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ACT-BT5711U

Bluetooth –to- RAW IR Bridge, Class 2, Battery Powered User's Manual



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**Warning! Please Install Driver BEFORE
you plug in the Dongle to USB port.**

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REVISION HISTORY

Revision History		
Revision	Date	Comment
0.0.9	02/22/2006	<ul style="list-style-type: none">• Preliminary release
1.0.0	05/16/2008	<ul style="list-style-type: none">• Corrected errors & added Power Off timer setting in Features• Added Raw IR Config Chapter
1.0.1	6/5/2008	<ul style="list-style-type: none">• Revised Figure of Data Transmitting Structure. & LED Behavior
1.0.2	8/25/2008	<ul style="list-style-type: none">• Changed default baud rate from 115.2k to 9.6k bps on both BT & Raw IR parameters
1.0.2.1	12/12/2008	<ul style="list-style-type: none">• Corrected model name of BT5711U-EK as Program Download Kit
1.0.3	11/5/2010	<ul style="list-style-type: none">• Updated Raw IR Configure Utility & Driver Which Win 7 Included.• Added WARNING on Setting Up Bluetooth Parameters

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1. OVERVIEW

ACT-BT5711U is designed to provide a **bridge** solution between two different wireless technologies on data transmission: **Raw IR and Bluetooth**. If your sender device support RAW-IR only (e.g., Old PDA) and your receiver device supports Bluetooth only (e.g., New Smart phone), then you can use it as a **RAW IR-Bluetooth Bridge**. It can convert Data received through Bluetooth (SPP profile support only) from sender to traditional RAW-IR data or vice versa. It allows you to use your ready-made application to link Bluetooth up with IR technology. Using Configuration Utility, you can set parameters for both Bluetooth as well as RAW-IR.

It is battery powered in addition to AC power operation. So you can use it in the field application.

2. PACKAGE CONTENT

This package contains:

- 1). ACT-BT5711U Bluetooth-to-Raw IR Bridge x 1
- 2). Battery AAA size x 4
- 3). CD includes user manual, driver and configuration utilities x 1
- 4). AC to DC power adapter 7.5V (5V ~ 12V) @300mA.x 1, power jack pin 1.3 mm Diameter
(Optional)
- 5). ACT-BT5711U-EK Program Download Kit x 1 (Optional)
- 6). RJ45 cable x 1 (Optional with EK)

3. SYSTEM REQUIREMENTS FOR CONFIGURATION

- 1). Windows 2000/XP/Vista/Win 7 (32 & 64 bit).
- 2). At least 256MB RAM (512MB is recommended).
- 3). Processor Speed 1.8 GHz.
- 4). USB 1.1 port (or above).

4. FEATURES

- Bluetooth embedded solution for RS232 cable replacement at one side; while bridge to another side as Raw IR connection.
- Configurable Bluetooth baud rate: 1.2k ~115.2k bps at the Bluetooth side.
- Configurable IR baud rate: 1.2k, 2.4k, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k and 115.2k bps at the IR side
- 1.63 μ s IR pulse.
- Supports only Raw IR; No IrDA[®] protocols
- 256 Bytes outbound buffer and 256 Bytes inbound buffer at IR side.
- Virtual COM port supported at both IR & Bluetooth sides.
- Customized Bluetooth features support for pairing mode, device name, PIN code.
- Sniff mode available at Bluetooth side for power saving.
- Supports UART interface.
- Supports RTS/CTS hardware flow control.
- Supports Bluetooth SPP (Serial Port Profile) as a slave or a master.
- Windows Based Bluetooth & IR configuration utilities are provided.
- Communicates with another ACTiSYS Bluetooth RS232 Adapter or any other Bluetooth enabled devices. (Opposite device should also support SPP)
- Bluetooth class II device for short-range data transfer.
- Compliant with Bluetooth 1.2 specification.
- Auto-connect feature when interconnecting two Bluetooth adapters.
- Security provided: Pairing
- Battery operated with Power OFF timer setting

5. DRIVER & UTILITY INSTALLATION

- a) The driver is an USB to serial conversion driver for **ACT-BT5711U-EK Program Download Kit** which will be used when user needs to configure the Bluetooth and/or RAW-IR parameters. Two separate **configuration utilities** (i) Bluetooth configuration (ii) RAW-IR configuration are used to configure Bluetooth and RAW-IR parameters respectively. **You do not require these two items on daily normal data communication as just one time configuration required as per your application need.**
- b) **Make sure USB dongle is NOT plugged into PC until you have installed the driver.**
- c) From “**Add or Remove Program**” in **Control Panel** of Win2K/XP, make sure there is no driver named: “**PL-2303 USB-to-Serial**” in PC. Or from “**Programs and Features**” in **Control Panel** of Windows Vista/ Win7, check if “**PL-2303 Vista Driver Installer**” exists in PC. If exists, please **remove it first.**
- d) Insert the installation CD and it will then automatically run the InstallShield and guide you to install the USB-RS232 driver, Bluetooth Configuration Utility program, RAW-IR configuration utility and this Manual to your hard disk. But if you find it Not AUTORUN, especially in Vista, make sure the “**AUTORUN**” option under “**Control Panel=> AUTOPLAY**” has been selected. Otherwise please browse the CD and manually run “**ACT-BT5711U-DriverInstaller_v1210-20100408.exe**”.
- e) Plug ACT-BT5711U-EK Program Download Kit into USB port. It will lead you to a “Found New Hardware” procedure to complete the installation.

