

# WCS-232 v5.0

## RS232 to Bluetooth Converter



User's Manual  
Version 1.0



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### 5-Year Warranty



SystemBase Co., Ltd. warrants that the product(s) shall be free from manufacturing defects in materials and workmanship for a period of five (5) years from the date of delivery provided that the product was properly installed and used. Defects, malfunctions or failures of the warranted product caused by damage resulting from acts of God (such as floods, fire, etc.), environmental and atmospheric disturbances, other external forces such as powerline disturbances, host computer malfunction, plugging the board in under power, or incorrect cabling and damage caused by misuse, abuse and unauthorized alteration or repair are not warranted.

The warranty is limited to the repair and/or replacement, at SystemBase's option, of the defective product during its warranty period. Customer must obtain a Return Material Authorization (RMA) number prior to returning the defective product to SystemBase for service. Customer agrees to insure the product or assume the risk of loss or damage in transit, to prepay shipping charges and to use the original shipping container or equivalent. Contact SystemBase Customer Support at tech@sysbas.com for further information. Product replaced shall be warranted for a period of ninety (90) days or the duration of the initial product warranty period, whichever is longer.

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Help Hotline : Technical supports are available to all our customers for assistance in installation and operation.  
[+82-2-855-0501]  
e-mail: tech@sysbas.com

### 1. Preface

Thank you for purchasing product by SystemBase. This product has passed thorough quality control and during the 5 year warranty period, the customers can get free repair services from the day the purchase was made. If you have any questions or difficulties with this product please contact our Technical Support at <http://www.solv-line.com>.

### 2. Introduction

- This is a converter which changes RS232 signal to Bluetooth signal or vice versa,
- The following is the contents in the package.
  - WCS-232 v5.0 2EA
  - 1dB antenna 2EA
  - User manual
  - USB power cable 2EA

### 3. Specification

#### 3.1 Serial Communication

Communication Interface	RS232
Communication Speed	Max. 230,4kbps
Communication Distance	Max. 15m
Connector	DB9 Female

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#### 3.2 Bluetooth Communication

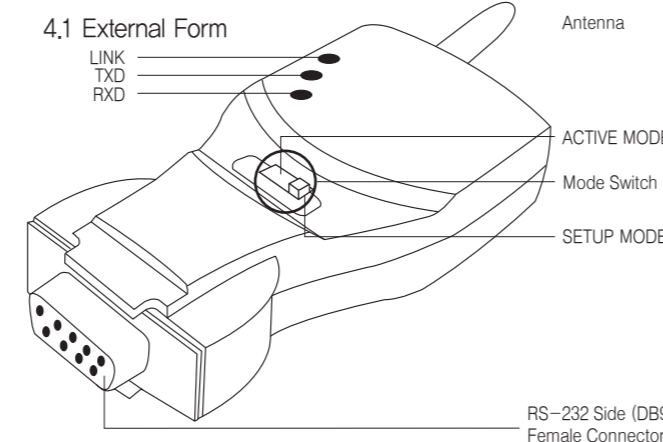
Specification	Bluetooth Specification V2.1 + EDR class 1
Frequency	2402 ~ 2480 MHz
Wireless method	Frequency Hopping Spread Spectrum
Maximum Communication Distance	100m

#### 3.3 Hardware

Power Supply	5V from USB port on the PC Can be used with 5~12V DC adapter 
Dimension	36.8(W) x 19.0(D) x 74.2(H)
Weight	35g

### 4. Structure

#### 4.1 External Form



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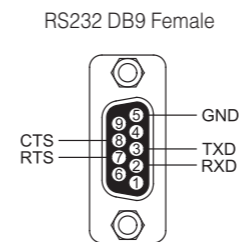
### 4.2 Hardware

SETUP  ACTIVE : Active Mode  
SETUP  ACTIVE : Setup Mode

### 4.2 Switch Mode

- LINK: When the power is supplied, red LED starts blinking. When connected with the target wirelessly, green is on.
- TXD: When a data is transmitted LED is on. (When it is in linked status LED is dimmed.)
- RXD: When a data is received LED is on.

### 5. Connector



### 6. Installation

#### 6.1 Connect

Connect WCS-232 to a serial port on a PC or a communication device and supply power.

