UM11521

RDK01DB1563 getting started

Rev. 1 — 19 November 2020 User manual

Document information

Information	Content
Keywords	RDK01DB1563, website, getting started
Abstract	This document provides the content for the getting started webpages for the TEA2016 development kit RDK01DB1563. Each chapter in this document provides the content of a chapter on the get started webpage.

Revision history

Rev	Date	Description
v.1	20201119	Initial version

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1 Introduction

This user manual provides the content for the getting started webpages for the TEA2016 development kit RDK01DB1563. Each chapter in this document provides the content of a chapter on the get started webpage.

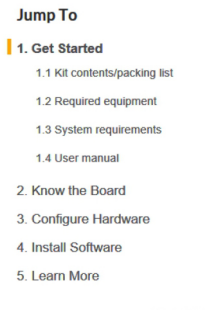

Figure 1. Example of chapters on an existing get started webpage

2 Get started

2.1 Kit content

Figure 2. Kit content

- TEA2016DB1514v2 USB-I^{2}C interface board
- USB, 3-pin, and 6-pin connection cables

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2.2 Required equipment

- TEA2016DB1561 programming board, TEA2016DB1519v2 demo board (available in RDK01DB1561 or RDK01DB1562 kit), or a power supply using a TEA2016AATdev IC to connect the IC to a PC
- Windows PC and USB for parameter modifications via software and interface

2.3 System requirements

- PC with a Microsoft Windows operating system
  Software tested for Windows 7 and Windows 10. However, it also works on Windows XP, Windows Vista, and Windows 8.
- 64-bit and 32-bit versions of Ringo software available for download

2.4 User manuals

- TEA2016DB1514 USB to I^2C hardware interface user manual
- Ringo TEA2016 development software with GUI user manual
- The Ringo software package contains documents, videos and tools.

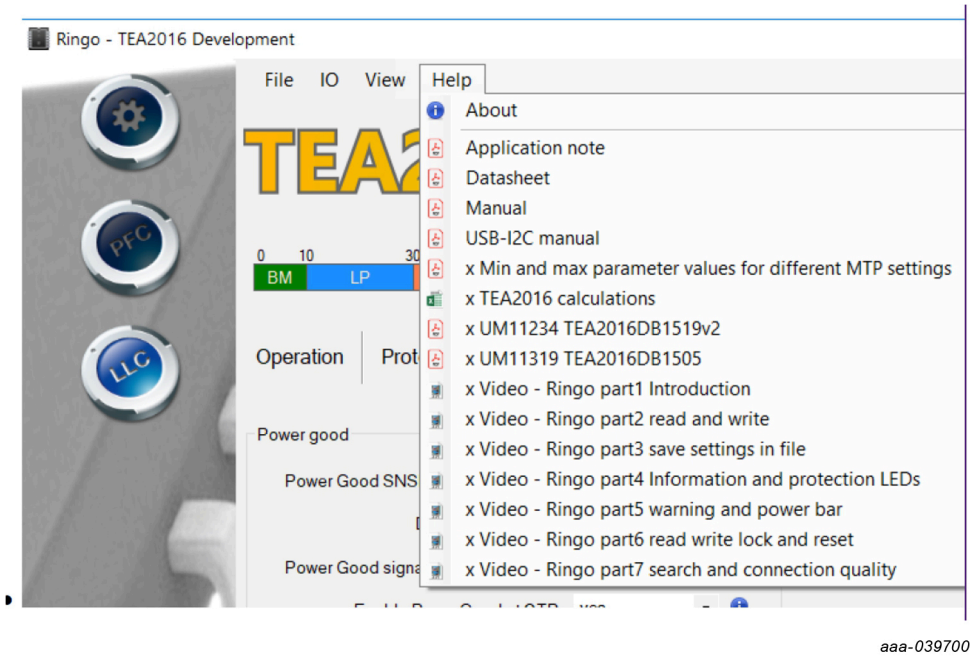

Figure 3. Ringo Help menu

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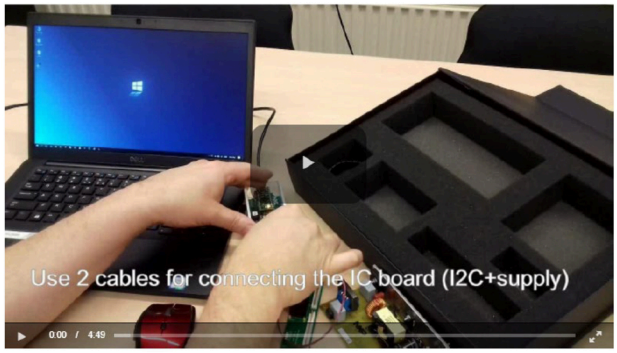
2.5 Get started videos

- Connecting the setup
- Installing the USB driver manually
- Start working with Ringo