6. CONFIGURATION PARAMETERS - BLUETOOTH

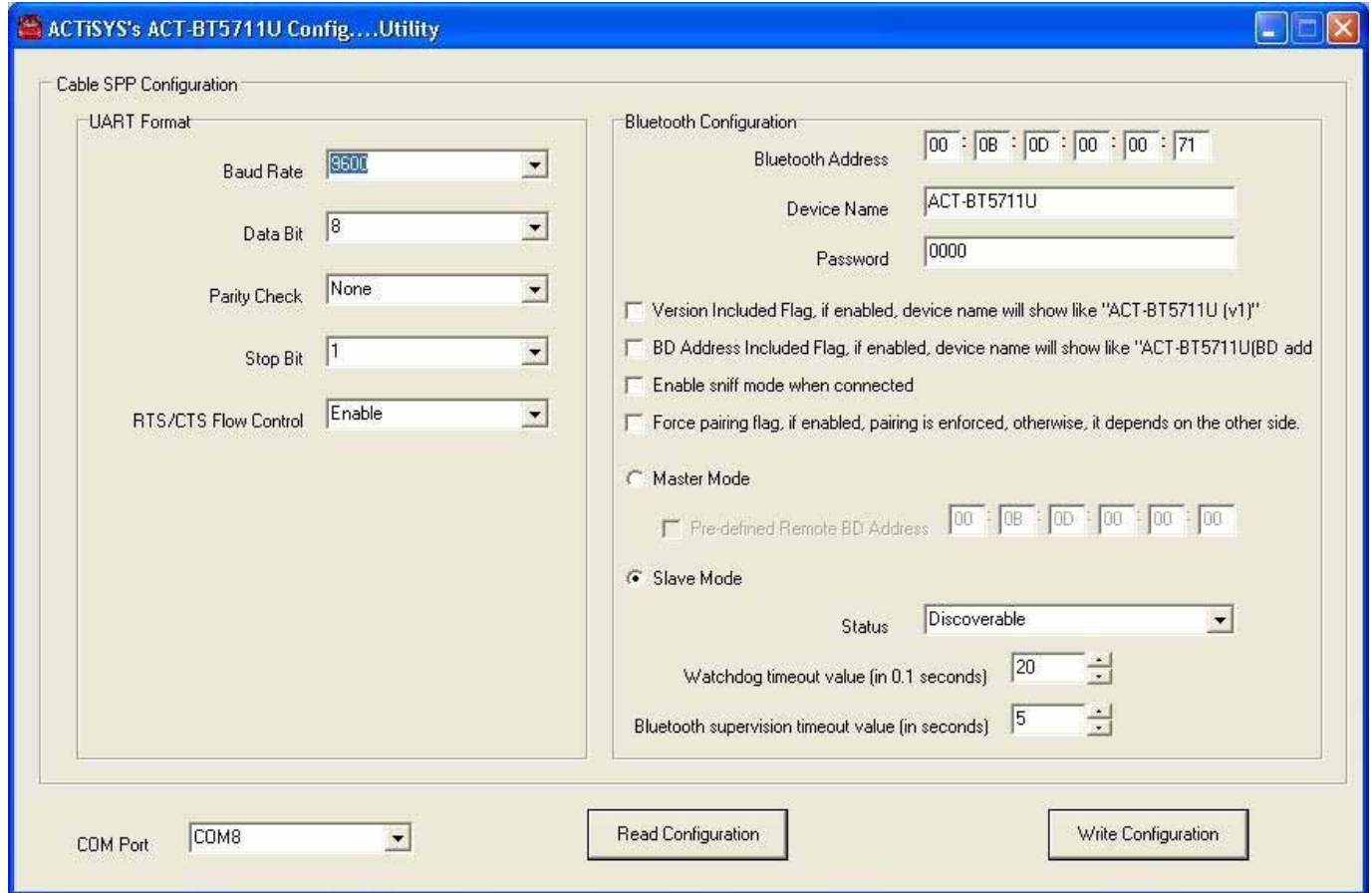


Figure: Bluetooth Configuration Parameters Window

6.1 UART Format

- **Baud Rate:** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 or 1843200 bps selectable.
- **Data Bit:** 5, 6, 7 and 8 data bits supported
- **Parity Check:** None, Odd or Even.
- **Stop Bit:** 1 or 2 stop bits.
- **RTS/CTS Flow Control:** None, or Enable

6.2 COM Port

Select COM port from COM1 to COM9 where you have connected device.

6.3 Bluetooth Configuration

- **Bluetooth Address:** BD address is a unique 6 byte hexadecimal device identifier, where the first 3 bytes of the address are assigned by IEEE, and the last 3 bytes are freely allocated by the manufacturer. And the format is as (00: 0B: 00: 00: 00: 02).

- **Device Name:** Give any name you want to show. Maximum is 24 characters allowed.
- **Password:** It's PIN code. **Default** is **0000**. You can leave it blank. Maximum length is 8 digits
- **Master or Slave Mode:** User can select device as a master or a slave. If you configure it as a Master then you need to assign Slave BD address (Predefined Remote BD Address). If you configure it as a Slave, then there is a "Status" parameter selectable: "Discoverable" or "Undiscoverable". The default is "Discoverable".

6.4 Control Flag

There are 4 flags to be selected:

- **Version Included Flag:** If enabled, the firmware version "[v1]" will show after the device name you have assigned, e.g., "ACT-BT5711U [v1]"
- **BD Address Included Flag:** If enabled, the last 3 byte BD address will show after the device name, e.g., "ACT-BT5711U (EB: 66: 8C)".
- **Enable sniff mode when connected Flag:** (If enabled, it will enter into sniff mode 5 sec after data transmitted or received).
- **Force Pairing Flag:** If enabled, pairing will be enforced. Otherwise it depends on opposite device.

6.5 Watchdog Timeout

- Setting Watchdog Timeout. *One time unit is 100 ms.* Setting "0" means no watchdog timer needed.

6.6 Bluetooth Supervision Timeout

- Setting Bluetooth Supervision timeout after link. *One time unit is 1 second.*
- **Note:** - Through the setting of Watchdog Timeout and Supervision Timeout fields, it could be returned back to system normal from the unknown error of software or hardware related. Based upon this characteristic, we could use it for some applications which require more stable system environment. Such as setting Watchdog timeout value to 30 (= 3 seconds), and Supervision timeout value to 3 (= 3 seconds).

