

# DEXATEK DK-9186 Wireless Module Realtek RTL8720CM Chip User Guide

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## Document Information

The DK-9186 Demo kit is based on the RTL8720CM SoC and designed for Extended IoT systems.  
Revision History (Version, Date, Description of change) V2.0 2022/06/27

## Overview

The DK-9186 is a wireless module that is built around the Realtek RTL8720CM chip. The Realtek RTL8720CM is a highly integrated single chip with a low-power consumption mechanism ideal for IoT (Internet of Things)

applications. It combines a Real-M300 CPU (up to 100MHz), Wi-Fi, Bluetooth, Wireless MAC/Baseband/RF, and configurable GPIOs that can function as digital peripherals for various product applications and control usage. The RTL8720CM's embedded memory configuration enables simpler and faster application development. It offers the following benefits:

- Complete IoT solution (low-level development, cloud services, APP)
- Support AT + application set secondary development
- Support OTA wireless upgrade
- Support Bluetooth smart networking,

## Application

- Home automation
- Sensor networks
- Building automation
- Industrial
- Retail
- Interactive entertainment devices
- Remote control
- Gaming controller

## hardware Description

### 3.1 Data Sheet

[https://www.dexatek.com/\\_files/ugd/c97cac\\_ebaee86bdb38480ca2ef28f874f0fa9d.pdf](https://www.dexatek.com/_files/ugd/c97cac_ebaee86bdb38480ca2ef28f874f0fa9d.pdf)

| DK-9186 Demo kit Spec |  |
|-----------------------|--|
| SoC                   | RTL8720CM-VA2                            |
| WLAN                  | 802.11 b/g/n 1×1, 2.4GHz + Bluetooth 4.2 |
| Antenna               | PCB Antenna                              |
| RAM                   | 256KB Internal SRAM                      |
| External flash        | 4MB                                      |
| Indicator             | Function*1(Green) System Power(Blue)     |
| Button                | Function Button *1                       |
| UART                  | UART *2                                  |
| GPIO                  | GPIO OUT*3                               |
| I2C                   | I2C*1                                    |
| Power                 | 3.3V / 5V                                |
| EVB dimension         | 75.69mm 44.83mm                          |

### 3.2 Standard Kit Contents

### 3.3 User-provided items

Micro USB Type A power adapter 5V 1A

## Setup your AWS account and Permissions

Users do NOT need to set up an AWS account, user will be using Dexatek's AWS cloud infrastructure. After a user purchases Dexatek's device, the user only needs to download the APP and sign up via the APP. All the required permissions will be granted to the user, due to the integration between AWS Cognito User Pool and Identity Pool. If the User wants/needs to set up their own environment, user will need to send an email to Dexatek ([awspartner@dexatek.com](mailto:awspartner@dexatek.com)), Dexatek's engineer will contact and support them.

