

User Manual

Product Name: Industry Edge computing gateway

Model Name: DSGW-081

Firmware Version: V1.0.0.9

Revision History

| Specification | | Sect. | Update Description | By |
|---------------|------------|-------|---------------------|-------------|
| Rev | Date | | | |
| 1.0 | 2022-12-14 | | New version release | Yanguangfei |
| 1.1 | 2023-2-2 | | Add new function | yanguangfei |
| 1.2 | 2023-2-16 | | Add can | Yan |
| | | | | |
| | | | | |

Approvals

| Organization | Name | Title | Date |
|--------------|------|-------|------|
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| Review | | | |
| Approved | | | |

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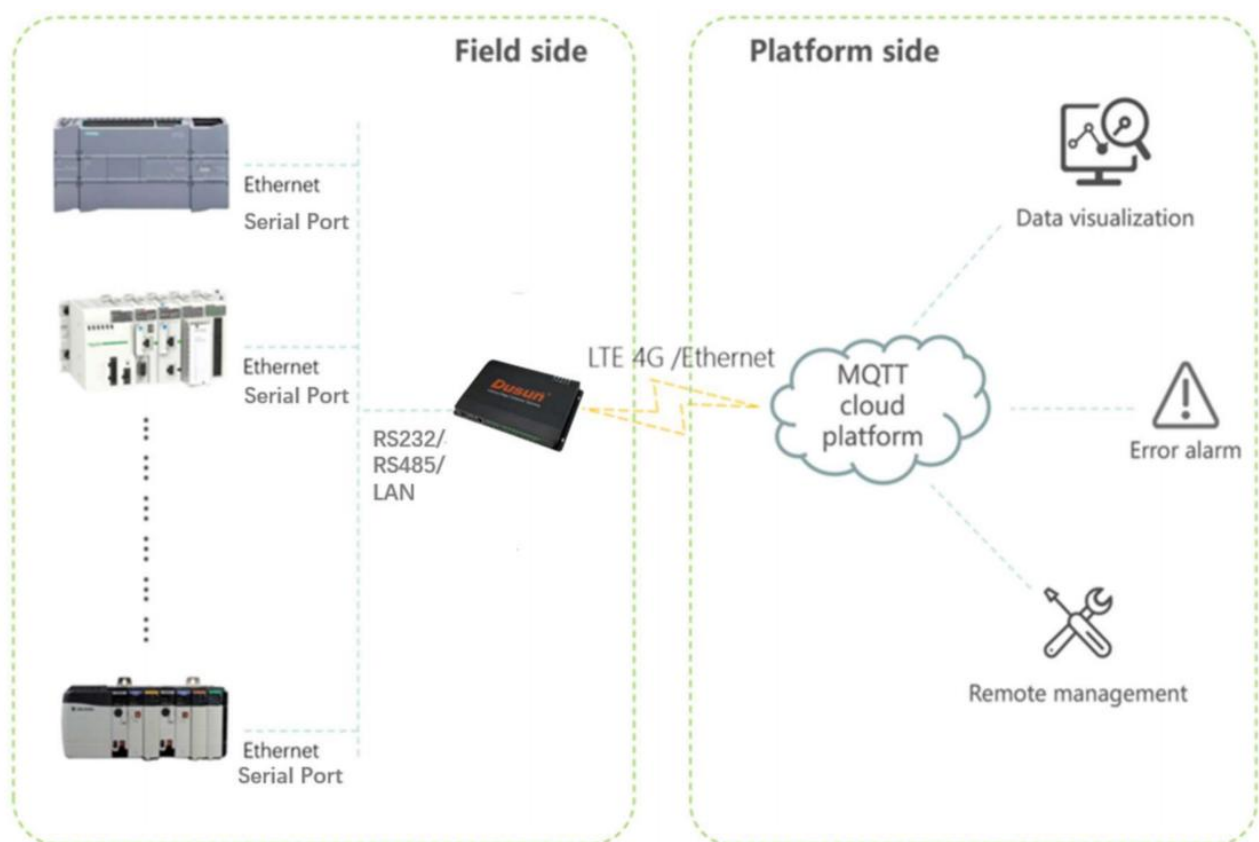
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1 Introduction

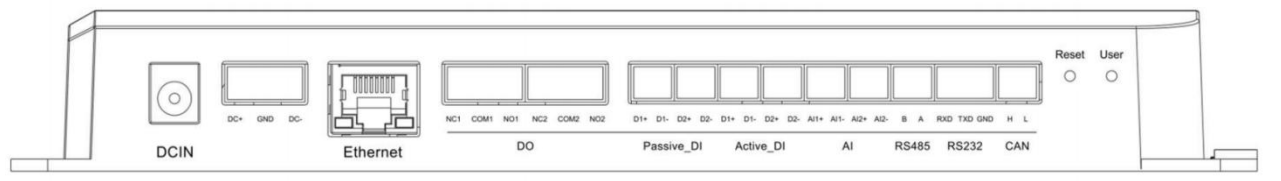
1.1 Purpose & Description

The DSGW-081 Industry Edge Computing Gateway provides uninterrupted Internet access for machines over ubiquitous 3G/4G wireless networks and multiple broadband services. with powerful edge computing capabilities, comprehensive security protection and wireless services. DSGW-081 features powerful edge computing capabilities. It realizes data optimization, real-time response, agile connection and intelligent analysis on the IoT edge, significantly reduces the data flow between field sites and data center, and avoid bottlenecks of cloud-end computing.

