

GREENTEL Bluetooth Serial Adapter

User Manual

For B232 Bluetooth Serial Adapter

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Announcements

Thank you for choosing our product. GREENTEL B232 is a Class1 type of Bluetooth Serial Adapter that supports 100 meters of wireless transmit distance.

GREENTEL B232 provides transparent RS232 serial cable replacement.

GREENTEL B232 allows any device with a serial port to communicate wirelessly.

Please read this manual carefully before using the product.

Important Safety Information

This product is not intended for use in the following circumstances

- Area(s) where radio transmission equipment (such as cell phone) are not permitted.
- Hospitals, health care facilities and area(s) where cell phones are restricted by law.
- Gas stations, fuel storage and places where chemical are stored.
- Chemical plants or places with potential explosion hazard.
- Any metal surface that may weaken the radio signal level.

Copyright Announcement

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1. Adapter Introduction

GREENTEL B232 is a Class1 type of Bluetooth Serial Adapter that supports 100 meters of wireless transmit distance.

GREENTEL B232 provides transparent RS232 serial cable replacement.

GREENTEL B232 allows any device with a serial port to communicate wirelessly.

Applications such as RS232 cable replacement, PLC, PDA, laptops, printers.

1.1 Features:

- Bluetooth Specification V2.0+EDR Class1
- Provides transparent RS232 serial cable replacement
- Main chipset: CSR BC04
- LED indicators: Power, Link
- Supports Bluetooth Serial Port Profile and Generic Access Profile
- Working distance (In an open field): 100 meters
- Configurable via Hyper Terminal
- Supports AT command
- Easy of installation and use
- No need external host and software
- Supports factory restore button

1.2 Technical Specifications:

- Baud Rate: 4.8/9.6/19.2/38.4/57.6/115.2/230.4 Kbps
- Coverage: Up to 100 meters (in an open field)
- Connection: Point-to-point (pico net)
- Signal: Tx/D, Rx/D, GND, CTS, and RTS (DSR and DTR optional)
- RS-232 Interface: D_SUB 9-pin female
- Standard: Bluetooth specification version 2.0+EDR Class 1
- Frequency: 2.400 to 2.4835 GHz
- Hopping: 1,600/sec, 1MHz channel space
- Modulation: GFSK-1 Mbps, DQPSK-2 Mbps, and 8-DPSK-3 Mbps
- Tx. Power: Max. 18 dBm (Class 1)
- Rx. Sensitivity: -86 dBm typical
- Antenna Connector: SMA female
- Power Supply: +5 to +6 V DC
- Current Consumption: Max. 90 mA
- Power Supply connector: Mini USB
- Casing Material: ABS + PC
- Operation Temperature: -20 °C to +75 °C

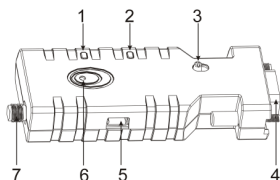
- Dimensions: 35 x 65 x 16 mm

1.3 Product Kit:

- Bluetooth Serial Adapter
- External Antenna
- DB9 Male to Female converter
- DC Adaptor with USB cable (B232-A)
- CD

2. Hardware Introduction

The figure below is an outline of the adaptor.



1 Power LED	2 Link LED	3 Slide switch	4 RS232 connector
5 Mini USB Connector	6 Reset button	7 Antenna connector	

2.1 Reset Button

By pressing the Reset button, you can:

Disconnect and reconnect a wireless connection (after a short press).

Restore the factory settings (after over three seconds' press).

2.2 Slide Switch

The slide switch can swap TXD/RXD and CTS/RTS signals.

By switching, you can set the adaptor either as a DTE (towards antenna connector) or a DCE (towards RS232 connector).

2.3 Power Supply

The adaptor can be powered via:

An AC/DC converter (output power: +5 to +6 V DC/300 mA)

A USB cable

Pin 9 of the D SUB 9-pin connector

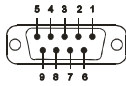
2.4 LED Status

The following is LED status information.