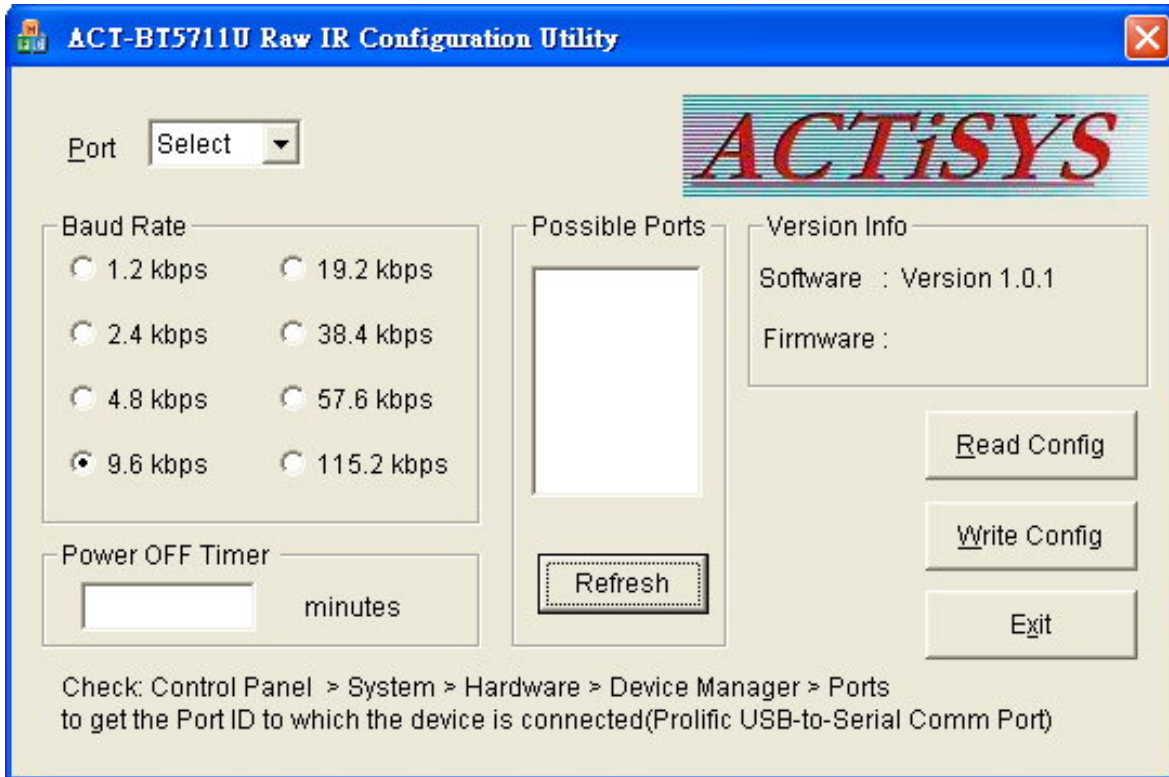
6.7 Read Configuration

- Click this button then you can read the original parameters setting.

6.8 Write Configuration

- Click this button to save all the settings you have changed.

7. CONFIGURATION PARAMETERS - RAW-IR



7.1 Baud Rate

It supports 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200 which are selectable. It must match with same baud rate what you are going to use with Bluetooth UART side.

7.2 COM Port

Select COM Port from COM1 to COM255 where you have connected device.

7.3 Power OFF Timer

This feature is useful to save power under batteries operation. By **default** device will be ON for **10** minutes even if no any IR activity/ active Bluetooth Link. 10 minutes after active Bluetooth Link, it will **auto off to save power**. You can make device ON again by pressing ON button or change Power off timer.

8. SETTING UP BLUETOOTH PARAMETERS

8.1 ACT-BT5711U-EK Connection

Step 1: Install driver for ACT-BT5711U-EK board as explain in chapter 5

Step 2: Now, First Plug ACT-BT5711U-EK board to USB port using USB cable.

Step 3: Set correct jumper setting of ACT-BT5711U-EK. **Jumper J1, J2, J5, and J6 must be closed (inserted) and Jumper J3 & J4 must be open.**

Step 4: Now before applying power OR loading batteries into ACT-BT5711U, first connect ACT-BT5711U to ACT-BT5711U-EK using RJ45 cable.

Step 5: Now load AC power adapter or batteries (please see *[\[WARNING\]](#) blow) into it.

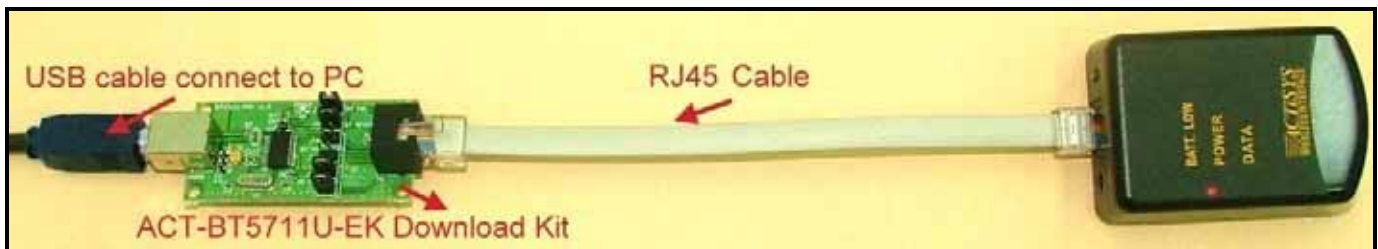


Figure: Bluetooth – Raw IR Bridge & ACT-BT5711U-EK Connection

[WARNING]

a) It's better to use AC power adapter to download configuration as it is more reliable. If use batteries, please Be Sure: (a1) It's Not Battery Low, (a2) Close the battery cover so that any battery drop out, which will cause **Power Removal**, will not happen anytime.

b) **Improper Handling** of Bluetooth configuration including **Power Removal** while WRITING operation may lead to **Permanent Internal Flash Corruption!** So always ensure power source is correct and always follow the steps given in manual.