## Create Resources in AWS IoT

Resources are created when pairing, these are the steps

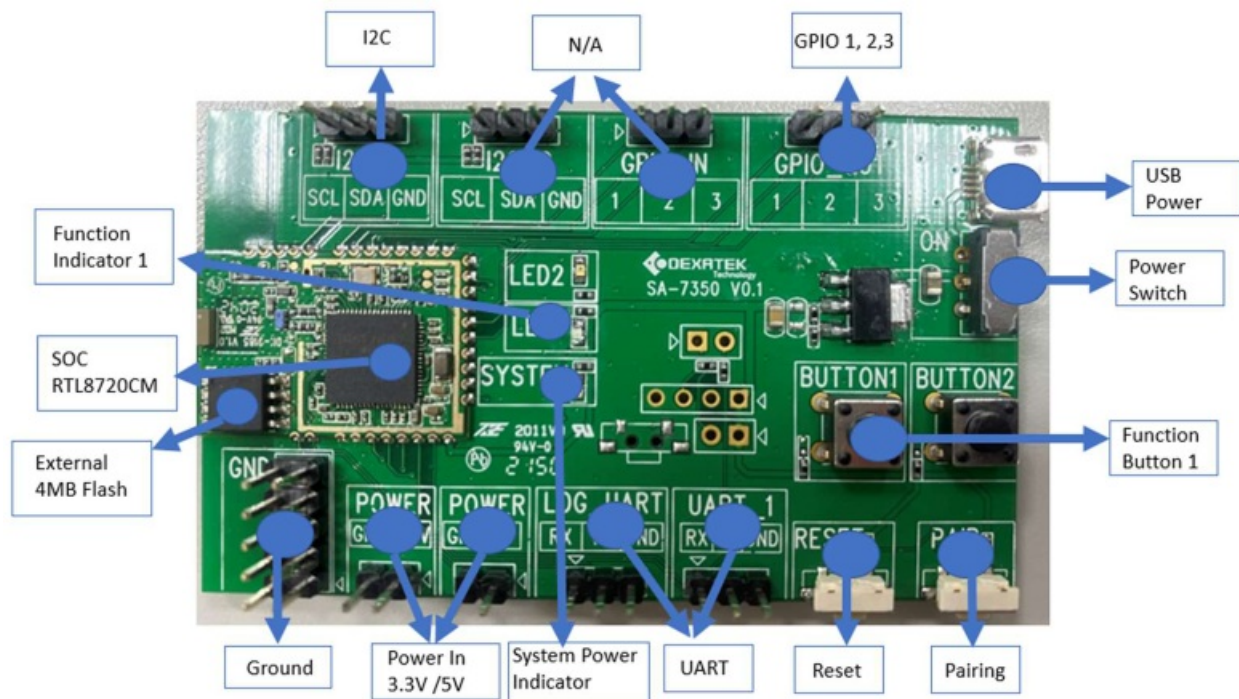
- a. User presses the reset button for 3 seconds on the device, the device becomes "pairing mode"
  - b. User turns on the "Bluetooth" of their phone,
  - c. The user opens our APP and follows the pairing wizard
  - d. Once APP receives all the information it needs, then APP sends the payload to a Dexatek-developed Lambda API called "AddDevice", developed by Dexatek, by making the HTTP POST call ("device").
  - e. The Lambda API returns an OTP (One-Time Password). Note: Most of the AWS IoT Resources are created in this step:
    - The "device" API helps to create "IoT Things", "IoT Device Shadow", and "Map to the correct thing type" and "create IoT Policy", and users don't need to create these manually.
    - The device Certificate has not yet been generated and Device has no IoT Core permission or connectivity up to this point.
  - f. APP sends the OTP to the Device via Bluetooth
  - g. The device makes an HTTP POST call to Lambda API, API named "GenerateCerts" and developed by Dexatek, OTP will be included in the payload, then Lambda API returns an AWS IoT Certificate. IoT certificate is generated in this step, "GenerateCerts" API help to create IoT Certificate, and bind the IoT Certificate to the IoT Policy.
- Users don't need to worry about the relationship between IoT Policy and IoT Certificate.
- h. Device will save the AWS IoT Certificate in the Flash, and use this credential to interact with AWS IoT Core.
- Note:** The device should have IoT connectivity by now

By doing Step a ~ h, all the required resources will be created by the Lambda API, which is developed by Dexter

## Provision the Device with Credentials

Please reference point 5d to 5h.

## Setup your hardware



1. Connect your IoT device (e.g. sensor....)
2. Plug in the USB Power
3. Turn on the power switch

## Build the demo

8.1 Download the latest version of the “**User Guide for installation of the Demo App**” at the product web page as below link. Follow the steps in the User Guide to download and install the app on the phone.  
<https://www.dexatek.com/aws-iot-core-dk9186>

## Run the demo

Go to the demo APP main page and select the interface your device is connected to

1. Select the “**I2C**” Tab to read /write I2C data
2. Select the “**GPIO**” Tab to monitor whether GPIO is High/Low status
3. Select “**UART**” Tab to read / write UART RX & TX data

## Troubleshooting

1. Check the power indicator to make sure the power supply is properly connected.
2. Use a minimum 1A current power supply to ensure sufficient power.
3. Follow point 8 to connect the device again to solve the pairing issue.
4. If the above steps do not solve the issue, please power off and double-check your device is connected to the connector.

**NOTE** – all data and credential information you provide will be stored in Dexatek’s account, and accessible to Dexter. If you have any questions or concerns, please reach out to our support team at [awspartner@dexatek.com](mailto:awspartner@dexatek.com)/ +886 2 8698 4245 #828

Documents / Resources

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| <div><br/><br/>DK9186 Demo Kit<br/>Getting Started Guide</div> | <div><a href="#">DEXATEK DK-9186 Wireless Module Realtek RTL8720CM Chip</a> [pdf] User Guide<br/>DK-9186, Wireless Module Realtek RTL8720CM Chip, Wireless Module, DK-9186, Module</div> |
|---|--|

References

- [AWS IoT Core-DK9186 | 2020-dexatek](#)