Status	Description
Power LED off	No power supply.
Power LED on	Firmware is running OK.
Link LED off	No pairing established.
Link LED fast (0.1 sec) blinking	Pairing (slave or master mode).
Link LED fast (0.3 sec) blinking	Discoverable and waiting for a connection (slave mode).
Link LED slow (0.9 sec) blinking	Inquiring (master mode).
Link LED very slow (1.2 sec) blinking	Connecting (master mode).
Link LED steadily on	Connection established.

2.5 RS232 Interface

2.5.1. Pin-out



2.5.2. Signals

Pin	Signal	DTE Direction	DCE Direction	Description
1	CD	Input	Output	Not connected
2	TxD	Output	Input	Transmitted data
3	RxD	Input	Output	Received data
4	DSR	Input	Output	Not connected
5	GND	N/A	N/A	Signal ground
6	DTR	Output	Input	Not connected
7	CTS	Input	Output	Clear to send (Remarks)
8	RTS	Output	Input	Request to send (Remarks)
9	Vcc	Input	Input	Power supply

Remarks: The default hardware configuration is for using CTS/RTS. If you want to use DSR/DTR, please contact us.

2.6 Factory Settings

The factory settings of COM port are as follows:

Baud rate: 19200 bps

Data bit: 8

Parity: none

Stop bit: 1

Flow control: H/W or none

Others: Please refer to section 4.3 AT Command Set.

3. How to Use

3.1 Installation Procedure

- Step 1: If provided with an external antenna, assemble it to the adaptor body.
- Step 2: Plug the adaptor into the COM port of device.
- Step 3: Adjust the slide switch, depending on whether the device is a DTE or DCE.
- Step 4: Power the adaptor on.
- Step 5: Configure the adaptor if necessary.

3.2 Usage

You can reprogram the default settings on the adaptor using HyperTerminal.

3.3.1 HyperTerminal Settings

Bits per second: 19200 bps (baud rate)
Data bit: 8
Parity: None
Stop bit: 1
Flow control: H/W

3.3.2 Configuration

Configuration Start-up

- Step 1: Plug the adaptor into a COM port of PC.
- Step 2: Power the adaptor on.
- Step 3: Create a HyperTerminal file.
- Step 4: On the interface of the new HyperTerminal file, click Properties button.
- Step 5: Select the COM port where the adaptor is attached to your PC and set the port properties as described in section 4.1 HyperTerminal Settings.
- Step 6: Input "A" in the file and then press <Enter>.
- If no echo, that is, nothing is displayed when you input "A", it indicates that the baud rate is incorrect. Ensure that the baud rate is 19200 bps.
- Step 7: Input "AT", and then press <Enter>. "OK" is displayed.
- If necessary, reprogram the configuration of adaptor using AT commands. For related commands, please refer to section 4.3 AT Command Set.

Master Role Configuration

You can use "ATR0" to change the adaptor to the master role.
When the adaptor is in the master role, you can use "ATO1" to manually set up a connection and "ATF?" to find the device you want to connect.

3.3 AT Command Set

The following is the AT command set for the local adaptor in the command mode (that is, the local adaptor is in the disconnection state). All the commands and parameters are case insensitive.

