

The Qorvo IoT Dev Kit for QPG6105 provides a complete solution for building applications for connected end devices with minimum application development effort. It contains a streamlined Matter and Bluetooth Low Energy development environment, as well as example applications and several tools that make IoT development easy.



Overview

Qorvo's IoT Dev Kit for QPG6105 helps product developers bring Matter products to market in a fast and easy way.

The QPG6105 is a multi-standard Smart Home communications controller supporting Zigbee, Thread, Bluetooth Low Energy, Bluetooth Mesh and Matter connectivity enabling greater interoperability and scalability. It features ConcurrentConnect™ technology enabling multiple protocols to operate simultaneously, delivering improved capacity for the low-power standards.

Benefits

ConcurrentConnect™ technology:

- **Multi-Radio:** included in the QPG6105 HW, it enables seamless and concurrent use of Bluetooth and 802.15.4 for all use cases making it easy to build multi-standard applications that simply work without adding a complex SW configuration/time-multiplexing mechanism.
- **Multi-channel:** enable the receiver for up to 3 IEEE 802.15.4 stacks concurrently. The Development Kit supports concurrency on **3 different 802.15.4 channels**.
- **Antenna diversity:** increasing interference robustness and link budget resulting in superior RF range through preamble-based antenna diversity built in the QPG6105 hardware.

Fast time-to-market by leveraging reference applications as basis for turn-key product solutions. An application generator for Matter is included as well to easily build custom applications

Single point-of-entry for Matter development with pre-integrated Matter and Thread open-source components in the Qorvo development kit, extended with tools and application development guidelines.

Optimized hardware for Matter products by offloading SW to QPG6105 ROM to maximize application flash availability.

Certified Solution and verified Interoperability with other Matter devices and infrastructure.



Development Kit - Hardware

A development board combining QPG6105, peripherals, LEDs, buttons, power supply and a program/debug interface is available to developers for prototyping applications and validating QPG6105 performance. The Development Kit is the ideal starting point to get familiar with the QPG6105 SW and development tools.

The Development Kit consists of a QPG6105 plug-on radio board and a carrier board. The carrier board enables application development and debugging of the radio board. It contains sensors and peripherals for easy demonstration of some of the QPG6105 capabilities.

QPG6105 radio board features:

- QPG6105 SoC with 1 MB flash, 128 kB RAM
- 2 x 2.4 GHz PCB antenna for antenna diversity
- +10 dBm output power.

Main board features:

- SEGGER J-Link on-board debugger and virtual COM port
- Humidity, PIR and hall sensors
- RGB LED, user LEDs and buttons
- UART interface
- 8 Mbit low-power serial flash
- CR123 battery support
- Extension headers.



Development Kit - Software



[Qorvo Matter SDK for QPG6105](#) is available on GitHub allowing easy access. The kit brings together a combination of open-source and Qorvo SW components in a user-friendly way.

Customers do not have to bother with version dependencies across Qorvo components and open-source repositories for Matter and Thread connectivity as these are pre-integrated and pre-tested. Customers get access to the full software repository required to build Matter products.

With the Development Kit comes instructions to install the free-to-use compiler and development/debug environment. All needed tools and features are made available there for professional embedded C programming and development.

Debugging capabilities are built right into the development board with on-board support for Segger J-Link to provide fast and stable debugging capabilities.

Additional tools that Qorvo provides in this development kit:

- **OTA file generator.** This tool generates an image in the correct format to be used for over-the-air upgrades.
- **Radio Control Console.** This RF test tool allows the user to interact directly with the radio, making the tool the ideal companion for RF engineers validating performance and regulatory certification requirements for their products. Alternatively, the tool can also be used during mass production.
- **Matter Tools** are also accessible via the Qorvo Matter SDK with including links to the necessary guidelines.
 - **Matter controller tool:** tool that allows to commission a Matter device into the network and to communicate with it.
 - **ZAP:** tool to convert user-defined application configuration into example code, including clusters and application callbacks. A template application integrated with ZAP is included.
 - **Application configurator:** tool that makes it very easy to create a customized version of one of the reference Matter applications.
 - **Device Attestation:** development tool that helps generating and programming certificates into the device during development phase.
 - **Production Provisioning tooling:** tooling for provisioning the device with keys for Matter certificates enabling secure boot and device attestation in the production phase.

IoT Dev Kit for QPG6105

for Matter™ & Bluetooth® Low Energy Connected Devices

Qorvo platform specific dependencies are abstracted in a separate library. This makes it easy to develop an application independent of the underlying platform. This makes it almost zero-effort to integrate the QPG6105 in a different product that requires an update in the board specific settings.

In line with this, QPG6105 peripheral examples on FreeRTOS are provided based on this separate library. These can be used as a drop-in code in Matter applications.

As part of the development kit, high quality documentation to guide a developer from setting up a reference application, modifying example applications and making the application secure is included.

Bluetooth Low Energy Applications

A Bluetooth Low Energy certified (v5.3) controller and host stack is included in the Development Kit. Through example applications, the user learns how to access the Bluetooth stack APIs for use cases such as advertising, connecting, sending and receiving data and developing custom Bluetooth profiles and services.

The Bluetooth Low Energy peripheral application included has sleep enabled and supports Device Firmware Upgrade service. It is based on FreeRTOS and is compatible with the Qorvo Connect smartphone app.

Matter Turn-key Applications

Turn-key applications can be used as is, or with only minimal changes. All reference applications are based on FreeRTOS, can perform over-the-air firmware updates and use secure boot to load only authenticated images. They demonstrate a QPG6105 Matter device with Thread connectivity, using Bluetooth Low Energy to perform Matter commissioning.

Provided reference applications are:



Color and dimmable light bulb



Lock



Thermostatic radiator valve



Color dimmer light switch

The **Qorvo IoT Dev Kit for QPG6105** is a one stop shop for Matter and Bluetooth Low Energy product developers and makes Matter product development easy.



IoT Dev Kit for QPG6105

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Ordering Information

Part Number	Packing / Qty	Description	Box Dimensions
QPG6105DK-01	1 Kit	IoT Dev Kit for QPG6105 – Matter & Bluetooth Low Energy Connected Devices	12" x 9" x 3"

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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