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# Getting Started with AWS IOT Core Guide

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# 1   Document Information

| Revision | Date | Remark |
|---|---|---|
| v1.0 | 2020-04-025 | Initial release |

# 2   Overview

**4G LTE Industrial Router R40** *is a multi-functional IOT console with router, RTU, and DTU integration. It can be connected with IP camera, smart meter, PLC, DI switch, DO relay, AI analog and RS485/232 equipment for remote monitoring and control through 4G/Ethernet network. Supporting various VPNs, dual-SIM and wide power voltage, it's widely used in smart wireless traffic video monitoring, smart streetlight environment monitoring, outdoor power line monitoring, water environment monitoring, etc.*

# 3   Hardware Description

## 3.1   DataSheet

*https://gateway-iot.com/u_file/2105/file/2f89f46944.pdf*

## 3.2   Standard Kit Contents

*R40 packing list:*
*Router R40 \*1,*
*Power adaptor\*1,*
*GSM/3G/4G Antenna \*1,*
*2.4G WIFI Antenna \*2,*
*User Manual \*1(Softcopy),*
*Wall-mounted snap kit \* 2,*
*35mm Standard DIN rail fixed Bracket\*1.*
*Optional: GPS Antenna (If GPS function is needed)*
*Note: The package does not include any SIM card.*

## 3.3 Additional Hardware References

*https://www.iot-solution.com/4g-router-lte-router-industrial-router-p00169p1.html*

# 4 Set up your Development Environment

*R40 is based on Openwrt open source system with Openwrt SDK and compiling environment*

# 5  Set up your hardware

## 5.1  R40 Overview
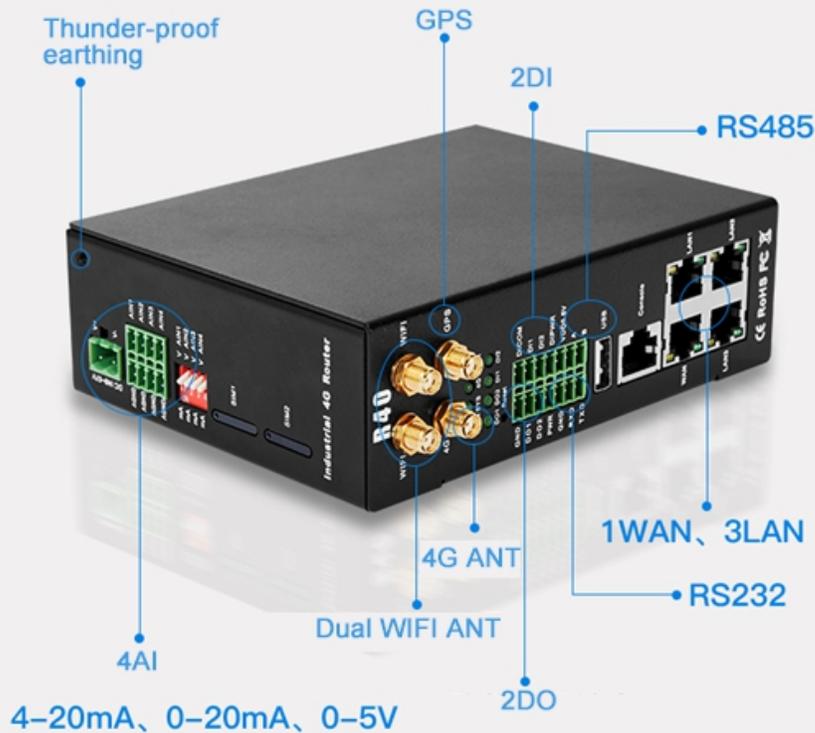


*Power Supply: 9-57V，5.08mm wiring terminal*

## 5.2 LED Definition

| LED Name | ON | OFF | Flickering |
|---|---|---|---|
| WIFI | Wifi is connectd | Wifi is not enabled | / |
| 4G | / | No 4G network | 4G is connected |
| SYS | / | System is not normally started | System is running |
| ALARM | Device has alarm | Device has no alarm | / |
| DI1 | DI1 close | DI1 open | / |
| DI2 | DI2 close | DI2 open | / |
| DO1 | DO1 close | DO1 open | / |
| DO2 | DO2 close | DO2 open | / |

## 5.3 More detailed information refer to user manual:

*https://gateway-iot.com/u_file/2105/file/68c97ce674.pdf*

# 6 Setup your AWS account and Permissions

Refer to the instructions at <u>Set up your AWS Account</u>. Follow the steps outlined in these sections to create your account and a user and get started:

- Sign up for an AWS account and
- Create a user and grant permissions.
- Open the AWS IoT console

Pay special attention to the Notes.

# 7 Create Resources in AWS IoT

Refer to the instructions at <u>Create AWS IoT Resources</u>. Follow the steps outlined in these sections to provision resources for your device:

- Create an AWS IoT Policy
- Create a thing object

Pay special attention to the Notes.

# 8 Provision the Device with credentials

*1. Connect device and enter configuration page. Select AWS Cloud in the dropdown menu of cloud platform and open ASW configuration page.*

**Cloud connection settings**

| | |
|---|---|
| Enable setting | ☑ |
| Host(EndPoint) | tin84sqmam5x4.deviceadvisor.iot.ι |
| Client ID | 402482273034 |
| Thing Name | R40 |
| Publish Topic | iot/topic |
| Publish Period(s) | 60 |
| Certificate authority | /etc/mqtt/AmazonRootCA1.pem (1.19 KB) |
| | /etc/mqtt/root.crt |
| Device certificate | /etc/mqtt/6165517a18-certificate.pem.crt (1.22 KB) |
| | /etc/mqtt/local.crt |
| Device private key | /etc/mqtt/6165517a18-private.pem.key (1.68 KB) |
| | /etc/mqtt/private.key |

Save & Apply    Save    Reset

*2. Download root Certificate Authority AmazonRootCA1.pem, Device Certificate and Device private key from ASW platform.*

*3. Load the certificates on device with following steps:*

*Click Selection files, select "etc/mqtt" content and select file xxx-certificate.pem.crt . If files are not uploaded, click Uploading files, select required certificates from local disk and click Uploading Files. Once it's uploaded, click file name and select the file. Device private key xxx-private.pem.key will be uploaded and selected with the same procedure.*

## 9  Run the demo

1. *Connect device and enter configuration page.*
2. *Select AWS Cloud from the dropdown menu of Cloud platform.*
3. *Enter ASW Cloud configuration page. Configure Public Topic, eg, "iot/topic"*
4. *Set publishing duration, defaut is 60s.*
5. *On the left side of AWS IoT Console Navigation bar, select "Test/ MQTT Test Client" and subscribe the topic configured on device, eg. "iot/topic" . Device published messages can be read from Topic box*

## 10 Debugging

1. Use RJ45 serial cable connect to R40 console port. Baud rate is 115200.
2. Enter serial page with the same user name and password of webpage configuration.
3. Use logread command to read system log.
   (From webpage configuration, just enter Status/Kernel log to read system log)

## 11 Troubleshooting

| No. | Description | Troubleshooting |
|-----|-------------|-----------------|
| 1 | 4G network can't be connected | Open configurator, enter Network/Cellulary page and check SIM Card ID. If it shows NULL，SIM card is not inserted properly. Re-insert SIM card |
| 2 | Configuration error can't be recovered and device can't be used. | Long-press Reset button on device panel to return to factory setting |