ACTiSYS

The Wireless Connectivity Expert

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ACT-BT5701S v2

Bluetooth RS232 Adapter Class 1

User's Manual

December 06, 2006
Version 2.0

TABLE OF CONTENT

REVISION HISTORY

Revision History		
Revision	**Date**	**Comment**
0.1	03/22/2006	• Initial draft version
1.0	03/28/2006	• Modified for configure parameter instructions & added more FAQ • Increased dongle name as ACT-BT5701SM for master • Added detail description for master and slave
1.0.1	04/13/2006	• Modified Chapter 6 Features
1.0.2	08/30/2006	• Added Chapter 12 for LED behavior
1.0.3	12/05/2006	• Modified FAQ 10
2.0	12/06/06	• New release for v2; firmware combined master and slave

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1. OVERVIEW

ACTiSYS Bluetooth RS232 adapter brings wireless Bluetooth technology to your RS232 serial equipment, allowing you to eliminate conventional cables. With a maximum range of distance, you are no longer bound to cable length limitations or messy cables. Simply plug in the Bluetooth RS232 adapter to your serial equipment and transfer data to a Bluetooth-enabled device such as a PC or PDA. With no software installation required, the Bluetooth RS232 adapter is a true Plug-n-Play solution. All you need to do is plug in the RS232 adapter to a serial RS232 equipment with DB9 connection. In addition, this unit features utility ACT-BT5701Sv2.EXE to allow you to easily configure the Master/Slave and baud rate speed with the simple utility. It is also fully compliant with Bluetooth 1.2 specifications and supports authentication and encryption.

2. DRIVER REQUIREMENT

Simply plug in the Bluetooth RS232 adapter to your serial equipment and transfer data to a Bluetooth-enabled device. No driver is required. For configuration parameters, user has to install ACT-BT5701Sv2.EXE utility program to set up them.

3. BLUETOOTH PROFILE SUPPORTED

ACT-BT5701S v2 is a Bluetooth RS232 adapter and supports SPP (Serial Port Profile) only. It supports both master and slave configuration. Due to various communication protocols and drivers involved, this adapter may not work with any RS232 devices using proprietary communication protocols.

4. PACKAGE CONTENT

This package contains:

1) ACT-BT5701S v2 Bluetooth RS232 adapter x 1
2) Null modem adapter x 1
3) AC to DC power adapter x 1
4) COM port fix screws x 2
5) CD includes user manual, setup file and configuration utility x 1

5. SYSTEM REQUIREMENTS

Device with DB9 connector and compliant with RS232 protocol

6. FEATURES

- Bluetooth embedded solution for RS232 cable replacement, applications such as industrial remote control devices.
- Configurable baud rate 1.2k ~1843.2k bps.
- True Plug-n-Play; no driver required.
- Customized features support for pairing mode, device name, PIN code.
- Sniff mode available for power saving.
- Supports UART interface.
- Supports RTS/CTS hardware flow control.
- Supports both DCE and DTE devices.
- Supports Bluetooth SPP (Serial Port Profile) as a slave or a master.
- Run utility ACT-BT5701Sv2.EXE for fast and easy configuration.
- Communicates with another ACTiSYS Bluetooth RS232 Adapter or any other Bluetooth enabled devices. (Opposite device should also support SPP)
- Bluetooth class 1 device for long-range data transfer.
- Compliant with Bluetooth 1.2 specification.
- Auto-connect feature when interconnecting two ACTiSYS Bluetooth RS232 adapters.
- Security provided: Pairing

7. HARDWARE INTERFACE

ACT-BT5701S v2 is a Bluetooth-RS232 Adapter and it supports SPP (Serial Port Profile). UART baud rate setting is per users' requirement. ACT-BT5701S v2 supports all the parameters listed in Chapter 9.