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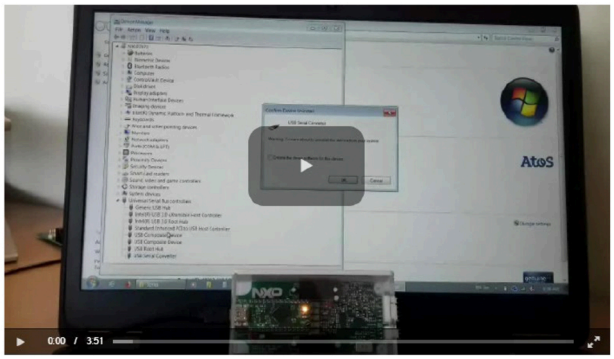

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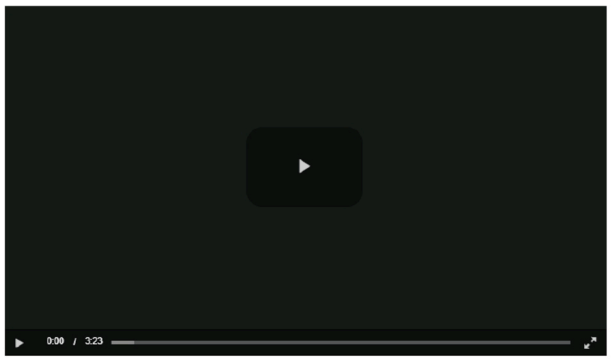

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Figure 4. Get started videos

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3 The boards

3.1 Interface board

The TEA2016DB1514 interface board is a development tool that enables setting TEA2016 controller parameters from a computer. The available Ringo TEA2016 development software provides a graphical user interface (GUI) that can be installed on a computer.

The interface and software are intended for engineering work in lab environment as part of power supply development. It is not suitable for use for consumer or industrial purposes.

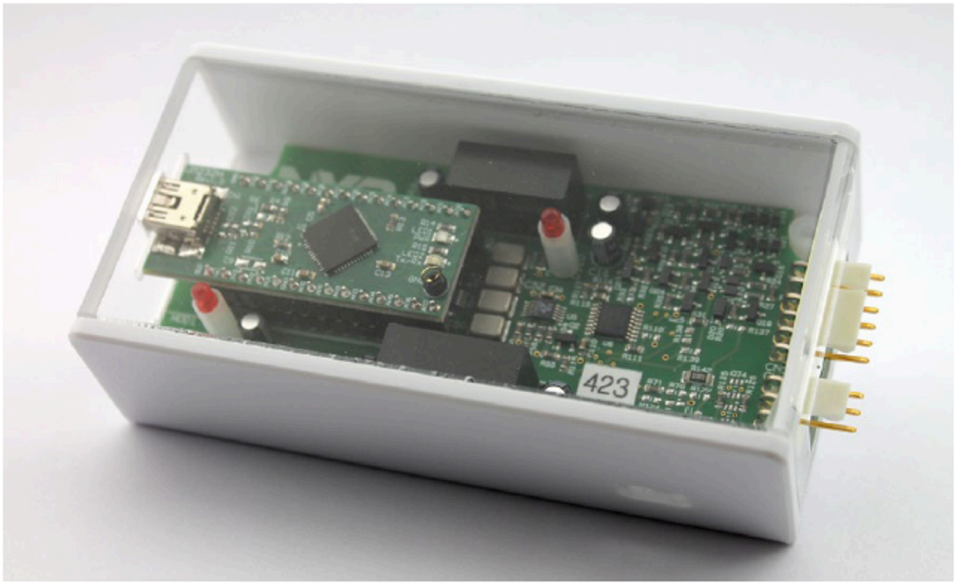

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Figure 5. Interface board

A user manual with detailed information is available for download and included in Ringo.

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4 Software

4.1 Installing the software

1. Copy the zip file from the USB stick or download it to a folder on your computer. The x64 is for 64-bit operating systems. The x86 is for 32-bit operating systems.
2. Unzip the file.

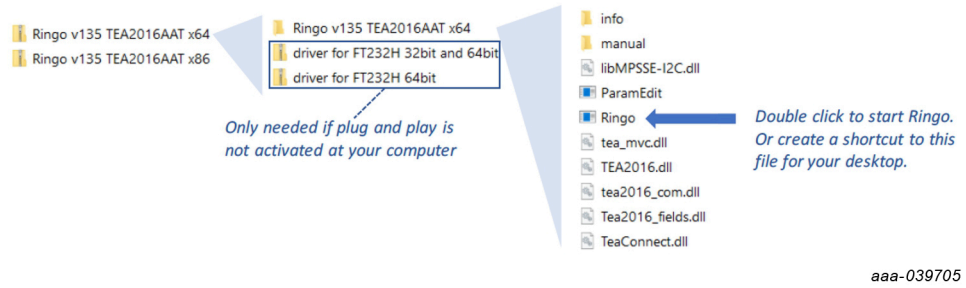

Figure 6. Copying the software files to your computer

For the Ringo software to work, the FT232H driver for the USB-I^{2}C interface must be installed. When the interface is connected via USB for the first time, this installation happens automatically. If the driver is not installed automatically, use the included drivers to install it manually (a video on the get started page shows how to install the driver manually).

