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RICHTEK RD0001-01 Wrenboard General USB-I2C GPIO PWM Tool Kit User Manual

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Introduction

Nowadays, most of ICs contain digital interface in order to control increasingly complex ICs easily. Richtek Technology developed a bridge board to control the device with digital interface. The bridge board, Wrenboard, provides I2C and GPIO, which can be utilized as 1-wire/PWM. In addition, we also provide the PC-based software (Richtek Bridgeboard Utilities). Users can control the devices by graphical user interface (GUI). This user manual describes the hardware setting and how to update the firmware on the Wrenboard. For the information about software operation, please refer to "Bridgeboard Control Panel User Manual".

Getting Started
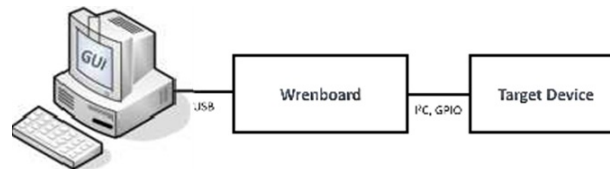
Figure 1. The Connection of Wrenboard

Figure 1. Summarizes the purpose of Wrenboard. This section describes how to install the required components.

System requirements

- Operating system: Windows 7, or Windows 10.
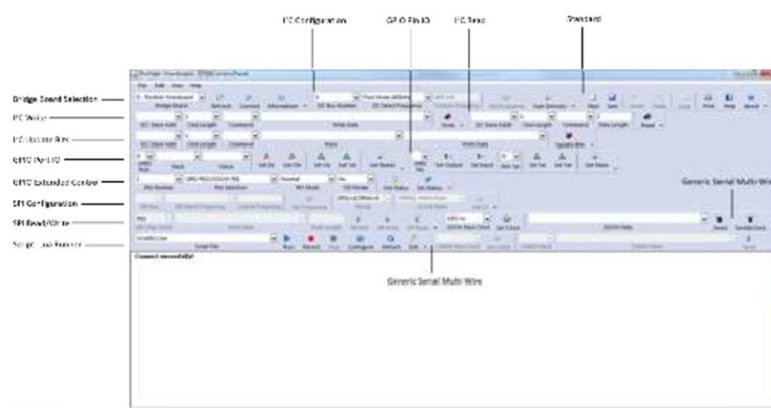
Software installation

Install Richtek Bridgeboard Utilities downloaded from
http://www.richtek.com/shareEVB/RTBridgeboardUtilities.exe

Hardware installation

1. Connect Wrenboard and target device via connect cable.
2. Insert Wrenboard into a USB port.

Graphical User Interface

After software and hardware installation, you can run Richtek Bridgeboard Control Panel to control the target device by GUI (Figure 2). For details regarding the operation, please refer to "Bridgeboard Control Panel User Manual".

Hardware Description

1. Standard USB A plug

   It can be connected to PC directly.

2. Micro-B USB port

   It is an alternative to connect Wrenboard to PC when the long distance between Wrenboard and PC is needed.

3. I2C voltage LED

   The Red LED indicates that the I2C pins are operated in 3.3V.

4. I2C voltage LED

   The Blue LED indicates that the I2C pins are operated in 1.8V.

5. System LED

   If the Wrenboard execute a command, the white LED will be switched on/ off.

6. I2C voltage exchange / Firmware update button

   - To exchange I2C voltage

     Click FN button in normal operation mode, the I2C voltage will be exchanged between 3.3V and 1.8V level.

   - To enable firmware download mode

     Connect Wrenboard to PC and press FN button. If the red and blue LEDs are blinking alternatively, it means firmware download mode is ready.

7. I2C and GND pins

   - SCL (Serial Clock Line)

     SCL is a serial clock line with a 2.7kΩ pull-up resistor. It is used to synchronize the data transfers on the I2C bus.

   - SDA (Serial Data Line)

     SDA is a serial data line with a 2.7kΩ pull-up resistor. It is used to send data and address.

8. 3V power pin

   It is suggested to limit the output current within 100mA.

9. 1.8V power pin

   It is suggested to limit the output current within 100mA.

10. GPIO

    The GPIO pin can be configured as GPIO (P0.1), 1-wire (GSOW) and PWM function according to programming

setting. User can connect this pin to control device in either function.

Firmware Update
Step 1. Connect Wrenboard to PC
To avoid impacting the other device, please disconnect all available pins on the Wrenboaord.