1.2 Hardware wiring



The following figure describes how to connect serial port terminals of DSGW-081:



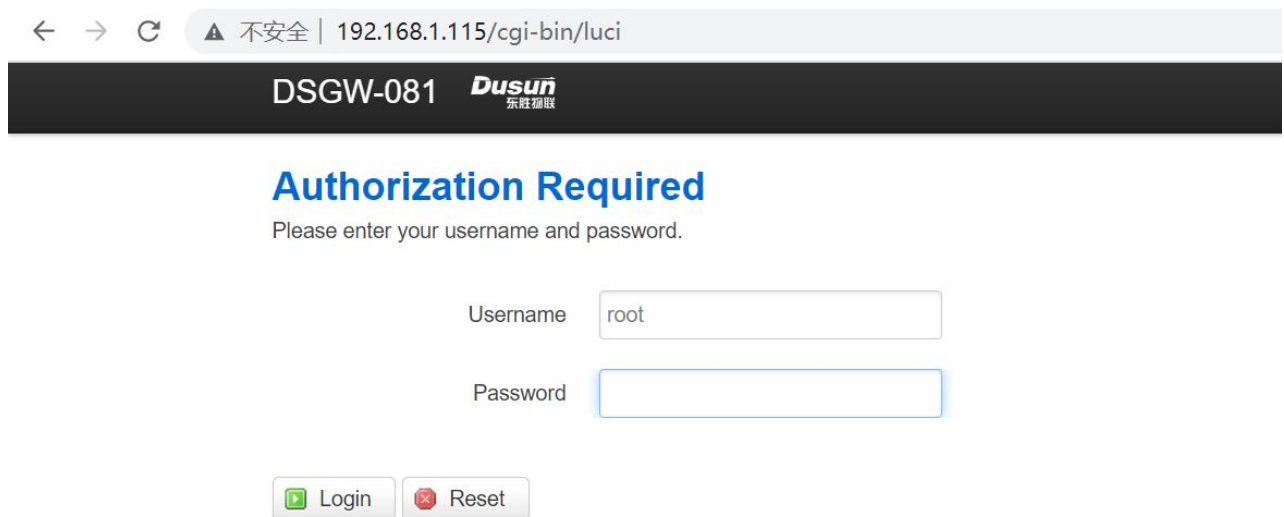
2 LUCI Configuration

2.1 Deploy the environment of configuration

- 1) Connect the gateway with a router via the Ethernet port
- 2) Connect a PC to the same router via Wi-Fi
- 3) Find out the IP address of the gateway in the router



- 4) Log in the gateway using the IP address in a browser



- 5) Enter the username and password

Username: [root](#)

Password: [root](#)

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← → ↻ ⚠ 不安全 | 192.168.1.115/cgi-bin/luci/stok=723ae9beaf38c5e95f997440c1f9556d/admin/status/overview 🔑 📄 📁 ☆ 🏠

DSGW-081  Status ▾ System ▾ Interfaces ▾ IOT Services ▾ Logout AUTO REFRESH ON

Status

System

| | |
|------------------|---------------------------------|
| Hostname | DSGW-081 |
| Model | IMX6ULL |
| Firmware Version | V1.0.0.5_zZBBE SDK / LuCI (SVN) |
| Kernel Version | 4.1.15-g3c91580-dirty |
| Local Time | Sun Mar 20 19:56:47 2022 |
| Uptime | 95 |
| Load Average | 6.216796875 |

2.2 Status

2.2.1 Overview

DSGW-081  Status ▾ System ▾ Interfaces ▾ IOT Services ▾ Logout AUTO REFRESH ON

Status

System

| | |
|------------------|---------------------------------|
| Hostname | DSGW-081 |
| Model | IMX6ULL |
| Firmware Version | V1.0.0.5_zZBBE SDK / LuCI (SVN) |
| Kernel Version | 4.1.15-g3c91580-dirty |
| Local Time | Sun Mar 20 20:26:33 2022 |
| Uptime | 1881 |
| Load Average | 2.11376953125 |

Memory

| | |
|-----------------|--------|
| Total Available | 504296 |
| Free | 252068 |
| Cached | 72672 |
| Buffered | 109840 |

In this page, you can check the status of system, memory.

System Information: Hostname, Model, Firmware Version, Kernel Version, Local Time, Uptime, Load Average.

Memory Information: Total Available, Free, Cached, Buffered.

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2.3 System

2.3.1 System

Select menu “System”--> “System”, configure the basic aspects of your device like its hostname or the timezone.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

AUTO REFRESH ON

System

Here you can configure the basic aspects of your device like its hostname or the timezone.

System Properties

General settings

Language and Style

Local Time

Sun Mar 20 20:41:42 2022

Sync with browser

Hostname

DSGW081

Timezone

UTC ▾

Save & Apply

Save

Reset

2.3.2 Administration

Select menu “System”--> “Administration”, change the administrator password for accessing the device.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

Router Password

Changes the administrator password for accessing the device

Password

Confirmation

Save & Apply

Save

Reset

2.3.3 Backup/Flash Firmware

Select menu “System”--> “Backup/Flash Firmware”, flash new firmware.

Flash operations

Actions

Flash new firmware image

Upload a sysupgrade-compatible image here to replace the running firmware. Check "Keep settings" to retain the current configuration (requires an OpenWrt compatible firmware image).

Keep settings:



Image:

选择文件

未选择任何文件

Flash image...

2.3.4 Reboot

Select menu "System"--> "Reboot", reboot the operating system of the device.

System

Reboot

Reboots the operating system of your device

[Perform reboot](#)

2.4 Interfaces

2.4.1 WAN Setting

Select menu "Interfaces" --> "WAN Setting", set the Wan Config.

