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# conga-QKIT/IoT

Starter Kit for congatec Qseven IoT Gateway Development



## Quick Start Guide

Revision 1.3

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## Preface

This quick start guide provides information on the contents of the conga-QKIT/loT kit and how to download and install the Intel® IoT Gateway Software Suite for evaluation or the Intel® IoT Gateway Software Suite for deployment. It is one of three documents that should be referred to when designing an IoT based application for the conga-QKIT/loT. The other reference documents are:

- Intel's IoT Design Guide
- Wind River Intelligent Device Platform XT

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# 1 Introduction

This section describes the features and interfaces of the congatec IoT hardware kit and how to set it up.

## 1.1 conga-QKIT/IoT

The conga-QKIT/IoT, a congatec Qseven IoT Development KIT, provides manufacturers and developers with a standardized platform for creating interoperable products that can discover, connect and communicate directly with other devices, systems and services in an intelligent way, regardless of brand. With the integration of the WindRiver IDP XT, the conga-QKIT/IoT provides outstanding software for the development and deployment of safe, secure and reliable intelligent devices.

The conga-QKIT/IoT contains amongst other components, the conga-QA3/E3827 module and a fully featured Qseven IoT carrier board. The conga-QA3/E3827 module features the Intel® Atom™ E3827 dual core processor with 1.75 GHz frequency, high definition graphics, 2GB dual channel DDR3L-1333 memory and onboard 4GB eMMC.

With maximum 8W TDP processor, the conga-QKIT/IoT offers an Ultra Low Power board with high computing performance and outstanding graphics.

## 1.2 Product Overview

The conga-QKIT/IoT - a congatec Qseven IoT Development Kit consists of:

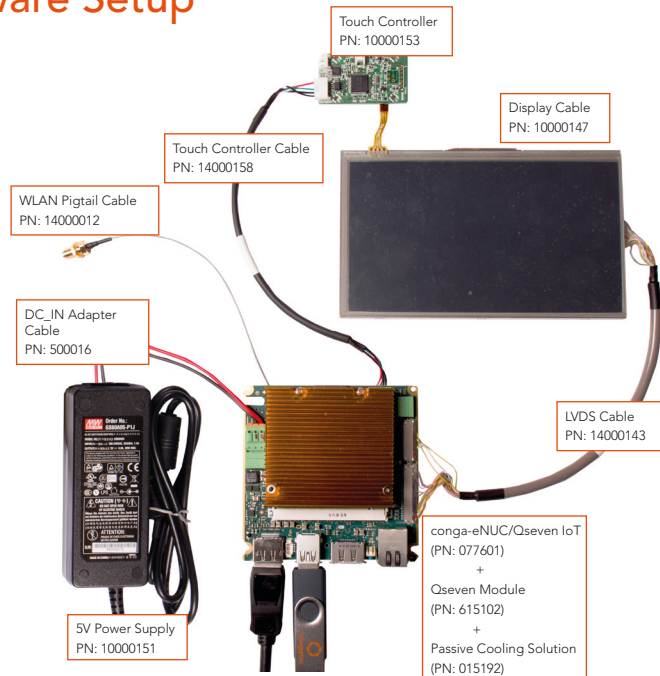
- congatec's conga-QA3/E3827 module with suitable heatsreader
- Full featured Qseven IoT carrier board
- 7" TFT touch display
- Mini PCIe WLAN card and WLAN antenna with cable
- USB touch controller
- 5V Power supply
- USB stick pre-installed with Intel's IoT Software Gateway image
- Set of cables for adequate setup



