Bluetooth RS-232 Adapter
User manual for Bluetronium models

1. Component Explanation
1.1 Front: Setting the Parameter by Toggle Switch.

LED Display:

Power/Batt: Power Source
Status: Bluetooth work
TX: Data Efferent
RX: Data Receive
Charging

Button Switch: (Paperclip)
Reset: return the original set

Function	Location	Location	Function
Set by Toggle Switch	DIP	S/W	Software Setting
Transfer Mode	Run	Config	Setting Mode
Bluetooth Auxiliary	Slave	Master	Bluetooth Main
Connection by Automatic	Auto	Manual	Connection by Manually
Close the flow control	Flow off	Flow On	Open the flow control
Four-stage switch settings	Baud Rate Setting		Four-stage switch settings

1.2 Sid:

2. P ower Supplying (use one of them), Input 5Vdc Maximum
    2.1 Mini USB
    2.2 DB9 Pin9
    2.3 Battery

3. The Original Set
- Baud rate: 9600 bps
- Data bit: 8
- Parity: none
- Stop bit: 1
- Flow control: none

Remark: Any setting can return the original set when pressing the "Reset" button continue 3 seconds.

4. LED Status:

Status	Description
Power LED off	No power supply.
Power LED on	The power input is equal or larger than 3.5 Volt (Please check the command "DETECT")
Power LED (0.5 sec) blinking	The power input is lower than 3.5 Volt (Please check the command "DETECT")
Status LED off	No pairing established.
Status LED fast (0.1 sec) blinking	Pairing (slave or master mode).
Status LED fast (0.3 sec) blinking	Discoverable and waiting for a connection (Slave mode).
Status LED slow (0.9 sec) blinking	Inquiring (master mode).
Status LED very slow (1.2 sec) blinking	Connecting (master mode).
Status LED steadily on	Connection established.
TX LED Flash	Data transmitted
RX LED Flash	Data received
Charging	The "power/Batt" lights, and the light off when finished

5. Setup Command set (Please type in <u>all capital letter</u> or <u>all lowercase letter</u>) via RS-232 interface

Command	Value	Description
<<<		Set the local adapter change the data mode into command mode. The command will be unavailable if the data pass through within 1 second when after set the command.
<<<		Switch the data mode to the command. The time interval between each character will be more than the time: [500ms] "<" [500ms] "<" [500ms] "<" [1500ms]
<<<=	?	Inquire the current setting.
(Default)	Y	Turn on the "<<<" command
	N	Turn off the "<<<" command
>>>		Set the remote adapter change the data mode into command mode from the local adapter in connecting status. The command is available after 500 ms when data transferring finished.
>>>		Switch the remote adapter from the data mode to the command. The time interval between each character will be more than the time: [1 sec] "<" [1 sec] "<" [1 sec] "<" [2 sec]
>>>=	?	Inquire the setting status of the ">>>" command.
(Default)	Y	Turn on the ">>>" command
	N	Turn off the ">>>" command
ADDRESS=		This command is used to display the Bluetooth address of the local Adapter.
	?	Inquire the Bluetooth address of the local Adapter.
AT		Check the connection status between control terminal and the RS-232 adapter. Response: "OK" when the connection is ok. Response: "ERROR" when the connection is not ok.
AT		Test the RS-232 status when first connect the adapter with the controller.
AUTO=		This command is used to enable/disable auto-connection feature. It is available only when the Adapter is in the master role. The command is available when DIP=N. The system will not re-start after change.
	Y	The Master role adapter will connect the latest paired Bluetooth device automatically.
(Default)	N	The user will connect the Bluetooth device manually.
	?	Inquire the current setting.
BAUD=		This command is used to specify the baud rate of COM port. The command will need 200 ms delay.
	1200	1200 bps
	2400	2400 bps
	4800	4800 bps
(Default)	9600	9600 bps
	19200	19200 bps
	38400	38400 bps
	57600	57600 bps
	115200	115200 bps