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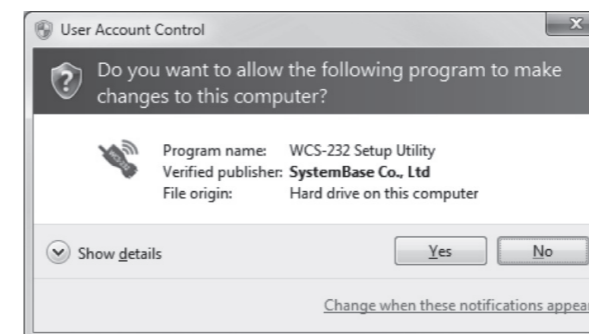
WCS-232 can get the power from USB cable connected to the USB port on the PC. When both WCS-232 is powered up, they will be connected using Bluetooth. This is when you can start using the serial port.

#### 6.2 Environment Setting

Since WCS-232 is connected to the serial port, serial related settings (baud rate, data bit, parity bit, stop bit, and flow control) and RF related configurations (name of the device, operation mode, target address) are required to be set. Regarding RF connection settings, if WCS-232 is not trying to connect to other WCS-232 but Bluetooth device from other companies or when trying to reset the settings to the factory default, it is required.

#### 6.3 WCS-232 Setup Utility Installation

Run WCS-232 Setup Utility. You can download the file from our homepage or find it from the CD included in the product package.

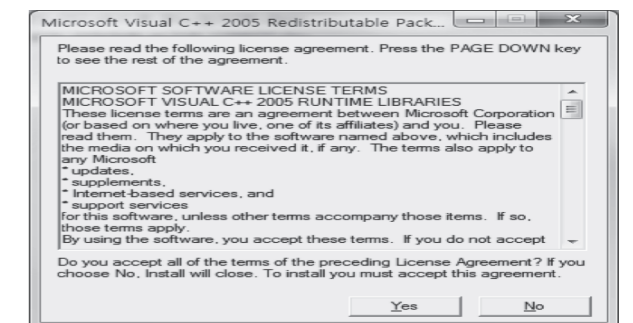


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When the User Account Control window pops up, click the Yes button.

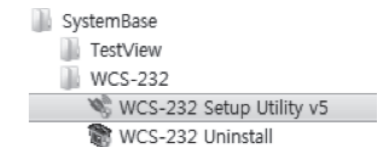


After installing WCS-232 v5.0 Setup Utility, Microsoft .NET Framework version 2.0 and Microsoft Visual C++ 2005 SP1 Redistributable Package will be ready to be installed.



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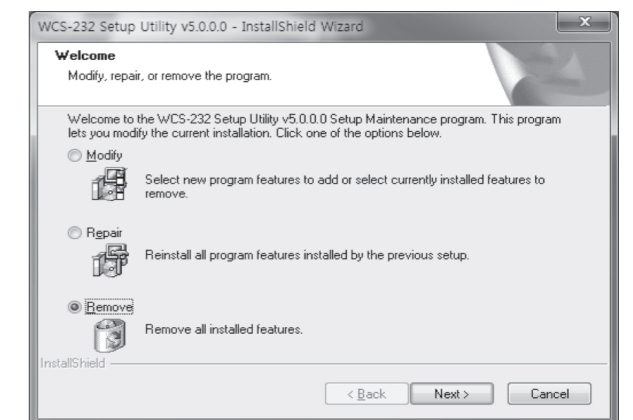
Proceed with Microsoft Visual C++ 2005 SP1 Redistributable Package installation.



After WCS-232 Setup Utility installation is complete, click WCS-232 v5.0 Setup Utility v5 from the Start button → SystemBase → WCS-232.

#### 6.4 Remove WCS-232 Setup Utility

Click WCS-232 Uninstall from Start button → SystemBase → WCS-232



Proceed with uninstallation by clicking on the Remove selection.

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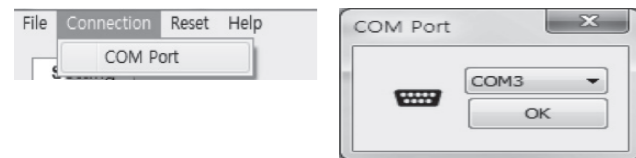
## 7. Operation Environment Configuration

### 7.1 How to configure

Dedicated WCS-232 v5.0 configuration utility can be used to modify communication speed, parity, stop bit, device name, and operation mode.