7.1 ACT-BT5701S v2 Adapter Pin-Out

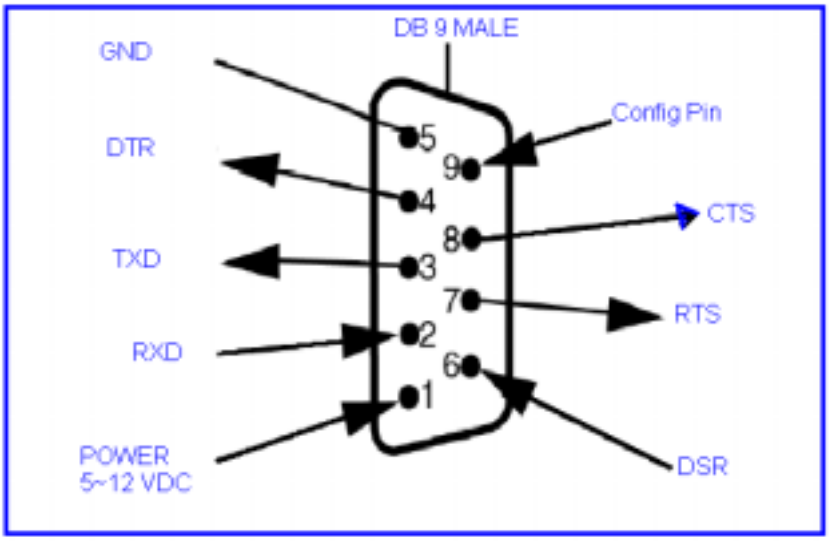


Figure 1: ACT-BT5701S v2 Adapter Pin-Out

7.2 Null Modem Connection For Configuring Parameters

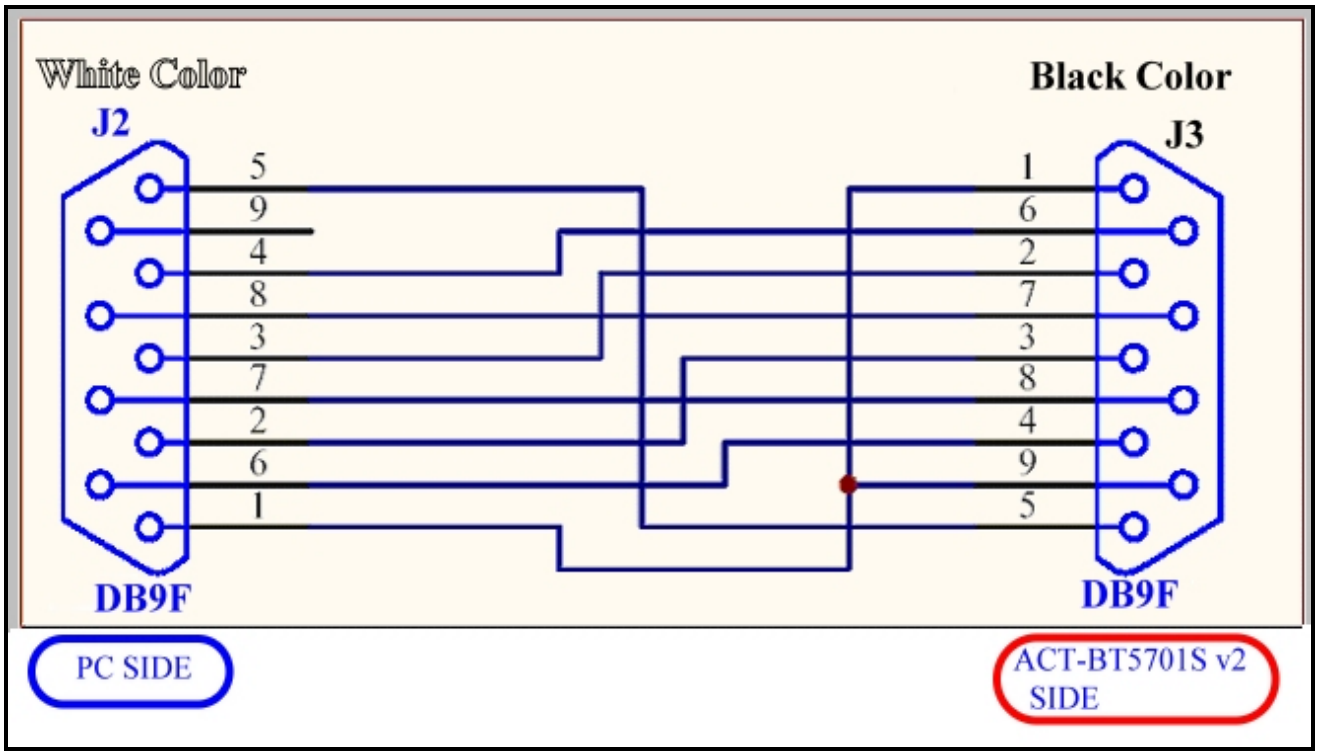


Figure 2: Null Modem Connection For Configuring Parameters

7.3 Null Modem Connection For Normal Operation

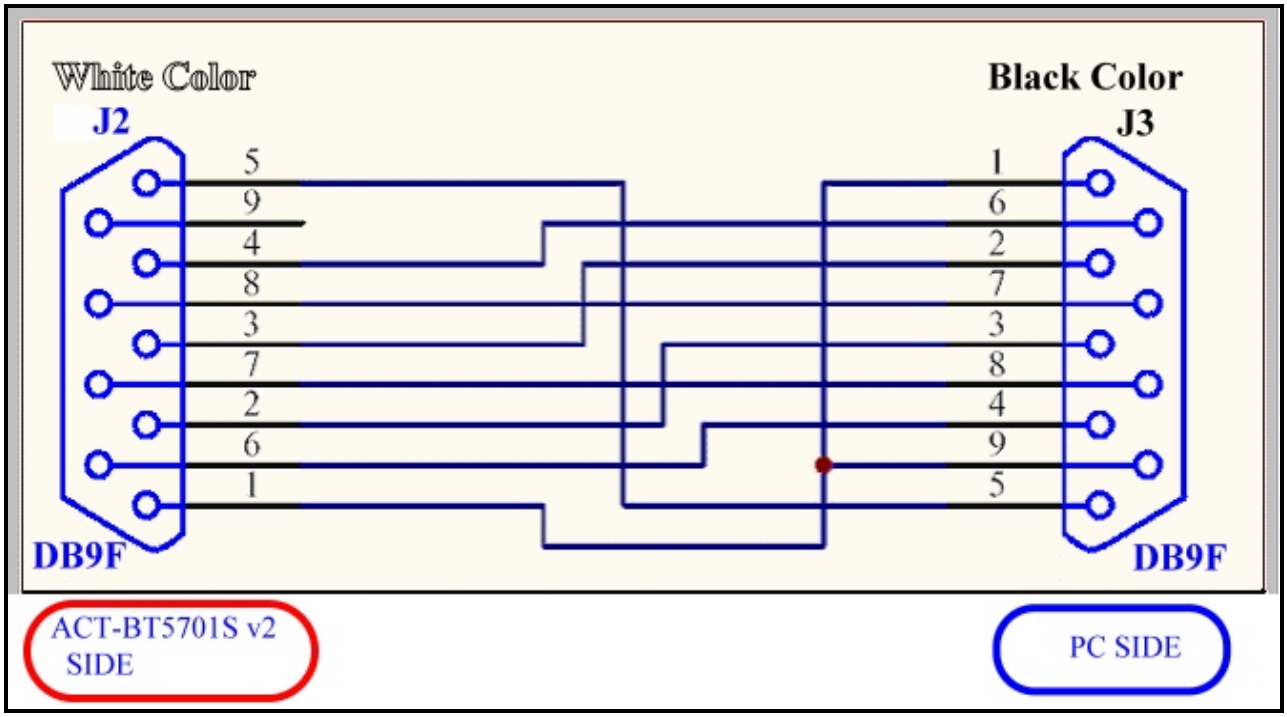
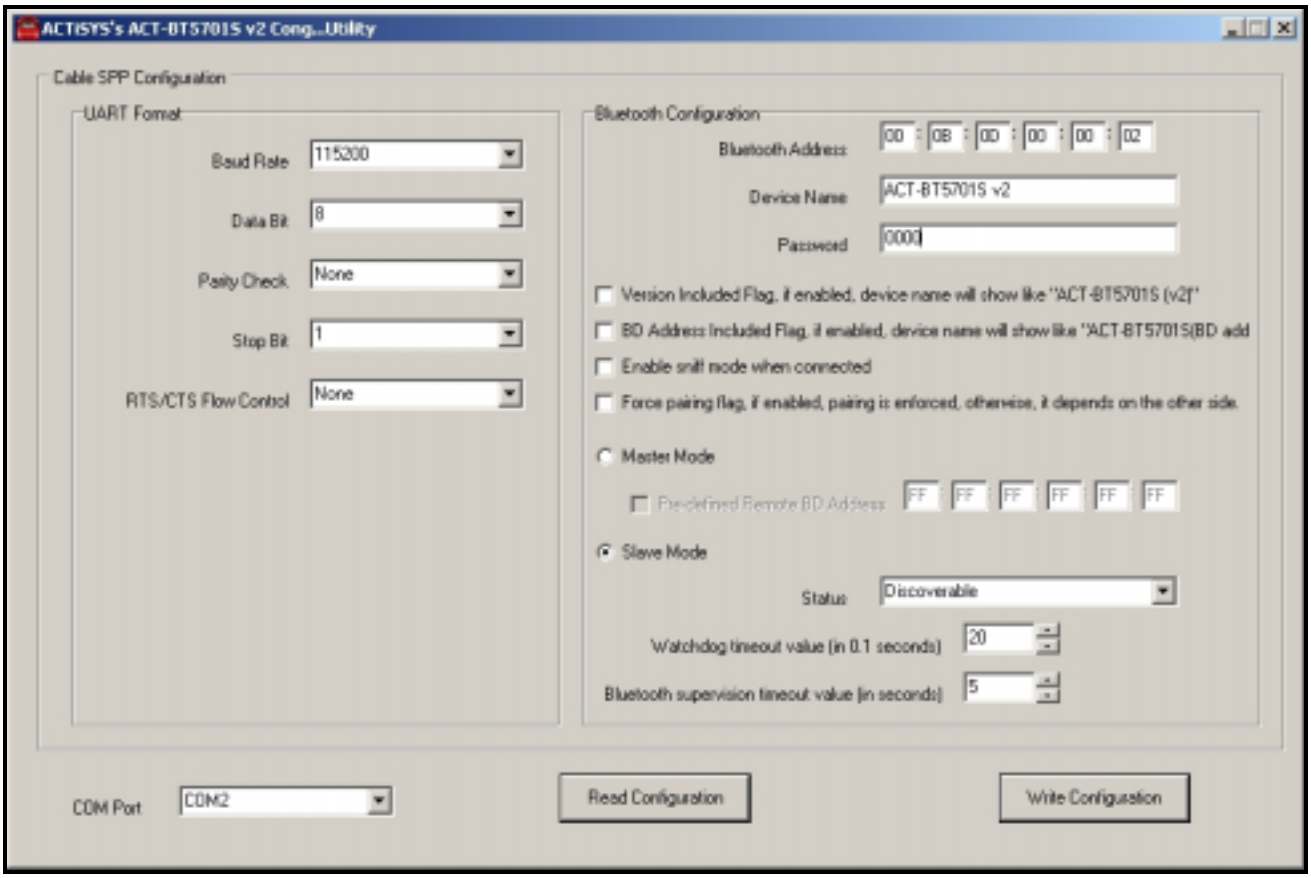


Figure 3: Null Modem Connection For Normal Operation

8. FACTORY SETTING PARAMETERS

When using ACT-BT5701S v2 with your serial devices, make sure all the settings match on both sides. Otherwise, you may encounter communicating problems. Below figure is the ***default factory setting*** parameters of this unit:



NOTE: If it requires you to change any of the settings, consult the configuration Chapters 9 and 10 for detail parameters and procedure.