## 1.3 Kit Contents

PN. No	Name	Description	Qty
077600	conga-QKIT/IoT	IoT Kit based on Intel® Atom™ E3827 processor. Supports Windriver IDP and build OS	
077601	conga-eNUC/Qseven IoT	Evaluation board for QSeven IoT modules	1
015101	conga-QA3/E3827	Qseven module with Intel® Atom™ processor, 2GB dual channel memory and 4GB eMMC flash	1
015192	conga-QA3/CSP-T	Standard conga-QA3 passive cooling	1
10000148	WLAN mini-PCIe card	Intel® 7260.HMWG (WiFi, Bluetooth)	1
10000149	WLAN Antenna	802.11ac/a/b/g/n 2 dBi Omnidirectional Joint	2
10000151	QKIT/IoT Power Supply	30W, 5V@6A Power supply. (C13 power cord not included)	1
10000153	Touch Controller TSC-34/RU-F	Touch controller board for the 7" TFT Display	1
14000012	WLAN pigtail cable	20cm RP-SMA WLAN pigtail cable	2
14000139	cab-eSATAp to 22pin 2.5" SATA	Cable with powered eSATA connector on one end and SATA connector on the other end	1
14000140	cab-QKIT/IoT DC-IN	160mm DC-IN adapter cable for QKIT/IoT	1
14000143	cab-QKIT/IoT LVDS	conga-QKIT/IoT LVDS cable. Used for ATM0700L6E display (7" TFT display)	1
14000158	cab-QKIT/IoT TSC-34/RU	conga-QKIT/IoT USB touch controller cable	1
14000159	QKIT/IoT Cable Set (Optional)	Cable set. Contains USB and audio cables	N.A
10000147	LCD Panel	7" TFT 800x480 display with resistive touch	1
10000113	congatec USB Stick	8 GB USB stick with pre-installed IoT OS image	1
	Quick Start Guide	conga-QKIT/IoT Quick Start Guide	

## 1.4 Hardware Setup

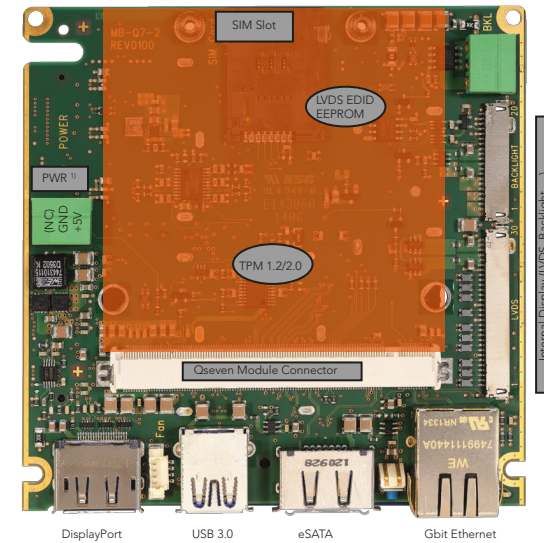


### Steps:

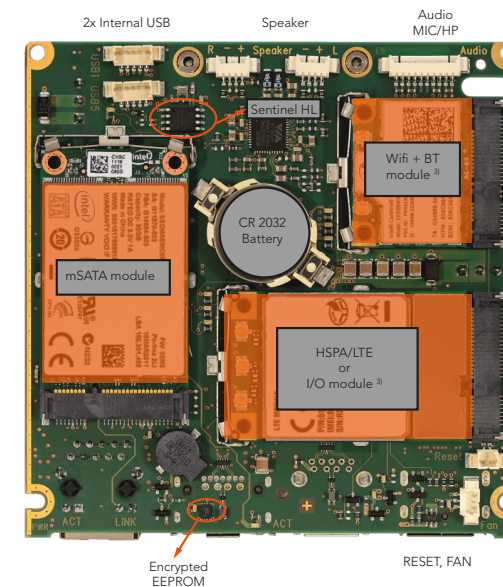
1. Install the congatec passive cooling solution or an appropriate conga-QA3 cooling solution.
2. Attach the conga-QA3 Qseven module with congatec passive cooler to the conga-eNUC/Qseven IoT evaluation board.
3. Connect the twin connector end of the LVDS cable to the evaluation board (LVDS & backlight) and the single connector end to the display panel.
4. Connect one end of the touch controller cable to the USB header on the evaluation board (bottom side) and the other end to the display panel.
5. Connect other required peripherals.
6. Plug in one end of the DC\_IN adapter cable to the 5V power supply. To power on the system, plug in the other end of the DC\_IN adapter cable to the evaluation board.