Command	Description
A	This command is used to establish a connection. It is available only when the adaptor is in the master role.
A	Connect the adaptor to a specified Bluetooth device. It is available only when "ATD=xxxxxxxxxxxx" is executed.
A1-A8	Connect the adaptor to a Bluetooth device in the neighborhood found through "ATF?"
B	This command is used to display the Bluetooth address of the local adaptor.
B?	Inquire the Bluetooth address of the local adaptor.
C	This command enable or disable flow control signals (CTS/RTS) of the UART port. Note, the setting is not affected by ATZ0
C0	Disable flow control.
C1 (Default)	Enable flow control.
C?	Inquire the current setting
D	For security purpose, this command is used to specify a unique remote Bluetooth serial adaptor to be connected. In the master role, the adaptor pairs and connects with the designated remote slave address. If the adaptor is in the slave mode, this command is a filter condition to accept the inquiry of the master device.
D=xxxxxxxxxxxx	"xxxx-xx-xxxxxx" is a string of 12 hexadecimal digits.
D0	Restore the status in which the adaptor can connect with any remote address.
D?	Inquiry the designated address that can be paired and connected.
E	This command is used to specify whether the adaptor echoes characters received from the UART back to the DTE/DCE.
E0	Command characters received from the UART are not echoed back to the DTE/DCE.
E1 (default)	Command characters received from the UART are echoed back to the DTE/DCE.
E?	Inquire the current setting.
F	This command is used to search for any Bluetooth device in the neighborhood within one minute. If any device is found, its name and address will be listed. The search ends with a message "Inquiry ends. xx device(s) found." This command is available only when the adaptor is in the master role.
F?	Inquire Bluetooth devices in the neighborhood, listing 8 devices the maximum
H	This command is used to specify whether the adaptor can be discovered or connected by remote devices.
H0	The adaptor enters the undiscoverable mode. If a pair has been made, the original connection can be resumed. But other remote master device cannot discover this adaptor.
H1 (default)	The adaptor enters the discoverable mode.
H?	Inquire the current setting.
I	This command is used to inquiry the firmware version.
I?	Inquire the version codes.
K	This command is used to specify one or two stop bits of COM port.
K0(default)	One stop bit.
K1	Two stop bits.
K?	Inquire the current setting.
L	This command is used to specify the baud rate of COM port.
L0	4800 bps

L1	9600 bps
L2 (default)	19200 bps
L3	38400 bps
L4	57600 bps
L5	115200 bps
L6	230.4 Kbps
L?	Inquire the current baud rate.
M	This command is used to specify parity bit setting of COM port.
M0(default)	None parity bit.
M1	Odd parity.
M2	Even parity
M?	Inquire the current setting.
N	This command is used to specify a name for the adaptor. You can specify a friendly name using 0 to 9, A to Z, a to z, space and -, which are all valid characters. Note that "first space or -, last space or - isn't permitted". The default name is "Serial Adaptor".
N=xxxxxx	"xxxxxx" is a character string with a maximal length of 16.
N?	Inquire the name of the local adaptor.
O	This command is used to enable/disable auto-connection feature. It is available only when the adaptor is in the master role.
O0 (Default)	Automatically connect the adaptor to a device specified by "ATD" or any available device if "ATD=xxxxxxxxxxx" is not executed.
O1	Disable auto-connection feature. After it is executed, you need to execute "ATA" to manually connect a remote device.
O?	Inquire the current setting.
P	This command is used to specify a PIN. The default PIN is "1234". Paired adaptors should have a same PIN.
P=xxxxxxx	"xxxx" is a 4~8-digit string.
P0	Cancel authentication by PIN.
P?	Inquire the current PIN.
Q	The command is used to decide whether result messages are prompted when AT commands are executed. The result messages are: OK/ERROR for command execution, or CONNECT/DISCONNECT for connection status.
Q0 (default)	Prompt result messages.
Q1	Not prompt result messages.
Q?	Inquire the current setting.
R	This command is used to specify whether the adaptor is in the master or slave role. If the device role is changed, the adaptor will reboot and all paired addresses will be cleared.
R0	Set the adaptor to the master role.
R1 (default)	Set the adaptor to the slave role.
R?	Inquire the current role of the adaptor.
Z	This command is used to restore the default settings and originate a warm start.
Z0	Restore the default settings (e.g. 19200 bps).

10. Support

In case you have problems with the installation and use, please address them to the Technical Assistance Department by e-mail support@greentel-eu.com

GREENTEL LIMITED

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