9. CONFIGURATION PARAMETERS

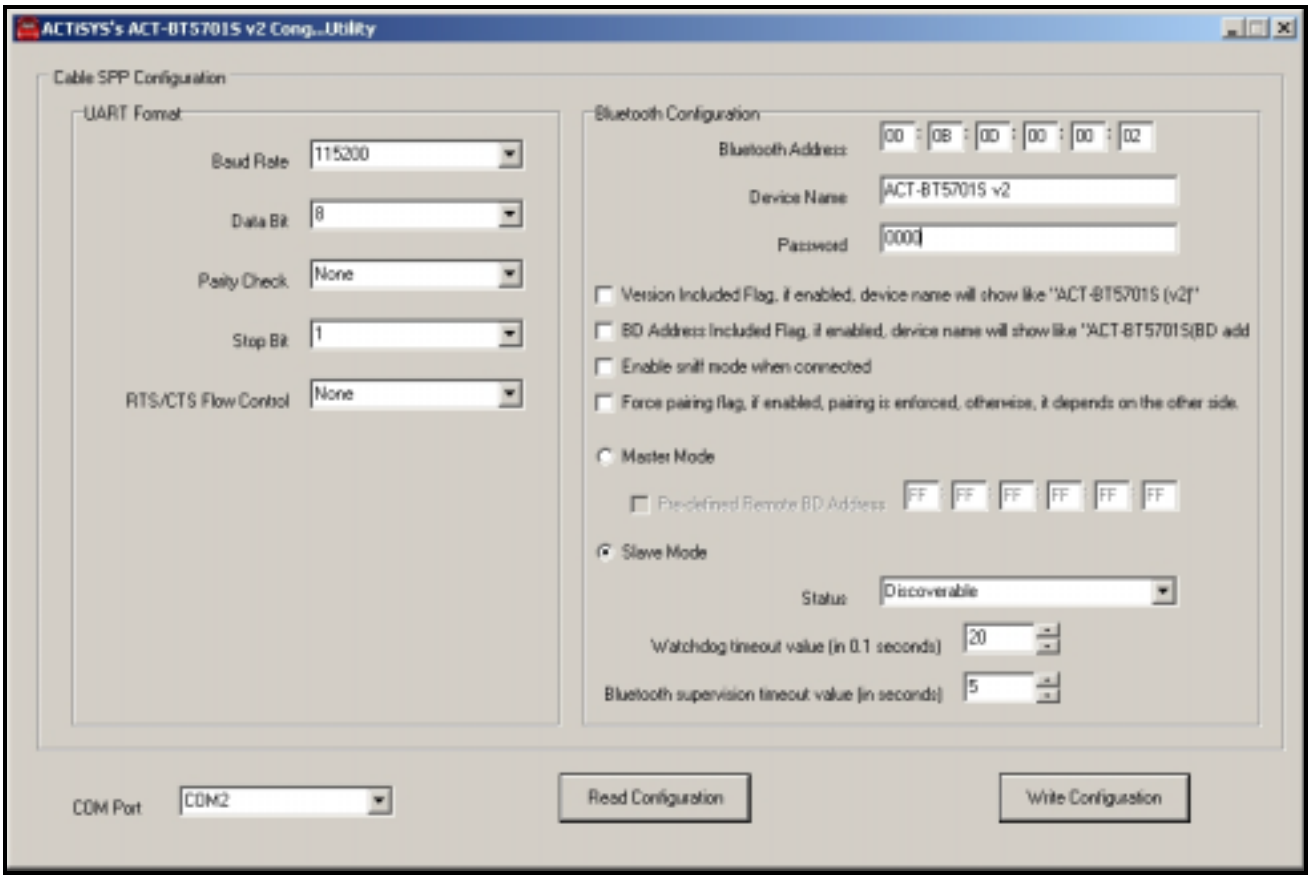


Figure 4: Configuration Parameters Window

9.1. 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

9.2. COM Port

Select COM1, COM2 or any other COM port you have connected.

9.3. Bluetooth Configuration

- **Bluetooth Address:** BD address is an 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 000. 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 "Un-discoverable". The default is "Discoverable".

9.4. Control Flag

There are 4 flags to be selected:

- **Version Included Flag:** If enabled, the firmware version "(v2)" will show after the device name you have assigned, e.g., "Device Name (v2)"
- **BD Address Included Flag:** If enabled, the last 3 byte BD address will show after the device name, e.g., "Device Name (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.

9.5. Watchdog Timeout

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

9.6. 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).

9.7. Read Configuration

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

9.8. Write Configuration

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

10. PROCEDURE FOR CONFIGURATION PARAMETERS

10.1. Refer Figure 5 for DB9 female-to-female null modem adapter. One end is black while the other is white.

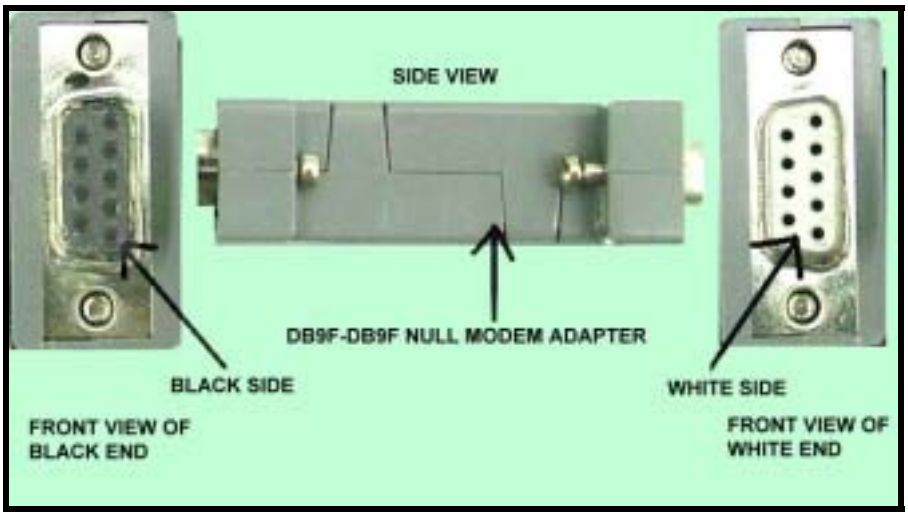


Figure 5: Null Modem Adapter

Connect ACT-BT5701S v2 as shown in Figure 6. User has to take care of direction of DB9 null modem adapter. During configuring parameters, ***black*** *end* of null modem adapter should be connected to ACT-BT5701S v2. Please follow the instructions below:

- Connect ACT-BT5701S v2 to *black end* of Null Modem Adapter
- Give power to DC JACK of ACT-BT5701S v2 through AC to DC power adaptor.
- Connect *white end* of null modem adapter to PC COM port.