## 1.5 Interfaces and Functionality Overview

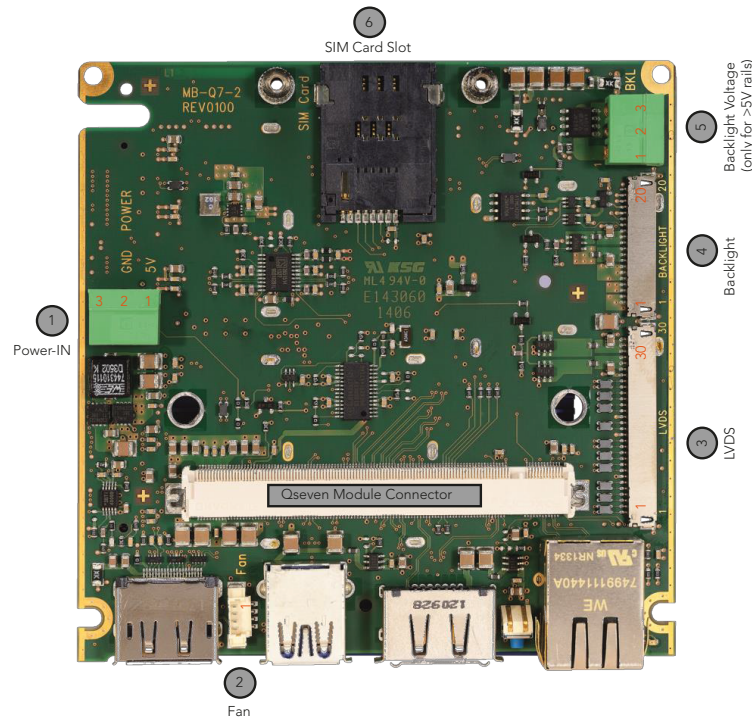
### Top Side



### Bottom Side



## 1.5.1 Internal Interfaces (Top Side)



### 1 Power-IN 5V Single Supply

1	VCC5V
2	DGND
3	Not connected

MC1.5/3-G-3.5 Phoenix

- Reverse voltage protection is implemented.
- Fuse and line filter have to be implemented externally.

Use Phoenix FMC1.5/3-ST-3.5 to connect power cord.

Connection method: Spring-cage connection.

### 2 Fan (temp. controlled)

1	DGND
2	VCC5V
3	TACHO_IN (10 PU)
4	PWM_OUT (5V)

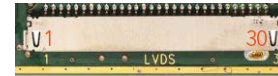
53398-0471 Molex

#### Note

Pin 3 has internal 10k PU to VCC3V3.

Only one fan connector (top or bottom) at a time can be used.

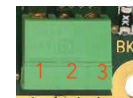
### 3 LVDS (out)



1	LVDS_A0-	16	LVDS_B1+
2	LVDS_A0+	17	DGND
3	LVDS_A1-	18	LVDS_B2-
4	LVDS_A1+	19	LVDS_B2+
5	LVDS_A2-	20	LVDS_BCLK-
6	LVDS_A2+	21	LVDS_BCLK+
7	DGND	22	LVDS_B3-
8	LVDS_ACLK-	23	LVDS_B3+
9	LVDS_ACLK+	24	DGND
10	LVDS_A3-	25	VCC5 (5V)
11	LVDS_A3+	26	VCC5 (5V)
12	LVDS_B0-	27	VCC5 (5V)
13	LVDS_B0+	28	VCC5 (3.3V)
14	DGND	29	VCC5 (3.3V)
15	LVDS_B1-	30	VCC5 (3.3V)

DF19G-30P-1H Hirose (max. 1A/pin with AWG28)

### 5 Backlight (for non 5V)



1	Ext. Backlight_VCC IN (max 12V)
2	DGND
3	Ext. Backlight_VCC switched

#### Note

Use only if Backlight\_VCC cannot be driven from internal VCC5V (max. input 12V/5A).