8.2. Go to Device Manager to check COM Port # as below figure. E.g., "COM9".

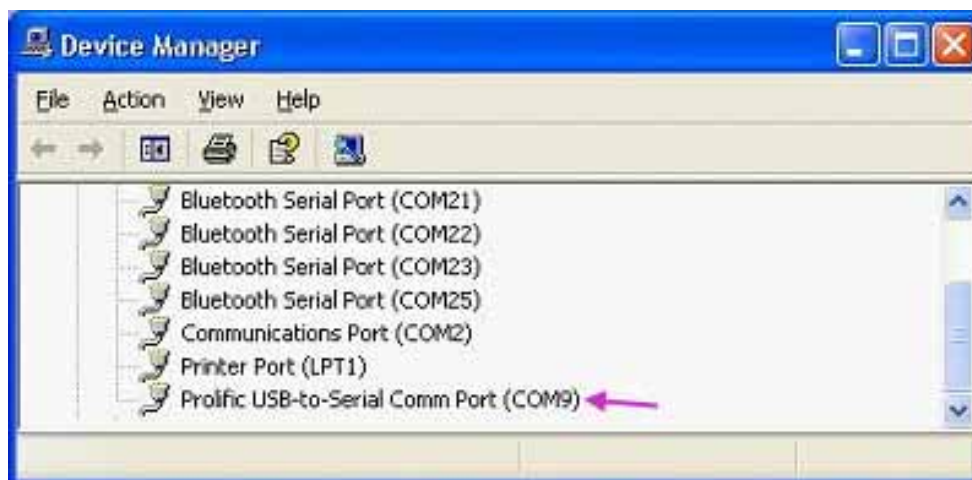


Figure: COM Port Check from Device Manager

8.3. Run utility program "ACT-BT5711U-Bluetooth-Config-Utility.exe" from
c:\program files\actisys\ACT-BT5711U
 You will see the following screen window:

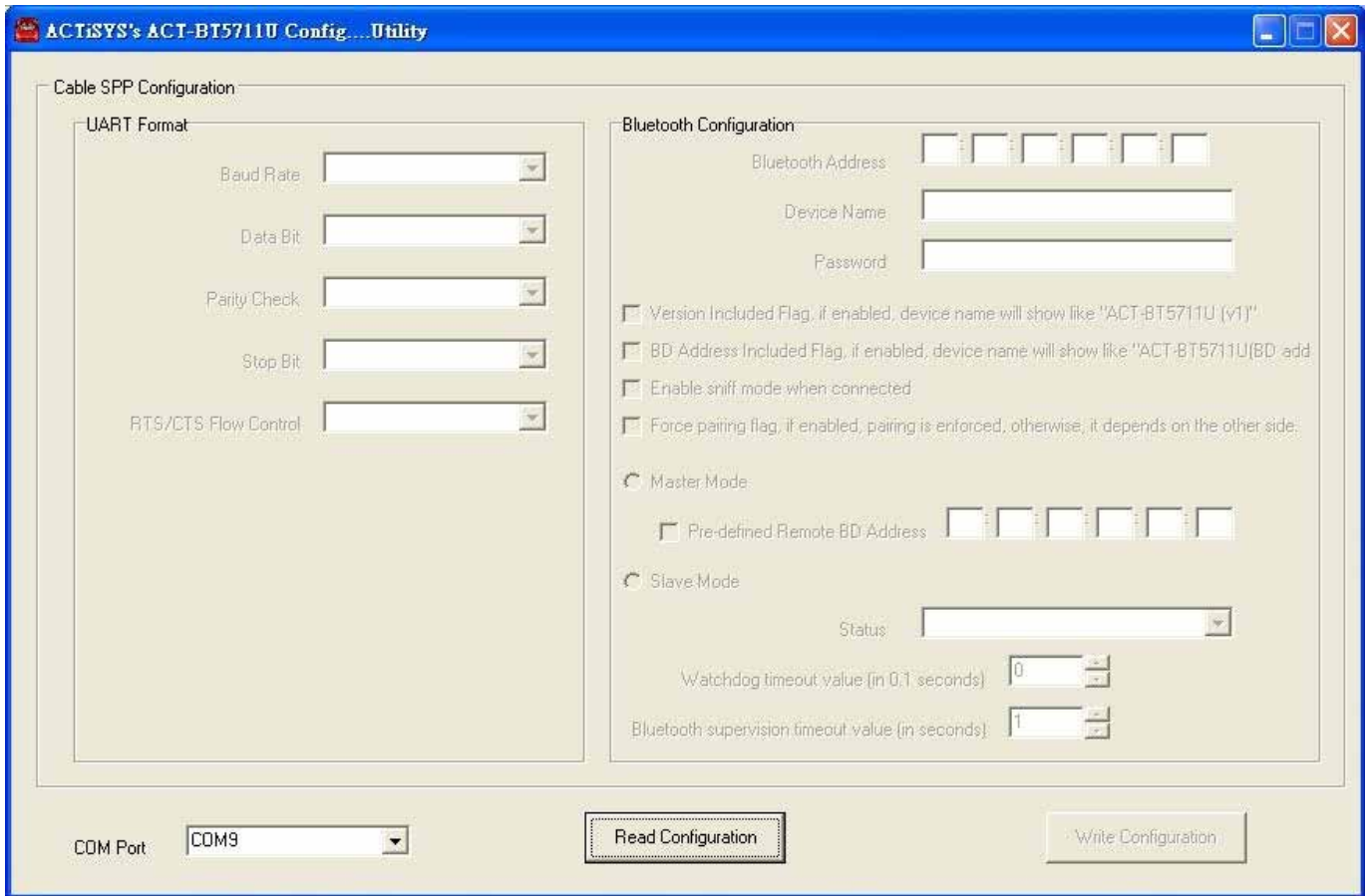


Figure: Bluetooth Configuration Utility

8.4. From "COM Port" field, select "COM9" for this example.

8.5. Click **“Read Configuration”** button and wait for operation completes. It will show up default configuration of the COM Port. See Figure below. In this window user has to define parameters as per requirement. Details please refer to Chapter 6.