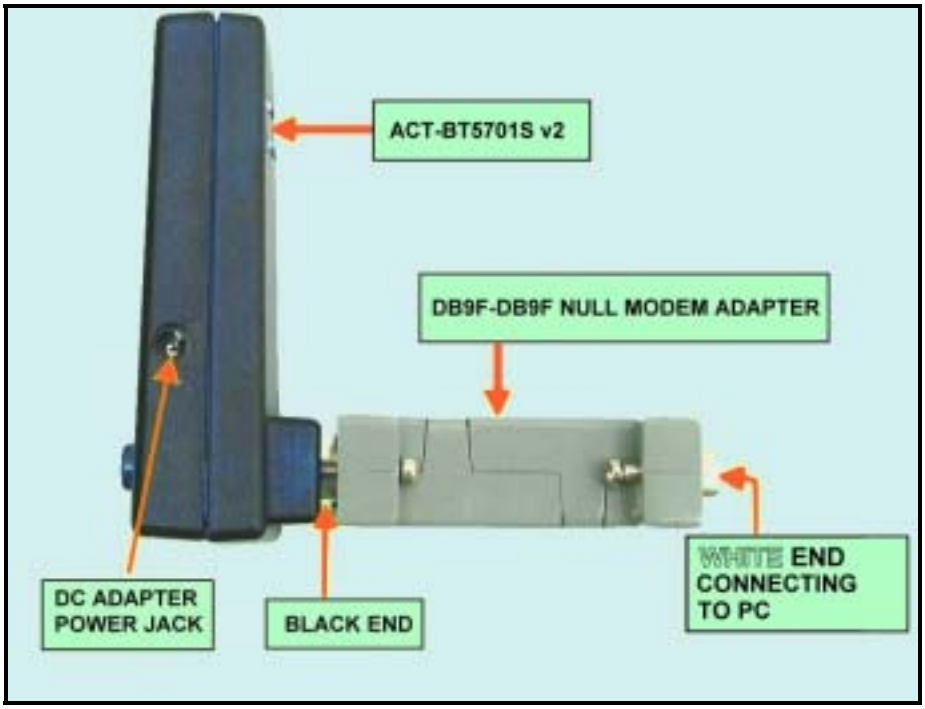


Figure 6: Connection For Configuring the Adapter

NOTE: For Normal Operation the null modem adapter must be in reverse direction. ***Black*** *end* should be connected to PC COM port while *white end* should be connected to ACT-BT5701S v2. Figure 7 shows this connection.

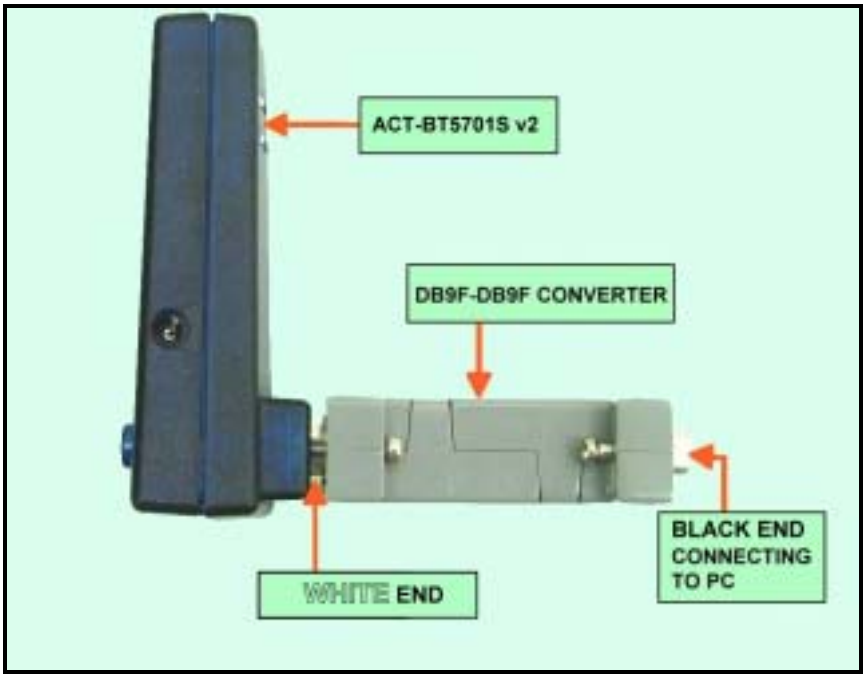
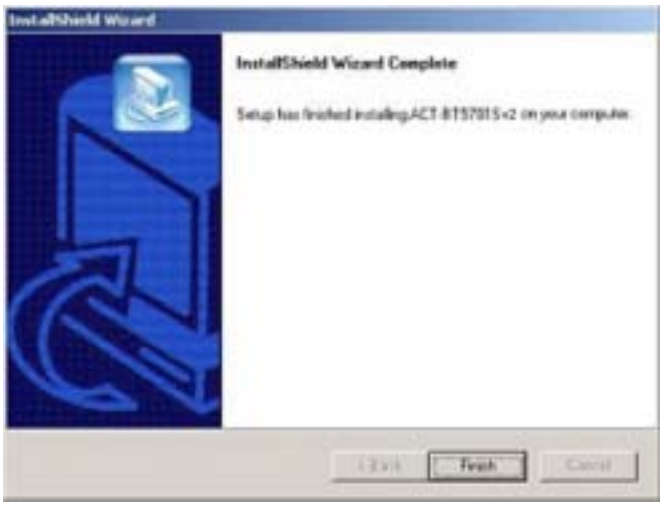