Wan Network Manage

This is configure for gateway Wan Config

Ip address Get Type DHCP

Static Ip Address 192.168.10.102

Static Netmask 255.255.255.0

Static Gateway 192.168.10.1

Static Dns 192.168.10.1 8.8.8.8

Save & Apply

Save

Reset

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2.4.2 WiFi Setting

Select menu “Interfaces” --> “WiFi Setting”, config the wifi Ap/Sta.

Choose a wireless SSID, then your PC can access it through the same WiFi.

192.168.1.107 cgi-bin/luci/stok=698f099e4a7881453f83d00aefdf2e4/admin/network/wifi

DSGW-081 **Dusun** Status System Interfaces IOT Services Logout

Wifi Manage

This is configure for wifi Ap/Sta.

Wifi Interface Wlan0

Enabled

Wifi Mode

Wireless SSID

Wifi Key

2.5 IOT Services

2.5.1 Cloud Config

Select menu “IOT Services” --> “Cloud Config”.

2.5.1.1 Mqtt Config

Configure the parameter in this page to connect to a mqtt broker. Filled in the right value offered by the MQTT broker.

DSGW-081 **Dusun** Status System Interfaces IOT Services Logout

Mqtt Config **TuYa Config** Azure Config AWS Config Udp Config Tcp Config Http Config Ulp Config

ThingsBoard Config

Cloud Connection Manage

This is configure for gateway cloud connect

Connect Server & Port

Mqtt Server

Mqtt Server Port

Mqtt Login ClientId

Mqtt Login User

Mqtt Login Password

Mqtt HeartBeat

Mqtt Sub Topic

Mqtt Pub Topic

Qos

Retain

SSL Option

The gateway publishes the messages to topic ‘t’ and subscribes from topic ‘t/<mac>’.

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For example, if gateway's mac is 1a:53:43:b8:d3:db, then it subscribes from the topic 't/1a:53:43:b8:d3:db' and publishes data to topic 't'. If you need set other topic, set in this page.

2.5.1.2 TuYa Config

If the gateway is TuYa version, fill in the right UUID and Key then gateway would be able to connect to TuYa Platform.

The screenshot shows the configuration page for a DSGW-081 gateway. The top navigation bar includes 'Status', 'System', 'Interfaces', 'IOT Services', and 'Logout'. The 'IOT Services' menu is expanded, showing options like 'Mqtt Config', 'TuYa Config', 'Azure Config', 'AWS Config', 'Udp Config', 'Tcp Config', 'Http Config', and 'Utp Config'. The 'TuYa Config' option is selected. The main heading is 'TuYa UUID And Key Config', with a subtext 'This is configure for Tuya UUID And Key.' Below this, the title 'TuYa UUID And Key' is followed by the message 'This section contains no values yet'. At the bottom right, there are three buttons: 'Save & Apply', 'Save', and 'Reset'.

2.5.1.3 Azure Config

Fill in the Azure connection string obtained from the Azure platform to enable gateway's connection.

The screenshot shows the configuration page for a DSGW-081 gateway. The top navigation bar includes 'Status', 'System', 'Interfaces', 'IOT Services', and 'Logout'. The 'IOT Services' menu is expanded, showing options like 'Mqtt Config', 'TuYa Config', 'Azure Config', 'AWS Config', 'Udp Config', 'Tcp Config', 'Http Config', and 'Utp Config'. The 'Azure Config' option is selected. The main heading is 'Azure Manage', with a subtext 'This is configure for Azure Connect String'. Below this, the title 'Azure Config' is followed by a text input field labeled 'AzureConnectionString'. At the bottom right, there are three buttons: 'Save & Apply', 'Save', and 'Reset'.

2.5.1.4 AWS Config

Configure the parameters obtained by AWS platform to establish the connection.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

Mqtt ConfigTuYa ConfigAzure ConfigAWS ConfigUdp ConfigTcp ConfigHttp ConfigUtp Config

ThingsBoard Config

AWS Manage

This is configure for aws config

AWS Config

AWS Server

AWS Port

AWS ClientId

AWS Root Ca

选择文件

未选择任何文件

AWS Cert

选择文件

未选择任何文件

AWS Private Key

选择文件

未选择任何文件

AWS Subscribe Topic

AWS Publish Topic

Save & Apply

Save

Reset

2.5.1.5 Udp Config

Configure the UDP parameters to connect to UDP server.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

Mqtt ConfigTuYa ConfigAzure ConfigAWS ConfigUdp ConfigTcp ConfigHttp ConfigUtp Config

ThingsBoard Config

Udp Manage

This is configure for udp config

udp config

Udp Enable

udp disable ▾

Udp Server

192.168.100.200

Udp Port

8888

Save & Apply

Save

Reset

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2.5.1.6 Tcp Config

Config the TCP parameters to establish the TCP connection.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

[Mqtt Config](#)[TuYa Config](#)[Azure Config](#)[AWS Config](#)[Udp Config](#)[Tcp Config](#)[Http Config](#)[Utp Config](#)

[ThingsBoard Config](#)

Tcp Manage

This is configure for tcp config

tcp config

Tcp Enable

disable ▾

Tcp Server

192.168.0.5

Tcp Port

8888

Save & Apply

Save

Reset

2.5.1.7 Http Config

Config the HTTP parameters to establish the HTTP connection.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

[Mqtt Config](#)[TuYa Config](#)[Azure Config](#)[AWS Config](#)[Udp Config](#)[Tcp Config](#)[Http Config](#)[Utp Config](#)

[ThingsBoard Config](#)

Http Manage

This is configure for http config

http config

Http Enable

disable ▾

Http Post Url

http://0.0.0.0/publish

Http Get Url

http://0.0.0.0/subscribe

Save & Apply

Save

Reset

2.5.1.8 Utp Config

Config the Utp parameters to establish the Utp connection.