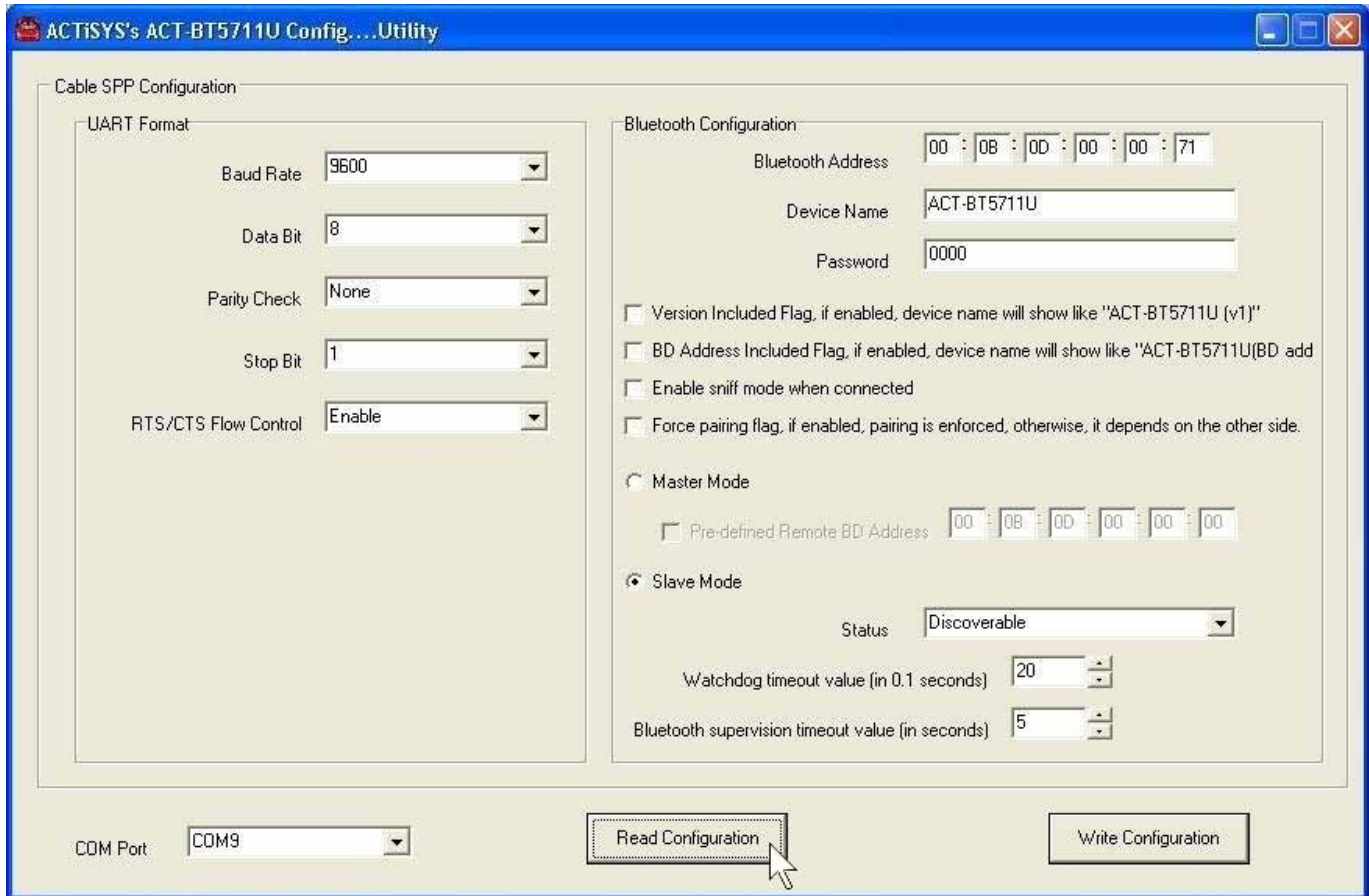


Figure: Bluetooth Read Configuration Complete

8.6. After all parameters have been set, click **“Write Configuration”** button to save all the settings.
See Figure below.