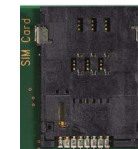
### 4 Backlight (out)



1	Always on
2	Ext. Backlight_VCC
3	Switched
4	Ext. Backlight_VCC
5	
6	DGND
7	
8	
9	Always on
10	Int. Backlight_VCC5V
11	
12	Switched
13	Int. Backlight_VCC5V
14	BL_Enable (ONN/OFF#) (3.3V)
15	BL DIMM Control (PWM) (3.3V)
16	DGND
17	
18	Do not connect
19	Reserved (Programming Interface)
20	

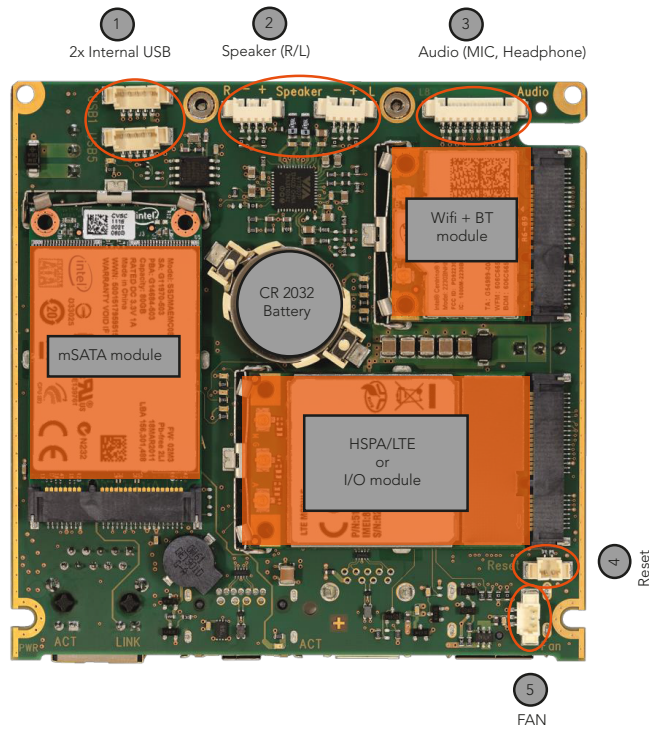
DF19G-20P-1H Hirose (max. 1A/pin with AWG28)

### 6 SIM Card Slot

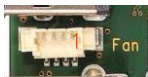


Signals are connected to mini PCIe full size socket (contacts on top side).

## 1.5.2 Internal Interfaces (Bottom Side)



### 1 FAN (Temp. Controlled)



1	DGND
2	VCC_FAN (5V, PWM)
3	TACHO_IN (10K PU)

53398-0371 Molex



Pin 3 has internal 10k Pull-Up to VCC3V3.

### 2 Reset



1	RST#
2	DGND

53398-0371 Molex

### 3 Audio (MIC, Headphone)



1	AGND
2	HP_OUT Left
3	HP_OUT Right
4	AGND
5	SENSE_HP_OUT# (HP active when pin 5 is connected to AGND)
6	SENSE_MIC# (MIC active when pin 6 is connected to AGND)
7	AGND
8	MIC_Left (MIC_MONO)
9	MIC_Right
10	AGND

53261-1071 Molex

### 5 2x Internal USB



1	VUSB (5V, max. 1A)
2	USB_N
3	USB_P
4	DGND
5	DGND

2x 53398-0571 Molex



USB 5 is not available if Sentinel HL Security Controller is assembled.

### 4 Speaker (Left/Right)



1	OUT+
2	
3	OUT-
4	

2x 53261-0471 Molex



4 or 8 Ohms and 2W max. output Power.

## Documentation

Documentation and useful resources for conga-QA3 are located here:

[www.congatec.com/conga-qa3](http://www.congatec.com/conga-qa3)

## Drivers

The drivers are located in the restricted area of the congatec website.