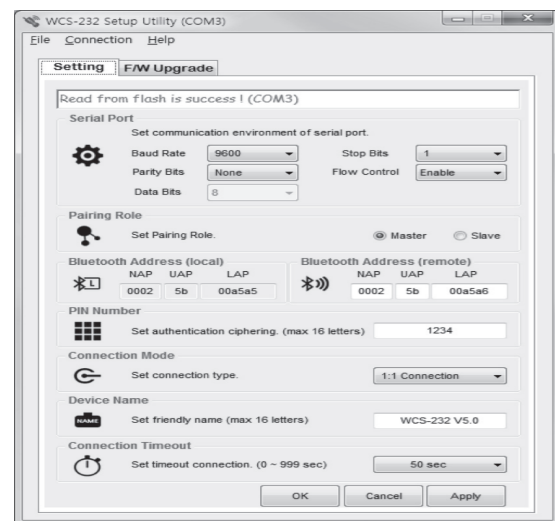
#### ■ Retrieve settings

- 1 Connect WCS-232 to COM port and supply power to the unit.
- 2 Set switch in WCS-232 to Setup Mode.
- 3 Run WCS-232 v5.0 Setup Utility
- 4 From the utility, click Connection then COM Port at the top of the menu to select the port to connect.



- 5 When successfully completed, "Read from flash is success" message will appear.

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#### ■ Save settings

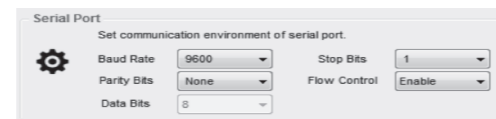
- 1 Click Apply button to save the settings in the device memory.
- 2 After it is saved, "Write to flash is success" message will appear.
- 3 Click on the OK button to save the settings in the device memory and close the windows.

### 7.2 Operation Setting

#### ■ Serial Port

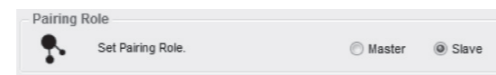
Set serial communication configuration for SPP (Serial Port Profile).

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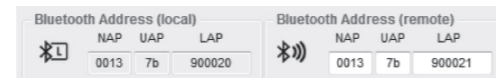
#### ■ Pairing Role

Select Master/Slave mode



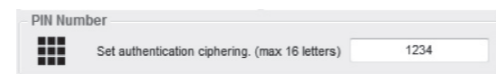
#### ■ Bluetooth Address

Current Bluetooth address can be checked. The target Bluetooth address can be checked and set.



#### ■ Pin Number

When connecting to the Bluetooth device, this pin is required. Up to ASCII 16 characters can be set for a pin number.

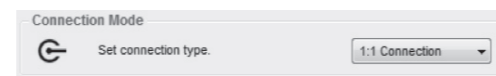


#### ■ Connection Mode

WCS-232 v5.0 supports "1:1 connection" and "connection waiting" modes.

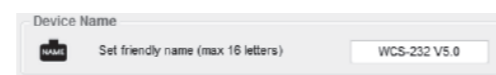
In 1:1 connection mode, connection is established when the address of the Bluetooth device is entered manually. In connection waiting mode, When a target device is not specified, it will look for new devices automatically.

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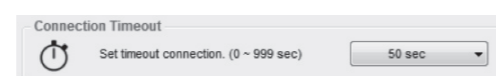
#### ■ Device Name

A device name can be given here with up to 16 ASCII characters.



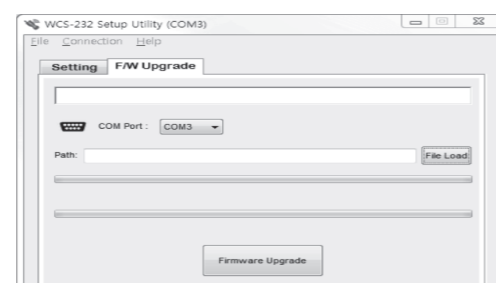
#### ■ Connection Timeout

Set a given period of time until the Bluetooth device searches and connects.



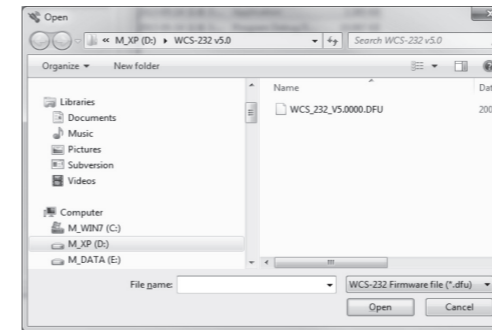
## 8. Firmware Upload

- 1 WCS-232 v5.0 unit and the DFU (Device Firmware Upgrade) file is required to upload a firmware.
2. Select F/W upgrade tab.