Note: *When the FT232H driver is not installed, the Ringo software does not work.*

The Ringo program does not require installation. Double-clicking Ringo.exe, starts the software. Keep the other files and folders in the same directory because Ringo uses them.

4.2 User manual and tutorial videos for the Ringo software

To get familiar with using the software and getting to know the functions that are available, user manuals and videos are included in the Ringo GUI software. They can be accessed easily from the Ringo GUI.

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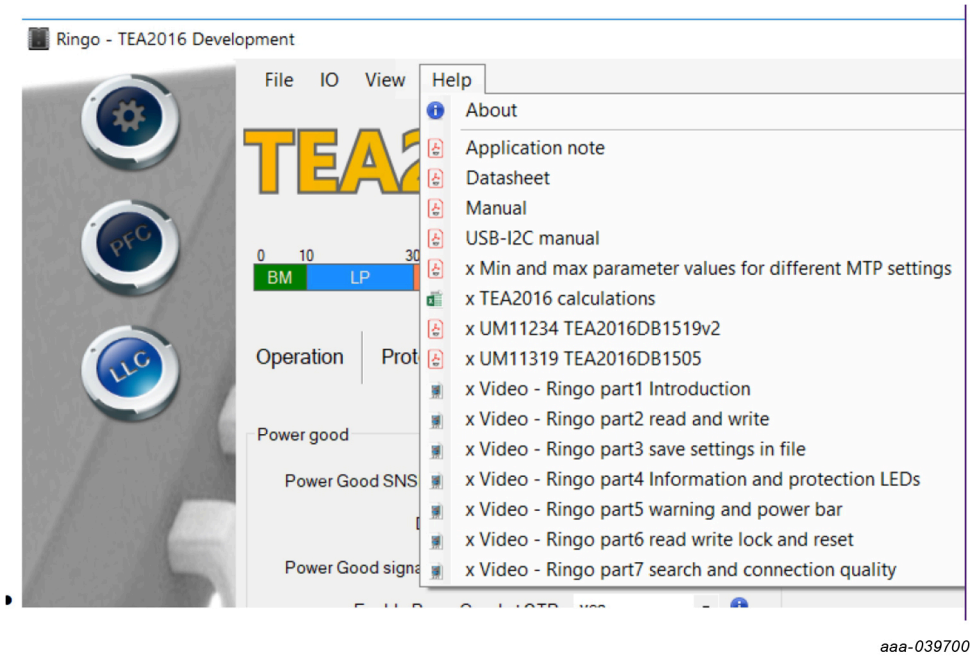

Figure 7. User manuals and videos

Videos are available in Ringo for viewing on your local video player or via the NXP website in your browser:

- Introduction
- Read and write
- Information and protection
- Save settings in file
- Warning and power bar
- Read write lock and reset
- Search and connection quality

Link to TEA2016 overview page that contains the videos for viewing online: https://www.nxp.com/products/power-management/ac-dc-solutions/ac-dc-controllers-with-integrated-pfc/digital-controller-for-high-efficiency-resonant-power-supply:TEA2016AAT

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5 Connecting and working with the setup

5.1 Connecting the setup

A video on the get started page shows how to connect a setup to your computer by USB. There are two types of setup.

1. **Power supply setup**
   The TEA2016DB1519v2 demo board contains a TEA2016AATdev sample that can communicate via I^2C during operation. It is connected to the interface with a 3-pin connection.
2. **IC programming board setup**
   Connecting a TEA2016DB1561 with a 6-pin cable provides reading or programming for TEA2016AAT ICs. If a TEA2016AATdev IC version is used, connect the 3-pin cable as well.
   The switch on the interface selects the 3-pin or 6-pin connection.