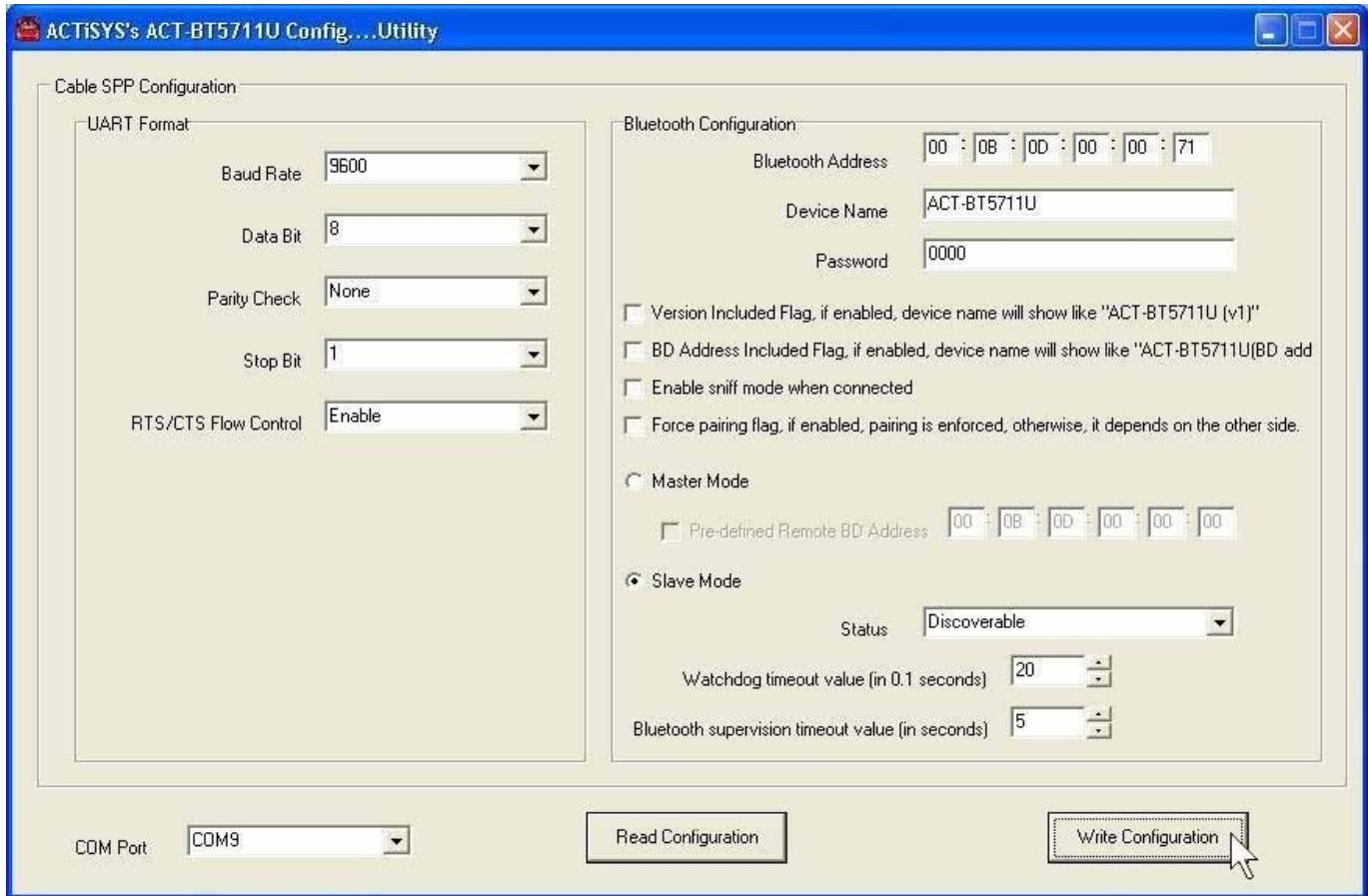


Figure: Bluetooth Write Configuration Progress

9. FACTORY DEFAULT SETTING - BLUETOOTH PARAMETERS

When running utility program ACT-BT5711U-Bluetooth-Config-Utility.exe with your serial devices, make sure all the settings match on both sides. Otherwise, you may encounter communicating problems. Below figure is the **factory default setting** parameters of this unit:

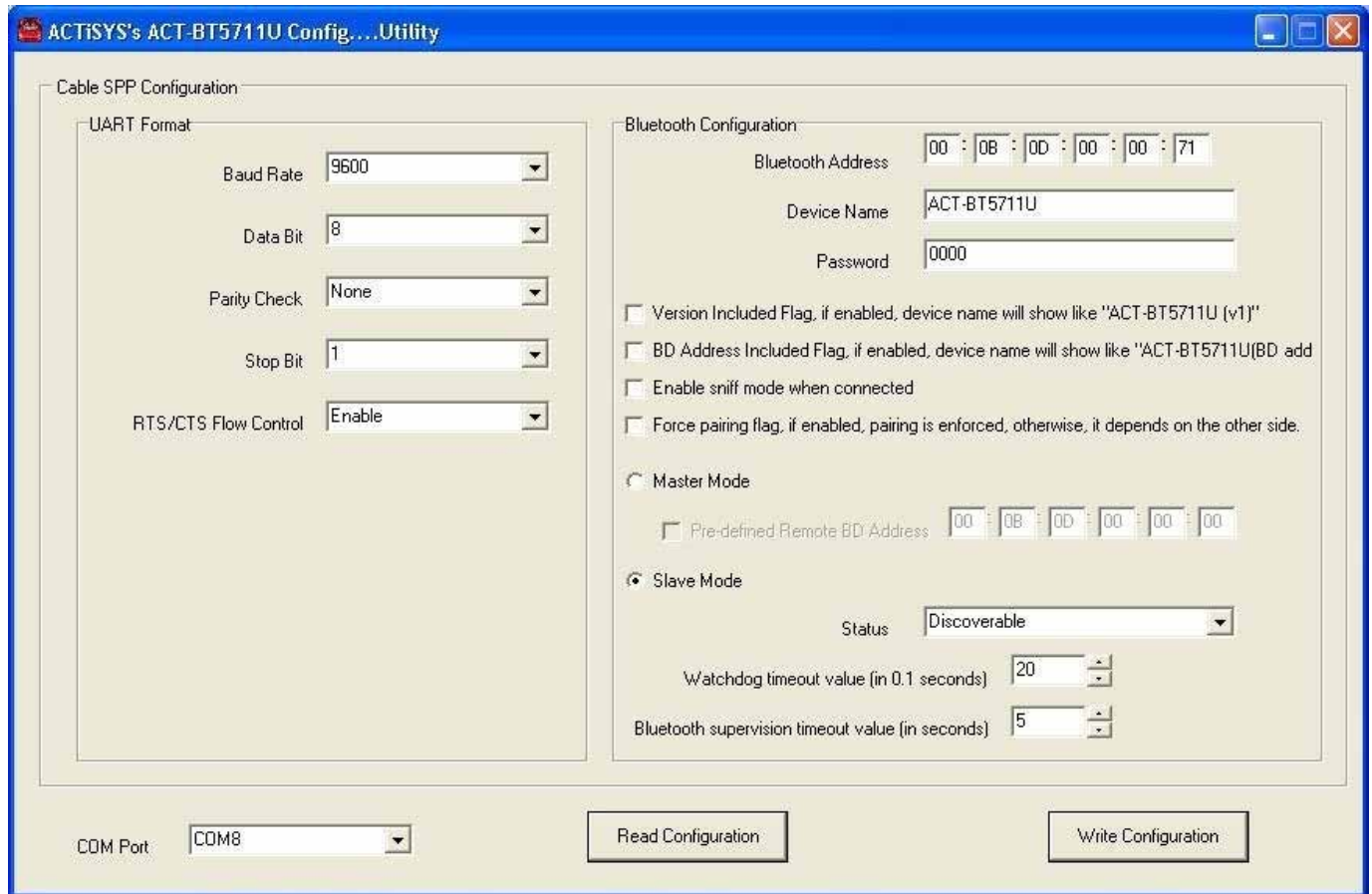


Figure: Default Bluetooth Configuration Parameters

NOTE: If it requires changing any of the settings, consult the Chapters of “**Configuration Parameters**” & “**Setting Up**” for all detail parameters and procedures.

10. SETTING UP RAW-IR CONFIGURATION PARAMETERS

9.1. ACT-BT5711U-EK Connection

Step 1: Install driver for ACT-BT5711U- PEK board as explain in chapter 5

Step 2: Now, First Plug ACT-BT5711U-EK board to USB port using USB cable.