To download the drivers, you must register. Contact your local congatec sales representative if you require assistance.

## 2 Software

The conga-QKIT/IoT kit contains a congatec USB stick, pre-installed with Intel® IoT Gateway Software Suite OS image. This software suite provides a quick and easy way to evaluate and develop applications for the conga-QKIT/IoT kit.

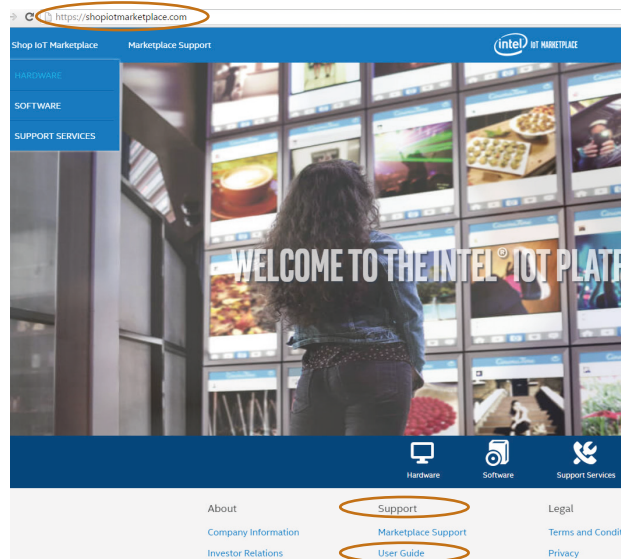
### Note

The Intel® IoT Gateway Software Suite is available at no cost, and is for evaluation/development purposes only. Some features on the conga-QKIT/ IoT kit may not work with this suite.

To access all the features on the conga-QKIT/ IoT kit or develop an application for commercial deployment, purchase the Intel® IoT Gateway Pro Pilot Software Suite. For more information, contact congatec support team.

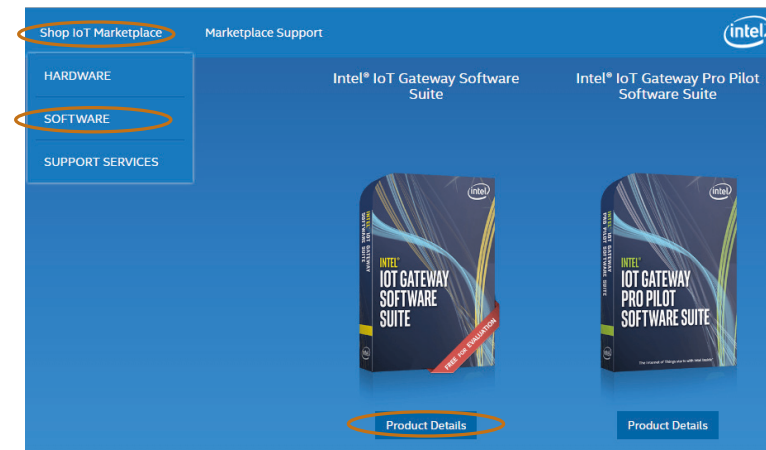
### 2.1 Download Intel® IoT Gateway Software

1. Open the Intel® IoT Marketplace in your browser: <https://shopiotmarketplace.com>.
2. Scroll down to the section "support" and click **User Guide**. The Intel® IoT Platform Marketplace User Guide opens.
3. Follow the instructions in the User Guide to download the Intel® IoT Gateway Software Suites (evaluation or deployment version).



### 2.2 Intel® IoT Gateway Documentation

1. Open the Intel® IoT Marketplace in your browser: <https://shopiotmarketplace.com>.
2. Click **Shop IoT Marketplace**. A drop-down menu appears. Click **SOFTWARE**.
3. Under Intel® IoT Gateway Software Suite, click **Product Details**.
4. Scroll down to the section "Technical Documentation" and click **Intel IoT Gateways with Wind River Linux**. The links for the technical documentation and resources appears.