Step 2. Run Richtek Wrenboard Flasher
(Start > Richtek Technology Corporation > Richtek Bridgeboard Utilities > Firmware Update Tool >Richtek Wrenboard Flasher)

Step 3. Use force download mode if the firmware cannot operate normally. Otherwise go to Step 4.
Press FN button until the red and blue LEDs are blinking alternatively.
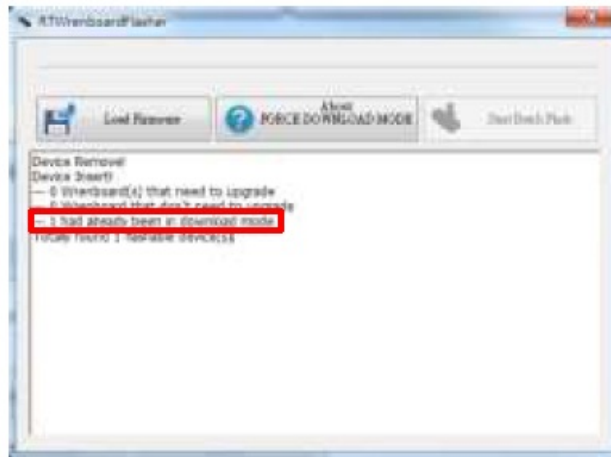
Step 4. Load firmware
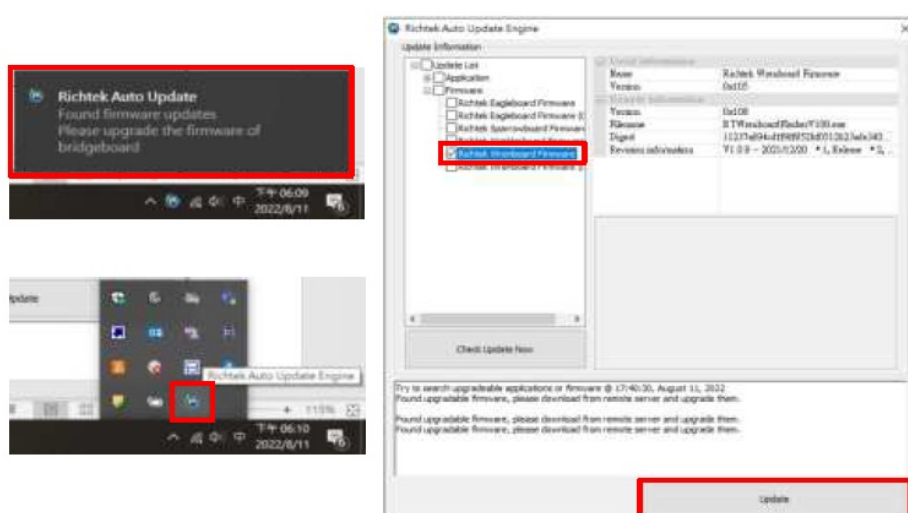Click "Load Firmware" and select the file you want to install on the Wrenboard.
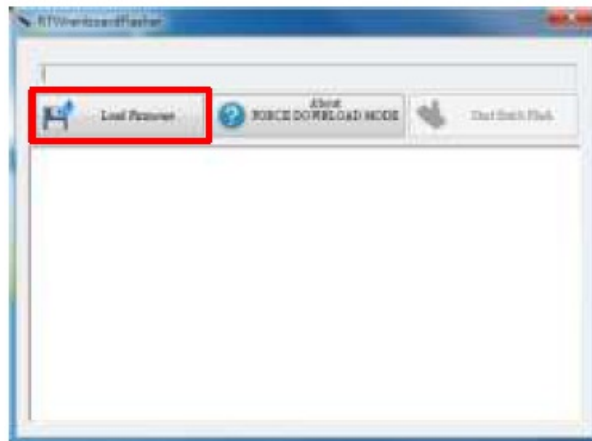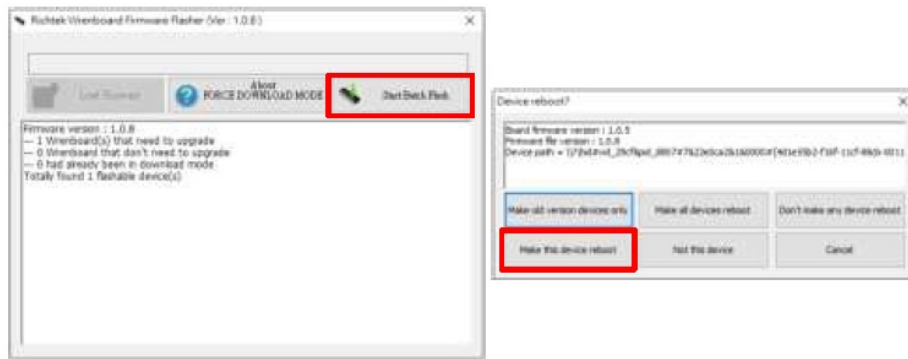
Step 5. Install firmware

Notes :
When popup following message. It is suggested to update newest firmware.
Click Richtek Auto Update Engine icon in lower right corner.

Click "Start Batch Flash" and "Make this device reboot".

More Information

For more information, please find the related datasheet or application notes from Richtek website **http://www.richtek.com**.

Important Notice for Richtek Reference Design

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RD0001-01, Wrenboard General USB-I2C GPIO PWM Tool Kit, RD0001-01 Wrenboard General USB-I2C GPIO PWM Tool Kit, General USB-I2C GPIO PWM Tool Kit, USB-I2C GPIO PWM Tool Kit, GPIO PWM Tool Kit, PWM Tool Kit, Tool Kit

References

- ⊒ **Richtek Technology**
- ⊒ **Richtek Technology**
- ⊒ **richtek.com/shareEVB/RTBridgeboardUtilities.exe**