DSGW-081

Dusun

Status

System

Interfaces

IOT Services

Logout

Mqtt Config

TuYa Config

Azure Config

AWS Config

Udp Config

Tcp Config

Http Config

Utp Config

ThingsBoard Config

Utp Manage

This is configure for utp config

utp config

Utp Enable

utp disable

Utp Server

192.168.100.200

Utp Port

8888

Save & Apply

Save

Reset

2.5.1.9 ThingsBoard Config

Configure the parameters obtained by ThingsBoard platform to establish the connection.

DSGW-081

Dusun

Status

System

Interfaces

IOT Services

Logout

Mqtt Config

TuYa Config

Azure Config

AWS Config

Udp Config

Tcp Config

Http Config

Utp Config

ThingsBoard Config

ThingsBoard Cloud Configuration

This is configuration for thingsboard cloud connection.

ThingsBoard Configuration

ThingsBoard Server

Server Port

Access Token

Save & Apply

Save

Reset

2.5.2 Bluetooth

Select menu “IOT Services” --> “Bluetooth”

DSGW-081

Dusun

Status

System

Interfaces

IOT Services

Logout

Bluetooth filter and config

Report Setting:

Data Type: Format Data

Scan Type: 1M and Code PHY

Report Interval: 60

Config

Filter Setting:

Rssi: -101

Device mac: mac

Model String: modelstr

Config

Raw Data: rawdata

Dev Name: name

Bluetooth devices

| DeviceType | Address | Rssi | AddrType | ScanTime | Major | Minor | txPower | UUID | URL | SensorValues | Name | Connect |
|------------|-------------------|------|----------|------------|-------|-------|---------|--------------------------------------|-----|--------------|----------|---------|
| Bledevice | 7F:B6:3E:D6:A4:84 | -83 | 1 | 1647813110 | | | | | | | | - |
| Bledevice | 4C:5B:B3:0A:6F:1C | -72 | 0 | 1647813219 | | | | | | | DusunTag | Connect |
| Bledevice | 84:2E:14:F1:38:CD | -81 | 0 | 1647813213 | | | | | | | | - |
| iBeacon | AC:23:3F:A3:D4:D6 | -70 | 0 | 1647813221 | 0000 | 0000 | 197 | E2C56DB5-DFFB-48D2-B060-D0F5A71096E0 | | | | Connect |
| iBeacon | AC:23:3F:53:BD:6A | -90 | 0 | 1647813216 | 2711 | 4CB9 | 197 | FDA50693-A4E2-4FB1-AFCF-C6EB07647825 | | | MBeacon | Connect |
| Bledevice | 53:94:02:56:CC:66 | -88 | 1 | 1647813217 | | | 12 | | | | | Connect |
| Bledevice | 2E:DC:67:2E:D6:46 | -83 | 1 | 1647813221 | | | | | | | | - |
| Bledevice | 70:E3:1D:0F:E2:AF | -80 | 1 | 1647813221 | | | | | | | | Connect |

Report Setting:

* Data Type

- Format Data
- Raw Data

* Scan Type

- 1M and Code PHY
- 1M PHY
- Code PHY

* Report Interval: time gap for ble list to be reported

2.5.3 Zigbee

Select menu “IOT Services” --> “Zigbee”.

There are two ways to pair the gateway with nearby zigbee sensors, one is by Permit function, the other is Add Device button.

a) User can press the Permit button to let the nearby zigbee devices to join the network. After pressing the button, there would be 120 seconds for nearby zigbee devices to join.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

Zigbee3.0 Operation Page

This Page Can Add Zigbee3.0 Device.

Zigbee Permit

Permit:

Zigbee Device List

| MAC Address | Signal Quality | Dusun Type | Dusun Sub Type | SoftVersion | Dusun Model | ModelString | Battery | Online | value | Remove |
|-------------------------------------|----------------|------------|----------------|-------------|-------------|-------------|---------|--------|-------|--------|
| This section contains no values yet | | | | | | | | | | |

b) User can press the Add Device button and fill in the corresponding MAC address to let a specific zigbee device to join the network.

DSGW-081

Dusun

Status ▾

System ▾

Interfaces ▾

IOT Services ▾

Logout

Zigbee3.0 Operation Page

This Page Can Add Zigbee3.0 Device.

Zigbee Permit

Permit:

Zigbee Device List

| MAC Address | Signal Quality | Dusun Type | Dusun Sub Type | SoftVersion | Dusun Model | ModelString | Battery | Online | value | Remove |
|-------------------------------------|----------------|------------|----------------|-------------|-------------|-------------|---------|--------|-------|--------|
| This section contains no values yet | | | | | | | | | | |

2.5.4 LTE

Select menu “IOT Services” --> “LTE”, fill in the APN, user name and password to enable LTE function, these info can be obtained from the carrier.

DSGW-081
Dusun
Status
System
Interfaces
IOT Services
Logout

4G/3G Manage

This is configure for 4G/3G Arguments

4G/3G Config

Apn
em

Username
111

Password
1122

Save & Apply
Save
Reset

2.5.5 Industry

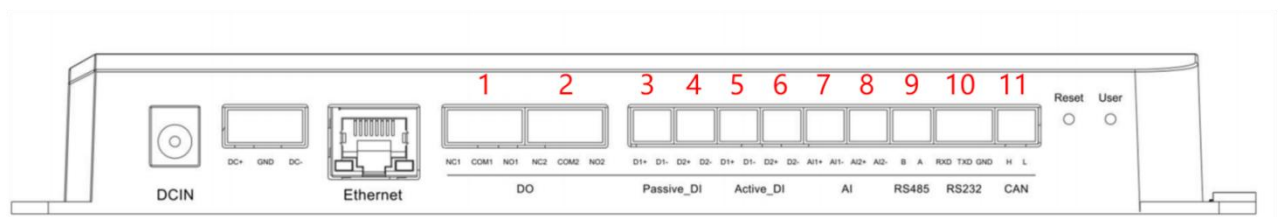
Select menu “IOT Services” --> “Industry”.