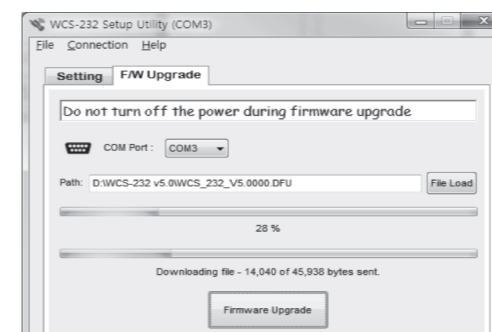


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3. When the "File Load" button is clicked, following dialog box will appear.

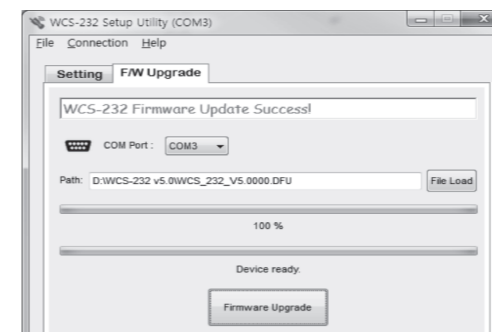


4. When you click on the "Firmware Upgrade" button, it will upload the firmware and show the progress from the bar.



5. After uploading the firmware is completed, the following message will appear.

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## Appendix : Troubleshooting

### 1. Things to check when communication is not established.

#### 1-1 COM port setting

- WCS-232 v5.0 supports 8 data bits only. When the host supports 7 data bits and even or odd parity, WCS-232 v5.0 can be set to 8 data bits, no parity (factory default state). However, it cannot be applied to a device such as 7 bit USB dongle.
- Check whether both WCS-232 devices are set to the same parity and stop bit. WCS-232 supports v5.0 no, even and odd parity and 1 or 2 stop bits.
- RTS (Request To Send) and CTS (Clear To Send) signal from RS-232 standard are used for data transmit/receiving (Hardware Flow Control or Hardware Handshaking) control purpose.
- WCS-232 v5.0 does not support the break signal from RS-232, thus it cannot be used for the device which requires such feature.

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### 1-2 Check the pin wiring

- Data transmit/receiving devices are separated to DTE (Data Terminal Equipment) device and DCE (Data Communication Equipment) device. Generally, a terminal such as a PC is a DTE device and a data relay system such as a modem is a DCE device. According to RS-232 standard, when DTE device is required to connect to a DCE device, two devices are connected directly or by 1:1 cable.

In other words, signal lines such as TX and RX or signal control line should not be crossed but connected directly. However, when two same kind of devices, such as DTE and DTE, or DCE and DCE devices needs to be connected, cross cable (often called the null modem cable) is used. This cable is used to connect TX with RX signal lines and cross connect other signal control lines.

WCS-232 v5.0 is a DCE device required to be connected to a PC directly. Therefore, if it needs to be connected to a DTE device, it can be connected to a DTE device directly or use a 1:1 cable. However, if it needs to be connected to a DCE device or a modem, a cross cable is required to be used.

### 2. Data loss or dysfunction

#### 2-1 Hardware control

- WCS-232 v5.0 sends a data received from the host to the

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target Bluetooth device, but when the communication environment is not good, resending packets will be repeated resulting a delay in communication. When a hardware flow control is not used, internal buffer in WCS-232 v5.0 may receive more data than it can handle, causing an overflow. Therefore when the wireless environment is not good, it is recommended to use the hardware flow control.

### 3. Delay in communication

#### 3-1 Delay in converting to wireless signal

- When WCS-232 v5.0 converts a data from the host to wireless signal, it takes about 30 msec. This delay may be increased due to the wireless connection environment. Additionally, when WCS-232 v5.0 receives a data it converts to the wireless signal immediately. Therefore, sequencing data can be divided and transmitted. To prevent this, Inter-Character Timeout feature is provided which is when no data is received from the serial port, transmission begins.

#### 3-2 Wireless Environment

- The Bluetooth uses 79 channels to transmit a data to avoid interferences. However, when there are numbers of Bluetooth devices in a small area, trying to send a large amount of data, data loss or error may occur. WCS-232 v5.0 can use 1,2 AFH feature in Bluetooth to avoid Wi-Fi interference, but depending on the distance or the number of the devices, it may have less effect in such environment.

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# FCC Statement

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- 1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation. for compliance could void the user's authority to operate the equipment.

## FCC RF

### INTERFERENCE STATEMENT

#### NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### **CE Warning !**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



USB Port for power supply\_WCS-232 Ver5.0