Step 3: Set correct jumper setting of ACT-BT5711U-EK. **Jumper J3, J4, J5, and J6 must be closed (inserted) and Jumper J1 & J2 must be open.**

Step 4: Now before applying power OR loading batteries into ACT-BT5711U, first connect ACT-BT5711U to ACT-BT5711U-EK using RJ45 cable.

Step 5: Now apply power to ACT-BT5711U or Load batteries into it.

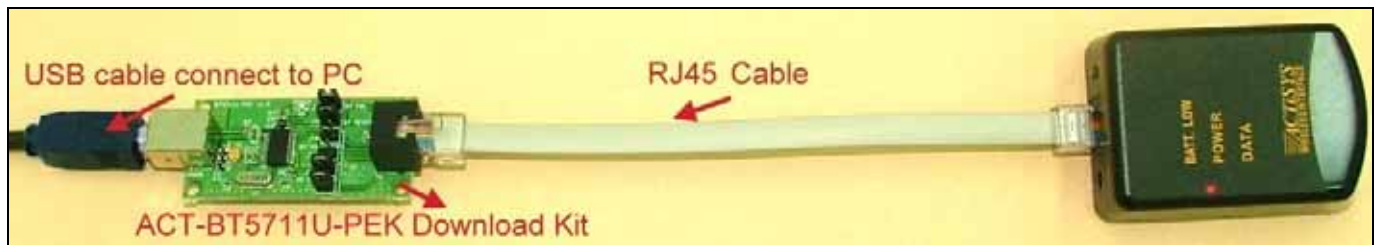


Figure: Bluetooth – Raw IR Bridge & ACT-BT5711U-EK Connection

9.2. Go to Device Manager to check COM Port # as below figure.

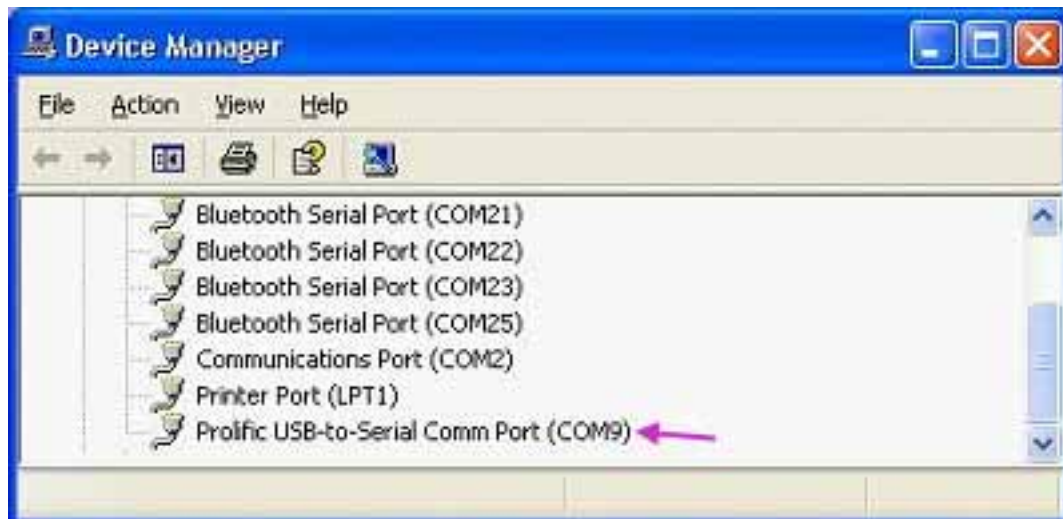


Figure: COM Port Check from Device Manager

From this example, COM Port is “COM9”.

9.3. Run Utility program “ACT-BT5711U-RawIRConfigUtility-v1.0.1.exe” from
c:\program files\actisys\ACT-BT5711U

You will see the following screen window:

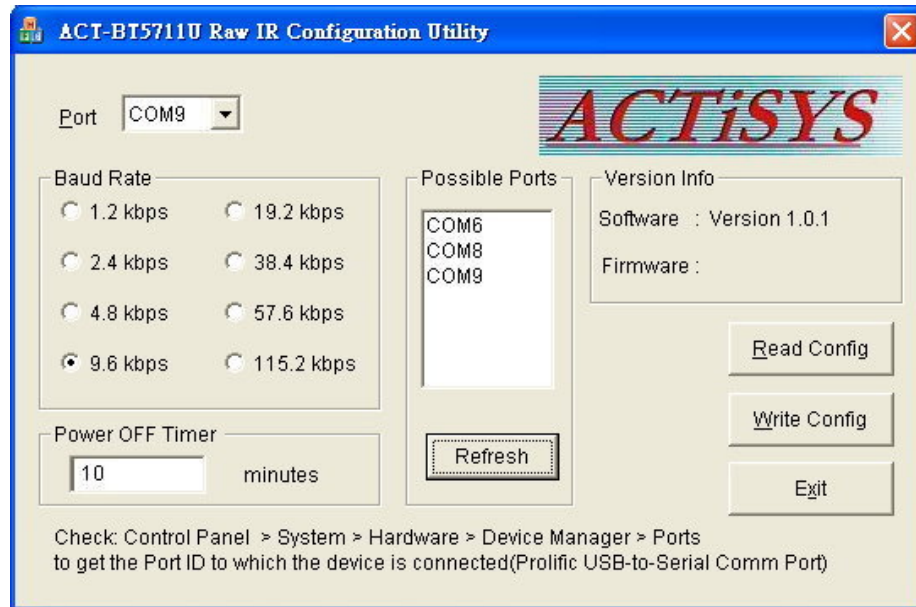


Figure: RAW-IR Configuration Utility

9.4. It will detect your correct COM Port automatically if it is not used by any other application. Else you need to select it manually.

9.5. Click “**Read Config**” button and wait for the operation completes. It will show up default configuration of COM Port and show message “**Read Configuration Success...**”as below upon configuration parameters reading successfully. Details please refer to:
 Chapter 7 CONFIGURATION PARAMETERS - RAW-IR.



Figure: Raw-IR Read Configuration Success

9.6. After all parameters have been set, click “**Write Config**” button to save all the settings. It will write parameters and show “**Write Configuration Success..**” message as below upon successful writing.