DSGW-081
Dusun
Status
System
Interfaces
IOT Services
Logout

Industry Test Page

1 Digital Output1: ☒
2 Digital Output2: ☒
3 Digital Input1: 1
4 Digital Input2: 1
5 Active Input1: 0 V
6 Active Input2: 0 V
7 Passtive Input1: 5.2 mV
8 Passtive Input2: 1.2 mV

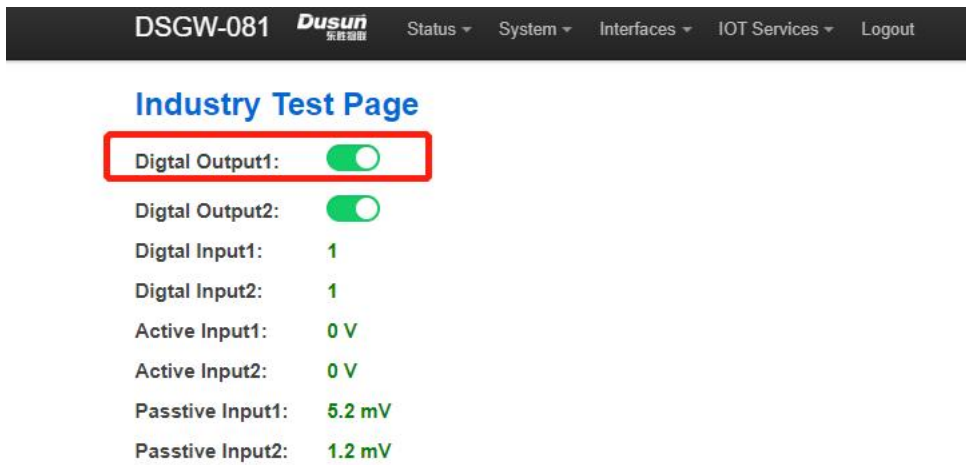
Here shows the correspondence between the web page and physical port.



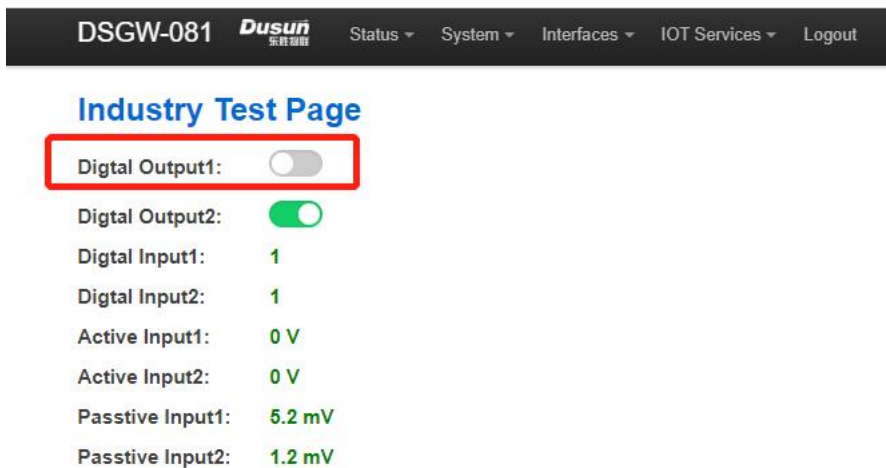
2.5.5.1 Digital Output

There are two same digital outputs, both connect to a relay. Take “Digital Output1” as an example.

* When the switch on the web page is on, the “NC1” pin would be connectable with “COM1” pin.



* When the switch on the web page is off, the “NO1” pin would be connectable with “COM1” pin.



2.5.5.2 Digital Input & Active Input & Passive Input

Shows the signal data of the corresponding port.

2.5.5.3 RS485 & RS232

* Login the OS of the gateway, config via minicom.

