

| Field | Do you have to | description |
|---------|----------------|--|
| msgType | Yes | setLteMqttConfigAck |
| data | Yes | 0: Success 1: Parameter error 2: Field error |

Example:

```

{
  "msgType": "setLteMqttConfig",
  "data": {
    "keepAlive": "30",
    "clear": "1",
    "clientID": "sadfgiaiodjfkasdf",
    "userName": "4921190608225632",
    "passWord": "zhe19141915",
    "subTopic": "/sub/topic/121123wdqwe",
    "pubTopic": "/pub/topic/121123wsad"
  }
}
{
  "msgType": "setLteMqttConfigAck",
  "data": "0"
}

```

Note: The instruction will take effect immediately after it is issued.