Figure 7: Connection For Normal Operation

10.2. Insert the installation CD provided in this package into your PC. It will then automatically run the InstallShield and guide you to install the utility program to your hard disk. **NOTE: Please don't install it again and Skip steps 10.3 to 10.4 if you have already installed this utility.**

10.3. Then you could see the following screen. Click **Next >** to continue.

10.4. Then you will see the screen below. Click **Finish** to complete the procedure.



10.5. Now run utility program ACT-BT5701Sv2.EXE from ***Start>Programs> ACTiSYS> ACT-BT5701S v2***.

You will see the following screen:

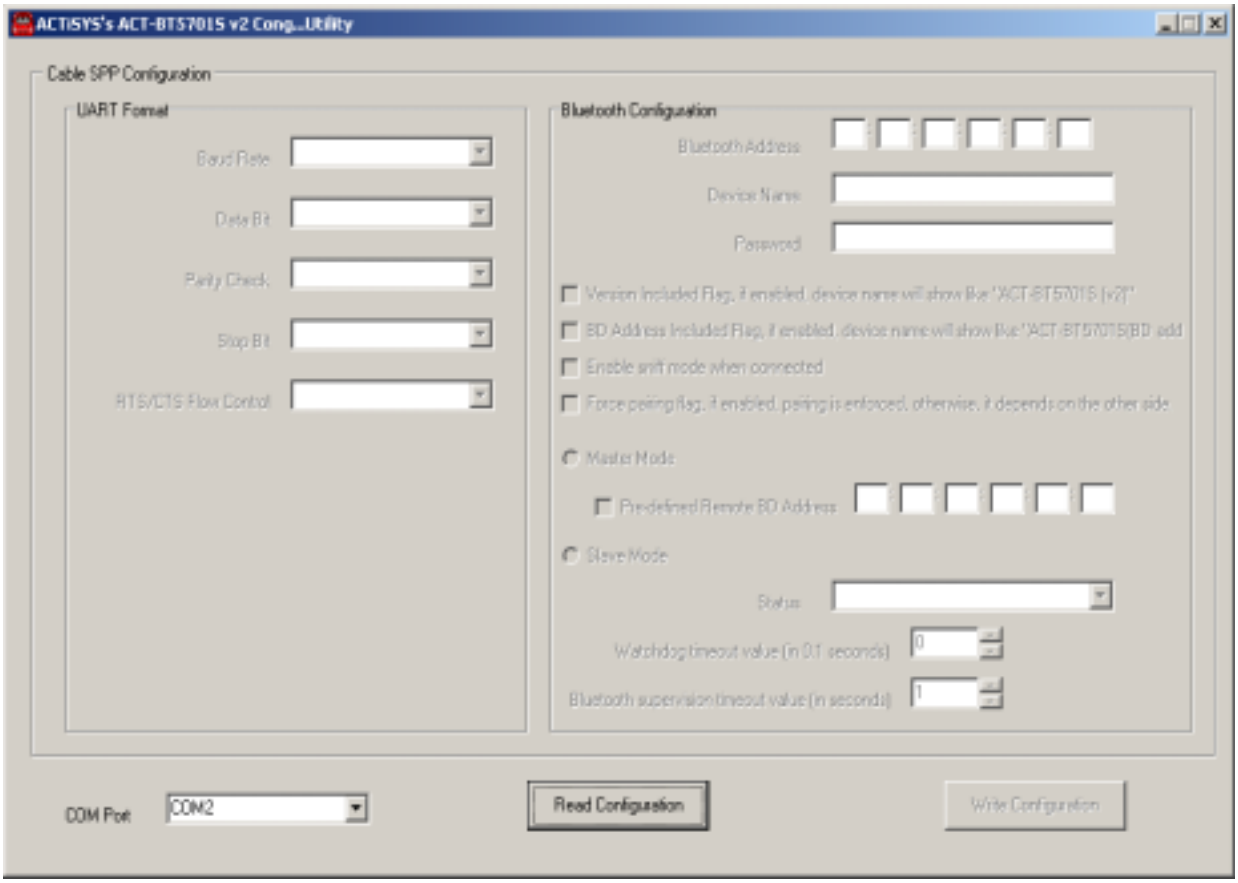


Figure 8: Configuration Utility

10.6. Click "**Read Configuration**" button and wait for operation completes. It will indicate default configuration. See Figure 9. In this window user has to define parameters as per requirement. Details please refer to Chapter 9.