Username: root

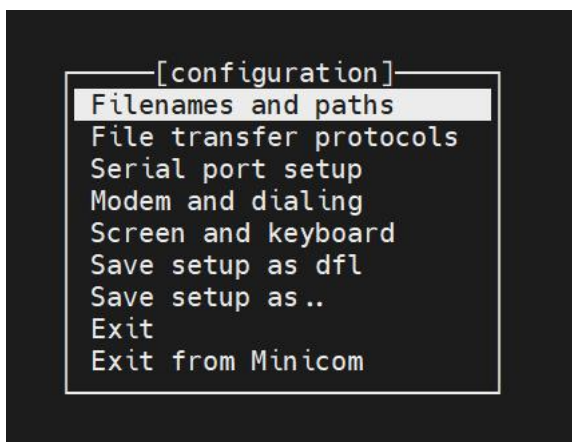
Password: root

```
15/12/2022 19:19.31 /home/mobaxterm ssh root@192.168.1.115
root@192.168.1.115's password:
Linux DSGW-081 4.1.15-g3c91580-dirty #47 SMP PREEMPT Mon Nov 7 20:04:35 CST 2022 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

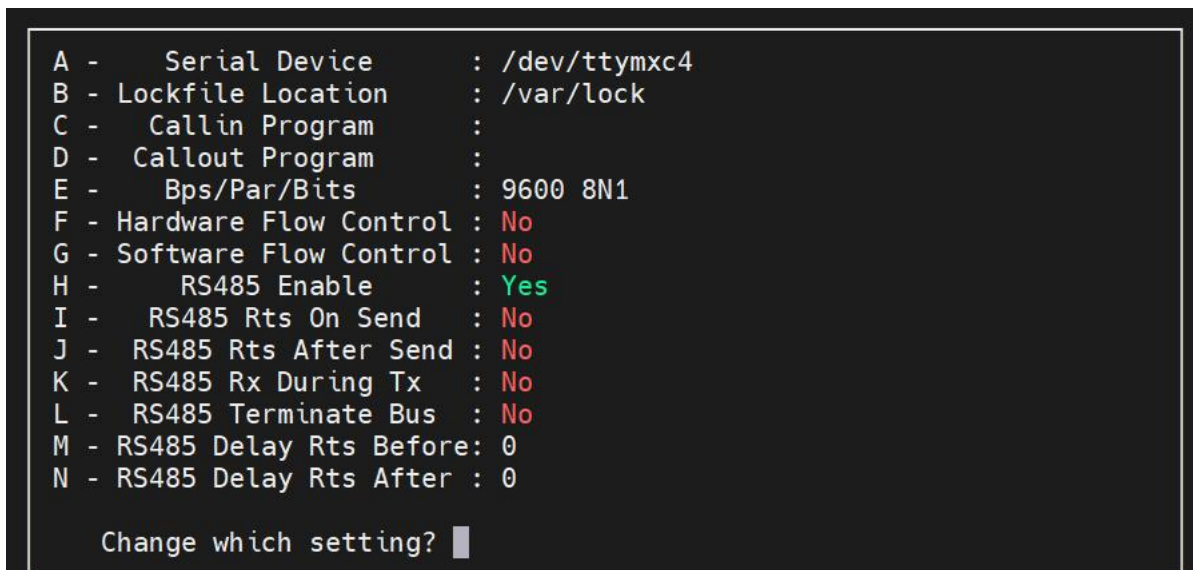
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Sun Mar 20 22:39:08 2022 from 192.168.1.108
root@DSGW-081:~# minicom -s
```

* Choose "Serial port setup".



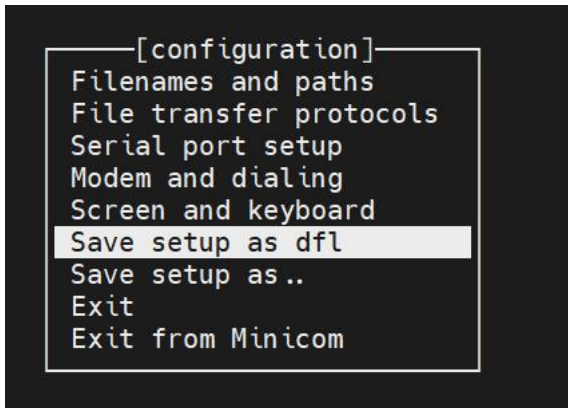
* Input "a" to change "Serial Device", input "Enter" to get out of the editor.

- RS232 /dev/ttymx3 115200bps
- RS485 /dev/ttymx4 9600bps

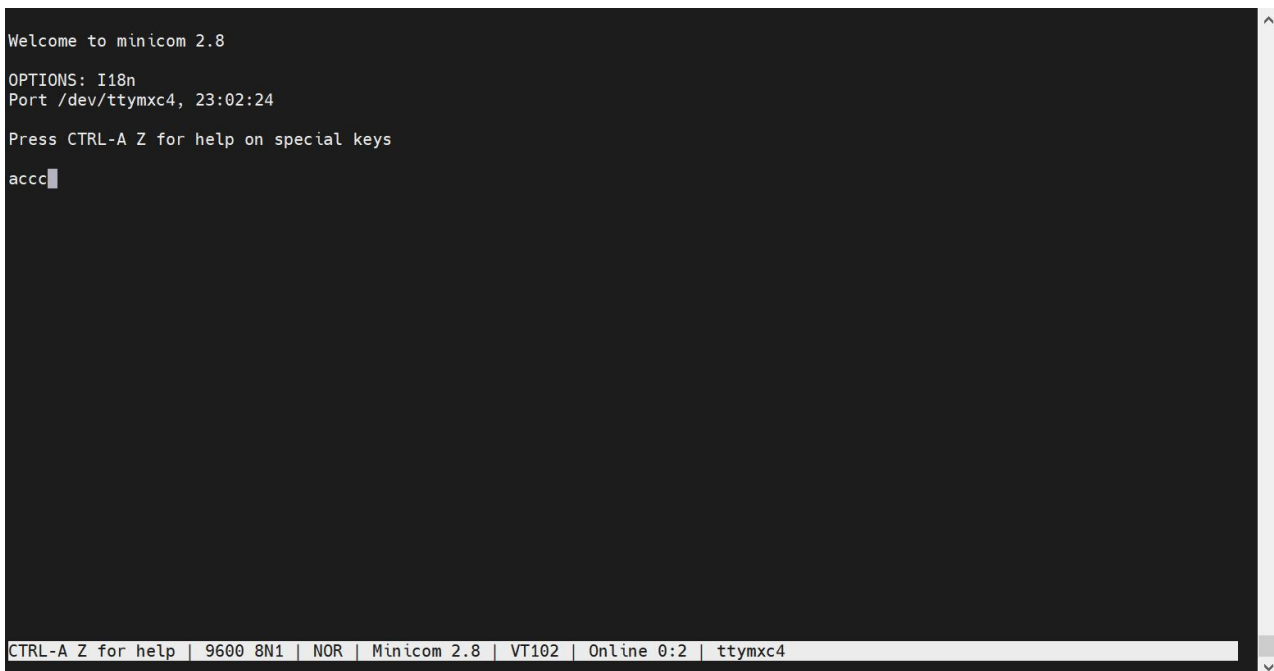


* Input "Enter" again to save changes and get back to the main menu.