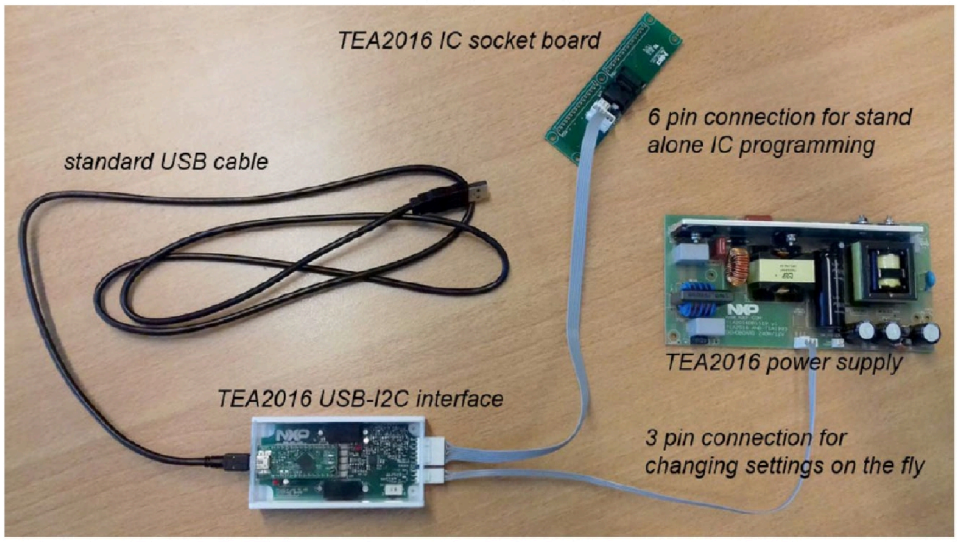

Figure 8. Connecting the setup

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6 Frequently asked questions

6.1 Ringo software

Q: Ringo.exe does not start.

- A1: To enable Ringo software to work, the USB-I^{2}C interface driver (FT232) must be installed on the computer.
- A2: Make sure that a compatible version is used: 32-bit or 64-bit
- A3: Ringo is made for Windows operating systems. On other operating systems, it can be run via a Windows emulator.

Q: Can I work with Ringo without the interface connected?

- A1: Yes, when the USB-I^{2}C interface driver (FT232) is already installed
- A2: To get started, the USB-I^{2}C interface driver (FT232) must be installed on the computer for the Ringo software to work. To install the driver, the interface must be connected (once only).

Q: When I connect the USB-I^{2}C, it does not work.

- A1: To make the FT323 module operational, a driver is required. The driver is often automatically installed (plug and play). However, sometimes a manual install is required. Several drivers are included in the Ringo zip package. Watch the video “installing USB driver manually” on the NXP website.
- A2: When the driver has been installed, but still it does not work:
  Completely (‘delete the driver software for this device’) remove the driver and select another driver included in the package. Or visit the FTDI chip website for more information or driver versions.

6.2 USB - I^{2}C interface

Q: Can I change settings in an TEA2016AATdev (development type) IC on the power supply when the power supply is not running?

- A1: Yes. When you apply a low mains voltage of 50 V (AC), the HV source supplies the IC and it can communicate via I^{2}C. But the power supply does not start because the mains voltage is still too low.
- A2: Yes. If an external power supply of 20 V is (temporarily) connected to SUPIC, the IC is operational without starting the power supply.

Q: Can I change settings in an TEA2016AAT IC (non-development type) on the power supply?

- Yes, but it is more complicated than with the TEA2016AATdev. The AN12330 application note shows how to do it in section "Programming ICs in the application". You cannot make changes during operation because the pins for I^{2}C communication have a different function during operation.

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Q: There is no communication with the IC.

- A1: Check if the switch on the interface is in the correct position: 3-pin or 6-pin.
- A2: Check if the correct cable is connected (or both when using the programming board).
- A3: Check if signal disturbance is blocking communication.

Q: I want to modify the board or do repairs on the board. Is there a circuit diagram?

- A1: The circuit diagram is included in the UM11235 user manual. This document is available in the document folder on the USB stick or in the Help tab in Ringo.

Q: What is the function of the LEDs on the board?

- A1: The Ringo software can use them for indicating that the I^2C connection is OK. The indication differs between Ringo versions. In general, slow blinking indicates no communication with the IC. And fast blinking indicates correct communication with the IC.

6.3 Programming board

Q: Which cable must I connect when I want to work with the programming board?

- A1: Connect both the 3-pin and the 6-pin cables and select the correct I^2C channel for communication.
- A2: For a TEA2016AAT IC, only the 6-pin cable connection is required.
- A3: For a TEA2016AATdev IC, the 3-pin and and the 6-pin cables are required.

Q: I want to add an IC socket on the board. What is a suitable type?

- A1: Provisions in the board are for a Wells CTI 652B0162215 SO16 socket.

Q: I want to measure signals or modify the board. Is there a circuit diagram?

- A1: The circuit diagram is included in the document folder on the USB stick or in the Help tab in Ringo.

6.4 RDK01DB1563 kit

Q: Can I also work with TEA2016AAT without buying the kit?

- A1: Yes. The TEA2016 IC can be used in a power supply. In this case, the IC standard parameter settings are used.
- A2: When you want to use the option to modify the TEA2016 settings for optimizing your design, the software and an interface board are necessary.

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