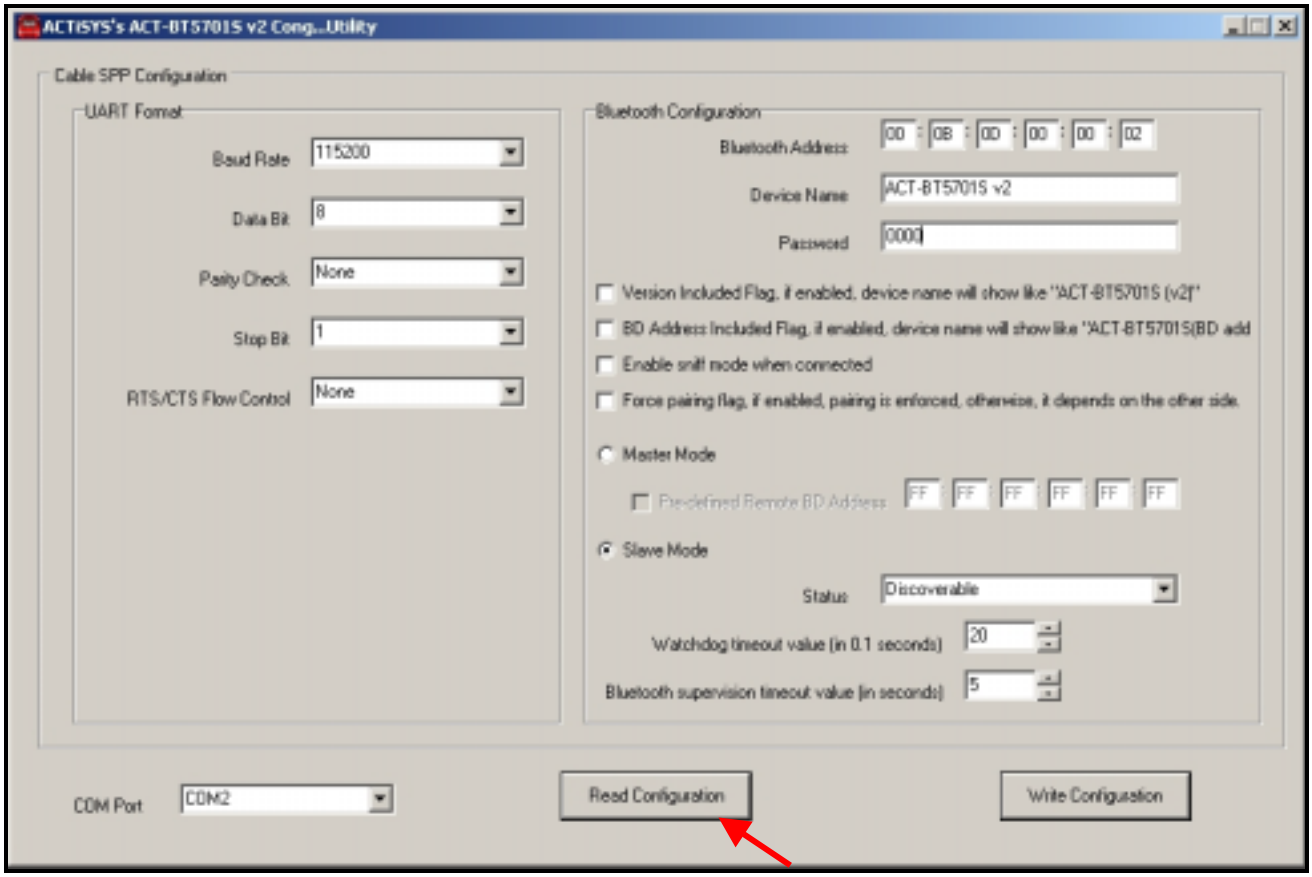


Figure 9: Read Configuration Complete

10.7. After all parameters have been set, click "**Write Configuration"** button to save all the settings. See Figure 10.

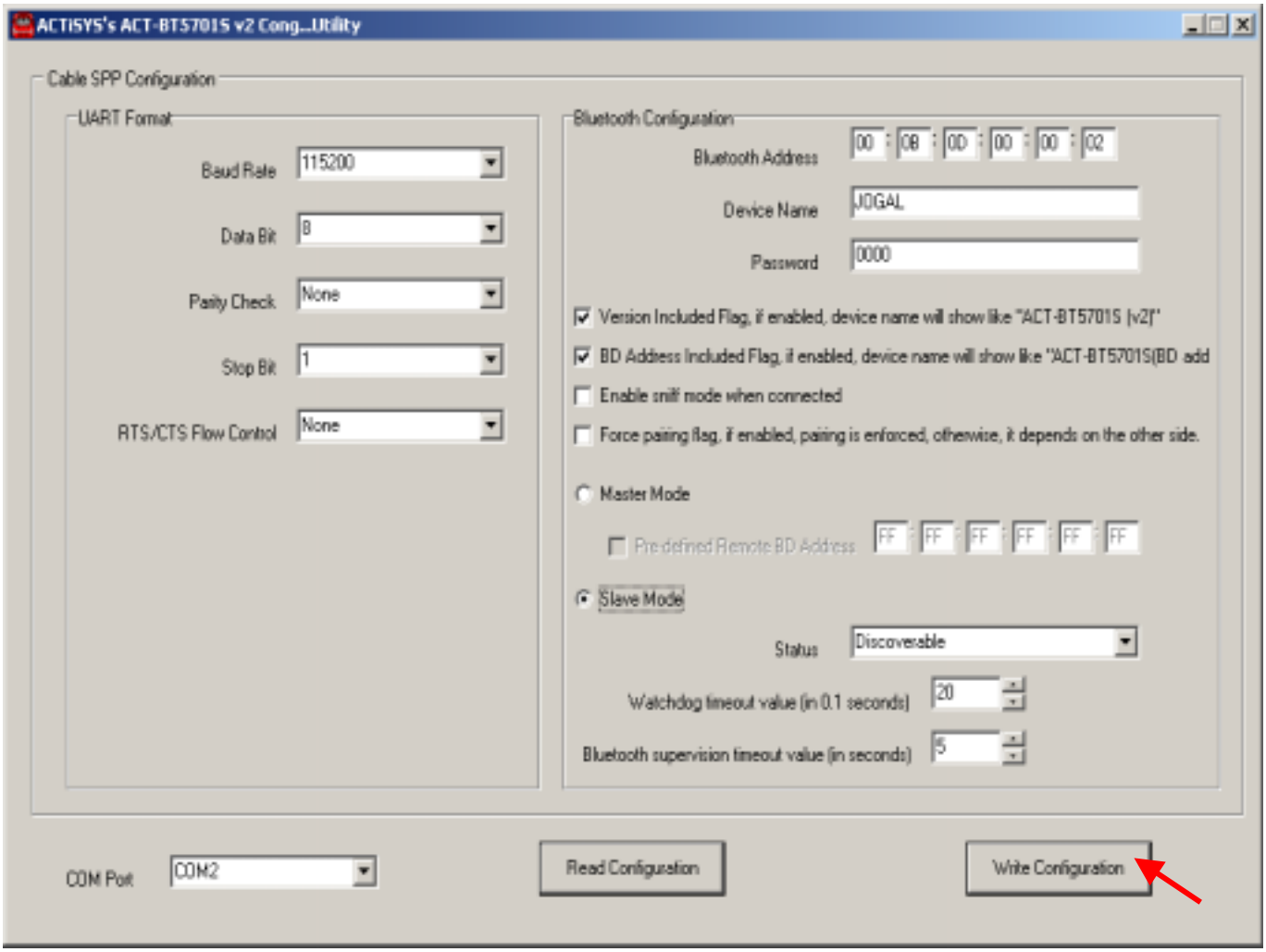
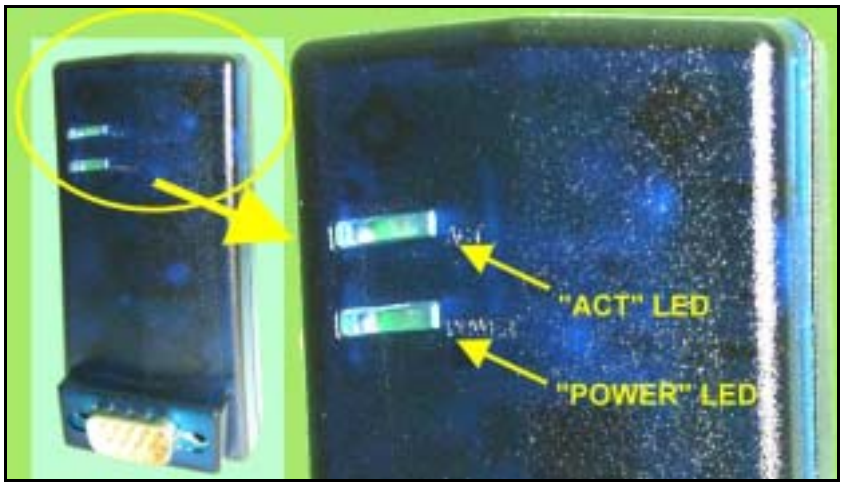