### 2.3 Explore Intel® IoT Gateway Developer Hub

The Intel® IoT Gateway Software Suite pre-installed on the congatec USB stick contains the Intel® IoT Gateway Developer Hub.

The Intel® IoT Gateway Developer Hub makes it possible to develop on the gateway, without the need of a development computer to recompile a new OS and application image.



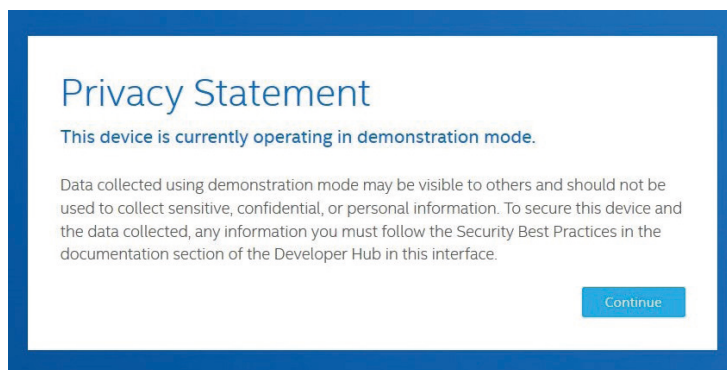
The Intel® IoT Gateway Developer Hub includes:

- An intuitive graphical user interface
- A third-party software package manager for the gateway
- Software tools for connecting sensors to the gateway and for sharing data to the cloud

Once your application is running on the gateway, you can create a secure runtime image, save the image onto a USB flash drive and install it onto other gateways for testing or trial deployment.

## 2.3.1 Connect to the Intel® IoT Gateway Developer Hub

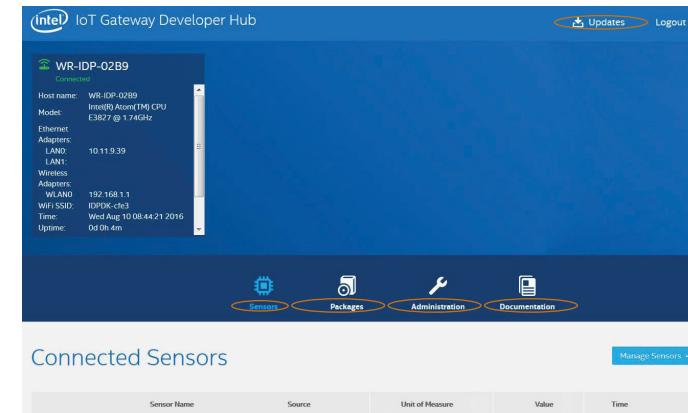
1. Set-up the conga-Qkit/loT (see section 1.4), attach the congatec USB stick and turn on the conga-Qkit/loT
2. Connect a development computer to the conga-Qkit/loT via wifi:
  - Open OS Wireless Network Connection window, double-click the SSID: IDPDK-xxxx where xxxx is the last four digits of the conga-Qkit/loT's Wi-fi MAC address.
  - Use `windrivertdp` for the Wi-Fi security password
3. Open an internet browser on the development computer and enter this IP address: `http://192.168.1.1`
4. The Privacy Statement appears. Click **continue**.



5. Login using `gwuser` for both the username and password. Click **Go** to continue.



6. The Licence Agreement page appears. Review the licence terms before proceeding. Click **Agree** to continue.
7. The Intel® IoT Gateway Developer Hub appears.



## 2.4 Software Limitations

The congatec bootable USB stick is pre-installed with the Intel® IoT Gateway Software Suite, for evaluation and as a proof of concept only. With this software suite, some conga-QKIT/loT features may not function. These features are listed below:

- Camera interface
- Watchdog
- TPM
- Touch controller



### Note

*These limitations do not exist with the Intel® IoT Pro Pilot Software Suite. Therefore, purchase the Intel® IoT Gateway Pro Pilot Software Suite to access all the features on the conga-QKIT/loT kit or develop an application for commercial deployment.*