Choose "Save setup as dfl".



*Now the gateway communicates with other device via serial port.



Besides, you can send data to the gateway via the serial ports on the luci page.

485(baudrate): 9600 Send Clear

select the baudrate and input the hex data to send, example data: 010203040506

232(baudrate): 9600 Send Clear

select the baudrate and input the hex data to send, example data: 010203040506

2.5.5.4 CAN

There is the interface “can0” on the gateway system, config it on the Linux system.

```
root@DSGW-081:~# ifconfig
can0: flags=193<UP,RUNNING,NOARP> mtu 16
    unspec 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00 txqueuelen 10 (UNSPEC)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1 bytes 8 (8.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 25
```

Here is an example.

```
root@DSGW-081:~# ifconfig can0 down;
root@DSGW-081:~# ip link set can0 type can bitrate 125000 loopback off;
root@DSGW-081:~# ifconfig can0 up
```

3 Development Protocol

The gateway runs ubus to control all physical ports. The followings are the protocols. Note that the data sent or received is hexadecimal under these protocols.

3.1 digital output

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675215353,
```

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```

"from": "CLOUD",
"deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
"data": {
  "command": "setAttribute",
  "arguments": {
    "mac": "30:ae:7b:e2:2e:94",
    "value": {
      "index": 1,
      "value": 1
    },
    "attribute": "ins.dout",
    "ep": 1
  },
  "id": "e30bcc6e-4c04-41bd-88a8-998f45780817"
},
"to": "INS"
}

```

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------|----------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | digital data output index |
| | | | value | integer | digital data output value: 1 / 2 |

| Name | type | description | | | |
|------|--------|------------------|--------------|-------------------------|--|
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.2 passive digital input

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675215770,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 1
      },
      "attribute": "ins.passive.din",
      "ep": 1
    },
    "id": "416eb6e4-7557-4208-b1f7-2088e7e338f0\u000a"
  },
  "to": "INS"
}
```

| Name | type | description |
|------|---------|----------------|
| mac | string | gateway mac |
| type | string | message type |
| time | integer | timestamp |
| from | string | message sender |

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------------------|--|
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | passive digital data input index : 1 / 2 |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.3 active digital input

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216074,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 0
      }
    }
  },
}
```

```
{
  "attribute": "ins.active.din",
  "ep": 1
},
{id": "68719efb-cd58-420a-a1b6-7294aadb4988\u000a"
},
"to": "INS"
}
```

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------------------|------------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | active digital input index : 0 / 1 |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.4 analog input

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216257,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "getAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 0
      },
      "attribute": "ins.ain",
      "ep": 1
    },
    "id": "c3e7960c-cf7a-4753-ba7b-3b7b0d258d94\u000a"
  },
  "to": "INS"
}
```

| Name | type | description | | |
|------------|-----------|--|--------------|-------------|
| mac | string | gateway mac | | |
| type | string | message type | | |
| time | integer | timestamp | | |
| from | string | message sender | | |
| deviceCode | string | Identification code assigned by the platform | | |
| data | | | | |
| | command | string | command type | |
| | arguments | | | |
| | | mac | string | gateway mac |
| | | value | | |

| Name | type | description | | | |
|------|--------|------------------|-----------------|-------------------------------|-------------------------------|
| | | | index | integer | analog input index : 0 / 1 |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.5 r485 configure

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216433,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 1,
        "buadrate": 9600
      },
      "attribute": "ins.r485.cfg",
      "ep": 1
    },
    "id": "9db9b842-3cc0-4d49-a24c-0bb98eb853ad\u000a"
  },
  "to": "INS"
}
```

| Name | type | description |
|------|--------|-------------|
| mac | string | gateway mac |

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------------------|-------------------------------------|
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | 485 interface index : 1 |
| | | | buadrate | integer | 485 interface buadrate: 9600/115200 |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.6 r485 data send

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216494,
```

```

"from": "CLOUD",
"deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
"data": {
  "command": "setAttribute",
  "arguments": {
    "mac": "30:ae:7b:e2:2e:94",
    "value": {
      "index": 1,
      "data": "AABB"
    },
    "attribute": "ins.r485.send",
    "ep": 1
  },
  "id": "49c4940e-8716-4d05-9bab-db6b835a627c\u000a"
},
"to": "INS"
}

```

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------|-------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | 485 interface index : 1 |
| | | | data | integer | 485 interface data : "AABBCC" |

| Name | type | description | | | |
|------|--------|------------------|--------------|-------------------------|--|
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.7 r485 data report

When there's data from gateway are transferring toward outside, the report message is automatically sent uplink, you can receive and process it.

```
{
  "from": "INS",
  "to": "GATEWAY",
  "deviceCode": "0000",
  "mac": "96:65:f3:bd:dc:e6",
  "type": "reportAttribute",
  "time": 1675225524,
  "data": {
    "attribute": "ins.r232.data",
    "mac": "96:65:f3:bd:dc:e6",
    "value": {
      "index": 1,
      "data": "AABB"
    }
  }
}
```

| Name | type | description |
|------------|---------|---------------------|
| mac | string | gateway mac |
| type | string | message type |
| time | integer | timestamp |
| from | string | message sender |
| deviceCode | string | Identification code |

| Name | type | description | | |
|------|-----------|--------------------------|----------------------|---|
| | | assigned by the platform | | |
| data | | | | |
| | mac | string | gateway mac | |
| | value | | | |
| | | index | integer | 485 interface index : 1 |
| | | data | integer | 485 interface data report : "AABBCC" |
| | attribute | string | message attribute | |
| to | string | message receiver | | |

3.8 r232 configure

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216433,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 1,
        "buadrate": 9600
      },
      "attribute": "ins.r232.cfg",
      "ep": 1
    },
    "id": "9db9b842-3cc0-4d49-a24c-0bb98eb853ad\u000a"
  },
  "to": "INS"
}
```

| Name | type | description |
|------|------|-------------|
|------|------|-------------|