Figure 10: Write Configuration Progress

11. CONNECTION FOR NORMAL OPERATION

For normal operation mode, the null modem adapter must be in reverse direction. Black side should be connected to PC COM port while white side should be connected to ACT-BT5701S v2. Please refer to Figure 7 (Connection For Normal Operation). User can connect ACT-BT5701S v2 directly to female connector of target side also. But if users don't have female connector and want to use the null modem adapter then they have to connect as per Figure 7.

12. LED BEHAVIOR



LED CATEGORY	LED BEHAVIOR	STATUS
"ACT" LED	On	Active (Connect) Mode
	Flash Fast	Data Transfer Mode
	Flash Slow	Stand By Mode
"POWER" LED	On	Power on
	Off	Power off

13. ELECTRICAL CHARACTERISTICS AND SPECIFICATIONS

13.1 Electrical Characteristics

Parameter	Min	Typical	Max	Unit
IDLE Mode Current Consumption		15	20	mA
STANDBY Mode Current Consumption		45	50	mA
TX and RX Mode Current Consumption		78	80	mA
DC Supply to DC JACK	4.5	7.5	12	V
DC Supply to DB9-M pin 1 (Optional)	4.5	5.0	12	V
Operating Temperature	0	25	60	°C
Transmission Power (Output Power)		19.30		dBm
Frequency Band	2.400	2.4GHz ISM Band	2.4835	GHz
Data Rate		723.1		kbps
UART Speed	1.2	115.2	1843.2	kbps
Sensitivity		-80		dBm

13.2 Generic Specifications

FUNCTION	ACT-BT5701S v2
Standard	Bluetooth 1.2
Interface	RS232
Configurable Parameters	Master or Slave mode, Stop Bit, Parity Check, Baud Rate, Flow Control, BD address & all other parameters shown in Chapter 9
Modulation	GFSK
Spread Spectrum	Frequency Hopping Spread Spectrum (FHSS)
Dimension	(78.6 X 41.2 X 32.8) mm / 32grams

14. 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 UART settings?

A2. Use the ACT-BT5701Sv2.EXE. Refer to Chapter 9 & 10 for Configuration Parameters and Procedures.

Q3. What is the data format of the device?

A3. Refer to Section 9.1 of Chapter 9.

Q4. How to display device settings?

A4. Use the ACT-BT5701Sv2.EXE. Refer to Chapter 10 "Procedure for Configuration Parameters".

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

A5. Use the ACT-BT5701Sv2.EXE. Refer to Chapter 9 & 10 for Configuration Parameters & Procedure. It supports1200 bps to 1843200 bps baud rate.

Q6. How to set PIN key (password)?

A6. Use the utility ACT-BT5701Sv2.EXE. The default PIN key is "0000". But you can change it. Refer to Chapter 9 & 10.

Q7. How to change device name?

A7. Use the utility file ACT-BT5701Sv2.EXE. Refer to Chapter 9 & 10.

Q8. How to provide power to ACT-BT5701S v2?

A8. User can give power to DC JACK pin through power adaptor 7.5V @300mA or give unregulated 5 ~ 12 VDC to pin 1 of the male connector of ACT-BT5701S v2.

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

A9. Please refer to Chapter 10 and strictly follow the sequence on connection of null modem adaptor, ACT-BT5701S v2, power adaptor and connect to PC.

15. 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 14. 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

16. CONTACT INFORMATION

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