Figure: Raw-IR Write Configuration Success

11. FACTORY DEFAULT SETTING OF RAW-IR PARAMETERS

When running Configuration Utility program with your devices, make sure all the settings match on both sides. Otherwise, you may encounter communicating problems. Below is the **factory default setting** parameters of this unit:

- **Baud Rate: 9.6 kbps**
- **Power OFF Timer: 10 minutes**

NOTE: If it requires changing any of the settings, refer to the “**Configuration Parameters**” & “**Setting Up**” Chapters for all details.

12. DATA TRANSMITTING & RECEIVING



A. Power On Button

B. IR Device Aimed At IR Window For Communication

Figure: Structure of Data Communication

Step 1. Start with your Bluetooth dongle and configure it properly.

Step 2. Load Battery set or apply power to the device and press “ON” button (see above Fig A.) on the ACT-BT5711U Bluetooth-Raw IR Bridge.

Step 3. IR window (see above Fig. B) aimed at another IR device.

Step 4. From Bluetooth dongle, start to transmit data to that IR device via ACT-BT5711U Bridge.

Step 5. Or From IR device, start to transmit data to the Bluetooth dongle via this Bridge.

13. LED BEHAVIOR

Status	IR LED Behavior
Power On	<ol style="list-style-type: none"> Green DATA LED blinks once. Red POWER LED on for 10 Min. by default.
Data Transmitting	<ol style="list-style-type: none"> Green DATA LED blinks rapidly when the active BT-Link is transmitting data. Green DATA LED will stay on if active BT-Link exists but no data transmitting. Green DATA LED will be turned off if no active BT-Link.
Power Off Mode	All LED will auto off N minutes (10 minutes by default or per timer setting) after no active BT-Link.
Battery Low	“Batt. Low” orange LED on.

Note: “BT-Link” means SPP (Serial Port Profile) link has been established between ACT-BT5711U and any other Bluetooth device.

14. SPECIFICATIONS

14.1 Bluetooth Generic Specifications

FUNCTION	ACT-BT5711U
Standard	Bluetooth 1.2
Profile	SPP
Configurable Parameters	Master or Slave mode, Stop Bit, Parity Check, Baud Rate, Flow Control, BD address & all other parameters shown in Chapter 6
Modulation	GFSK
Spread Spectrum	Frequency Hopping Spread Spectrum (FHSS)
Baud Rate	1.2 k ~ 1843.2k bps

14.2 Power Specifications

Parameter	MIN.	TYPICAL	MAX.	Units
DC Supply Voltage	5.0	7.5	12	V
Supply Voltage, VSS		0		V
Operating Temperature Range, TA	0		60	
DC Current (Ready mode)		25	35	mA
DC Current (Active mode)		56	70	mA

14.3 IR Specifications

Parameter	MIN.	TYPICAL	MAX.	Units
Infrared Transmitting Range	1 158	158	200	cm
Baud Rate	1.2k, 2.4k, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k, 115.2k			bps

15. FREQUENTLY ASKED QUESTIONS (FAQ)

Q1. What is the Bluetooth version of the device?

A1. This device supports Bluetooth 1.2 version.

Q2. How to change Bluetooth UART settings?

A2. Use the ACT-BT5711U-Bluetooth-Config-Utility.exe. Refer to Chapters 6 & 8 for Configuration Parameters.

Q3. What is the data format of the device?

A3. Refer to Section 6.1 UART Format in Chapter 6.

Q4. How to display Bluetooth device settings?

A4. Use the ACT-BT5711U-Bluetooth-Config-Utility.exe. Refer to Chapter 8 "Setting Up Bluetooth Parameters".

Q5. How to set baud rate and what baud rates it supports?

A5. Use the ACT-BT5711U-Bluetooth-Config-Utility.exe. Refer to Chapters 6 & 8 for Configuration Parameters & Procedure. It supports 1200 bps to 1843200 bps baud rate.

Q6. How to set PIN key (password)?

A6. Use the utility ACT-BT5711U-Bluetooth-Config-Utility.exe. The default PIN key is "0000". But you can change it. Refer to Chapters 6 & 8.

Q7. How to change device name?

A7. Use the utility file ACT-BT5711U-Bluetooth-Config-Utility.exe. Refer to Chapters 6 & 8.

Q8. How to provide power to ACT-BT5711U?

A8. User can load AAA battery set (x4), or give power to DC JACK pin through DC power adaptor 7.5V (5V ~ 12V) @300mA.

Q9. I am not able to configure the new parameters.

A9. Please refer to Chapter 8 (for Bluetooth) & 10 (for RAW IR) and strictly follow the steps on connection.

16. TECHNICAL SUPPORT

ACTiSYS has provided an online section of trouble shooting guidelines on the Web Site:

<http://www.actisys.com/TechSupport.html> - **TechSport**. In order to save your valuable time, please review chapter [15. Frequently Asked Questions \(FAQ\)](#) of this manual before contacting our technical support team. If the problem is still unsolved, please contact ACTiSYS Technical Support by email <mailto:tech-support@actisys.com>

17. CONTACT INFORMATION

GO WIRELESS WITH ACTiSYS IR



ACTiSYS
The Wireless Infra-red Expert

- ◆ IrDA Protocol Software For Portable Devices
- ◆ IrDA Test Software For Hardware Systems
- ◆ IrDA Printer And Computer Adapters

115.2K, 4M and 16M bps

IR100M/1000M

IR2000L

IR220L/L+

The graphic features a central red background with the ACTiSYS logo and tagline. Below the logo is a list of three bullet points. Underneath the list, the text '115.2K, 4M and 16M bps' is displayed. The central part of the graphic is divided into three panels: the left panel shows a computer keyboard with an IrDA adapter and is labeled 'IR100M/1000M'; the top right panel shows an IrDA adapter and a cable, labeled 'IR2000L'; the bottom right panel shows another IrDA adapter and cable, labeled 'IR220L/L+'. Surrounding these panels are various images of devices connected via IrDA, including a printer, a PDA, a mobile phone, a digital camera, and a laptop.

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