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| Name | type | description | | | |
|------------|-----------|--|--------------|-------------------------|-------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | 232 interface index : 1 |
| | | | buadrate | integer | 232 interface data : "AABBCC" |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.9 r232 data send

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216494,
```

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```

"from": "CLOUD",
"deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
"data": {
  "command": "setAttribute",
  "arguments": {
    "mac": "30:ae:7b:e2:2e:94",
    "value": {
      "index": 1,
      "data": "AABB"
    },
    "attribute": "ins.r232.send",
    "ep": 1
  },
  "id": "49c4940e-8716-4d05-9bab-db6b835a627c\u000a"
},
"to": "INS"
}

```

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------|---------------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | 232 interface index : 1 |
| | | | data | string | 232 interface data to send : "AABBCC" |

| Name | type | description | | | |
|------|--------|------------------|--------------|-------------------------|--|
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.10 r232 data report

When there's data from gateway are transferring toward outside, the report message is automatically sent uplink, you can receive and process it.

```
{
  "from": "INS",
  "to": "GATEWAY",
  "deviceCode": "0000",
  "mac": "96:65:f3:bd:dc:e6",
  "type": "reportAttribute",
  "time": 1675225524,
  "data": {
    "attribute": "ins.r232.data",
    "mac": "96:65:f3:bd:dc:e6",
    "value": {
      "index": 1,
      "data": "AABB"
    }
  }
}
```

| Name | type | description |
|------|---------|----------------|
| mac | string | gateway mac |
| type | string | message type |
| time | integer | timestamp |
| from | string | message sender |

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| Name | type | description | | |
|------------|-----------|--|-------------------|-------------------------------------|
| deviceCode | string | Identification code assigned by the platform | | |
| data | | | | |
| | mac | string | gateway mac | |
| | value | | | |
| | | index | integer | 232 interface index : 1 |
| | | data | integer | 232 interface data report: "AABBCC" |
| | attribute | string | message attribute | |
| to | string | message receiver | | |

3.11 can configure

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216433,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 0,
        "buadrate": 250000
      },
      "attribute": "ins.can.cfg",
      "ep": 1
    },
    "id": "9db9b842-3cc0-4d49-a24c-0bb98eb853ad\u0000a"
  },
  "to": "INS"
}
```

}

| Name | type | description | | | |
|------------|-----------|--|--------------|-------------------------|-------------------------------|
| mac | string | gateway mac | | | |
| type | string | message type | | | |
| time | integer | timestamp | | | |
| from | string | message sender | | | |
| deviceCode | string | Identification code assigned by the platform | | | |
| data | | | | | |
| | command | string | command type | | |
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | can interface index : 0 |
| | | | buadrate | integer | can interface data : "AABBCC" |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.12 can data send

```
{
  "mac": "30:ae:7b:e2:2e:94",
  "type": "cmd",
  "time": 1675216494,
  "from": "CLOUD",
  "deviceCode": "db4a7b00-08f4-49e3-9ace-ac59ce035737",
  "data": {
    "command": "setAttribute",
    "arguments": {
      "mac": "30:ae:7b:e2:2e:94",
      "value": {
        "index": 0,
        "data": "AABB",
        "can_id": "0001"
      },
      "attribute": "ins.can.send",
      "ep": 1
    },
    "id": "49c4940e-8716-4d05-9bab-db6b835a627c\u000a"
  },
  "to": "INS"
}
```

| Name | type | description | |
|------------|---------|--|--------------|
| mac | string | gateway mac | |
| type | string | message type | |
| time | integer | timestamp | |
| from | string | message sender | |
| deviceCode | string | Identification code assigned by the platform | |
| data | | | |
| | command | string | command type |

| Name | type | description | | | |
|------|-----------|---------------------|-----------------|-------------------------------|---|
| | arguments | | | | |
| | | mac | string | gateway mac | |
| | | value | | | |
| | | | index | integer | can interface index : 0 |
| | | | data | string | can interface data to send : "AABBCC" , max 8 bytes(16 chars) |
| | | | can_id | integer | can_id to send |
| | | attribute | string | message attribute | |
| | | ep | integer | message sender endpoint | |
| | id | string | message uuid | | |
| to | string | message receiver | | | |

3.13 can data report

When there's data from gateway are transferring toward outside, the report message is automatically sent uplink, you can receive and process it.

```
{
  "from": "INS",
  "to": "GATEWAY",
  "deviceCode": "0000",
  "mac": "96:65:f3:bd:dc:e6",
  "type": "reportAttribute",
  "time": 1675225524,
```

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```
{
  "data": {
    "attribute": "ins.can.data",
    "mac": "96:65:f3:bd:dc:e6",
    "value": {
      "index": 0,
      "data": "AABB"
    }
  }
}
```

| Name | type | description | | |
|------------|-----------|--|-------------------|-------------------------------------|
| mac | string | gateway mac | | |
| type | string | message type | | |
| time | integer | timestamp | | |
| from | string | message sender | | |
| deviceCode | string | Identification code assigned by the platform | | |
| data | | | | |
| | mac | string | gateway mac | |
| | value | | | |
| | | index | integer | can interface index : 0 |
| | | data | integer | can interface data report: "AABBCC" |
| | attribute | string | message attribute | |
| to | string | message receiver | | |