	230400	230400 bps
	460800	460800 bps
	921600	921600 bps
	R	Restore the default settings. (Baud rate =19200 bps)
	?	Inquire the current baud rate.
CONNECT=		This command is used to establish a connection manually. It is available only when the Adapter is in the master role.
	DEVICE	Connect the Adapter to a specified Bluetooth device manually. It is available only when "DEVICE=xxxxxxxxxxxx" is executed.
	1~8	Connect the Adapter to a Bluetooth device in the neighborhood found through "SEARCH=?"
	xxxxxxxxxxxx	Connect the remote adapter by type the MAC address directly without searching.
	?	Display the MAC address of the latest paired device.
	Y	Recover the latest connection in the command mode.
	N	Disconnect the two adapters in the command mode
	P	Connect the previous connected adapter.
DEFAULT=		This command is used to restore the default settings and originate a warm start.
	Y	Restore the default settings (e.g. 19200 bps). The command will re-start the system for 1 second.
DETECT=		The command is used to detect the voltage of the power supply and set the alert value of low power.
(Default)	N	Disable the voltage detection
	Y	Enable the voltage detection
	R	Restore the default value (3.5 Volt)
	x.x	Setup the range of voltage detection from 3.0 to 3.7 Volt. The "x" indicate the number.
	?	Inquire the setting ststus
DEVICE=		For security purpose, this command is used to specify a unique remote Bluetooth serial Adapter to be connected. In the master role, the Adapter pairs and connects with the designated remote slave address. If the Adapter is in the slave mode, this command is a filter condition to accept the inquiry of the master device.
	xxxxxxxxxxxx	"xxxxxxxxxxxx" is a string of 12 hexadecimal digits.
	R	Restore the status in which the Adapter can connect with any remote address.
	?	Inquiry the designated address that can be paired and connected.
DFU=		Device Firmware Upgrade
	Y	
DIP=		Set the DIP switch function.
	?	Inquire the setting status of the DIP switch function.
	Y	Turn on the function of the DIP switch. The "ROLE" and "AUTO" command are not available to set the "Master" or "Slave".
(Default)	N	Turn off the function of the DIP switch. The "ROLE" and "AUTO" command are available when the DIP=N.
DISCOVER=		This command is used to specify whether the Adapter can be discovered or connected by remote devices. This command is available only when the Adapter is in the slave role.
	N	The Adapter enters the undiscoverable mode. If a pair has been made, the original connection can be resumed. But other remote master device

		cannot discover this Adapter.
(Default)	Y	The Adapter enters the discoverable mode.
	?	Inquire the current setting.
ECHO=		This command is used to specify whether the Adapter echoes characters received from the UART back to the DTE/DCE.
	N	Command characters received from the UART are not echoed back to the DTE/DCE.
(Default)	Y	Command characters received from the UART are echoed back to the DTE/DCE.
	?	Inquire the current setting.
FLOW=		This command enable or disable flow control signals (CTS/RTS) of the UART port. Note, the setting is not affected by DEFAULT. The command will need 1 second delay.
(Default)	N	Disable flow control.
	Y	Enable flow control.
	?	Inquire the current setting
NAME=		This command is used to specify a name for the Adapter. 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 Adapter".
(Default)	Serial Adapter	Default device name
	xx….xx	"xx….xx" is a character string with the length from 2 to 30.
	R	Restore the default settings name="Serial Adapter".
	?	Inquire the name of the local Adapter.
PARITY=		This command is used to specify parity bit setting of COM port. The command will need 200 ms delay.
(Default)	N	None parity bit
	O	Odd parity
	E	Even parity
	?	Inquire the current setting.
PIN=		This command is used to specify a PIN. The default PIN is "1234". Paired Adapters should have a same PIN. This command is used to specify a PIN. The default PIN is "1234" and the length is not smaller than 4. Paired Adapters should have a same PIN. The PIN code includes the numeral and English characters.
(Default)	1234	
	xx….xx	"xx….xx" is a 4~16 digit string or English character (in capital or lower case)
	N	Cancel authentication by PIN.
	R	Restore the default settings PIN="1234".
	?	Inquire the current PIN.
PROMPT=		The command is used to decide whether result messages are prompted when Setup commands are executed. The result messages are: OK/ERROR for command execution, or CONNECT/DISCONNECT/Try Connect Device for connection status.
(Default)	Y	Prompt result messages.
	N	Not prompt result messages.
	?	Inquire the current setting.

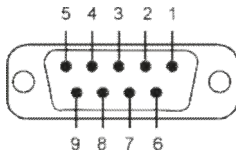|		
RECONNECT=		The command is used to re-connect the lost link for the Master adapter.
	?	Inquire the current setting.
	Y	Re-connect is Enable
(Default)	N	Re-connect is disable
ROLE=		This command is used to specify whether the Adapter is in the master or slave role. If the device role is changed, the Adapter will reboot and all paired addresses will be cleared. The command is available when the adapter is in DIP=N status. The command will need 1 second delay.
	M	Set the Adapter to the master role.
(Default)	S	Set the Adapter to the slave role.
	?	Inquire the current role of the Adapter.
RSSI=		Received signal strength indication
	?	Display the Received signal strength indication in command mode when connected. 1. Strong: RSSI>-9 2. Medium: -9>RSSI>-20 3. Weak: RSSI<-20
SEARCH=		This command is used to search for any Bluetooth device in the neighborhood within one minute. If any device is found, its name and its 12-digit-address will be listed. The search ends with a message "Inquiry ends. xx device(s) found." This command is available only when the Adapter is in the master role by manual.
	?	Inquire Bluetooth devices in the neighborhood, listing 8 devices the maximum
STATUS=		Inquire all the current setting of the adapter.
	T	Inquire the inner temperature of the IC in centigrade
	?	Display the current setting of the adapter
STOP=		This command is used to specify one or two stop bits of COM port. The command will need 200ms delay.
(Default)	1	One stop bit.
	2	Two stop bits.
	?	Inquire the current setting.
VERSION=		This command is used to inquiry the firmware version.
	?	Inquire the version codes.

Remark:
(1) If you need to customize the command, please call.
(2) Command is not available in the status:

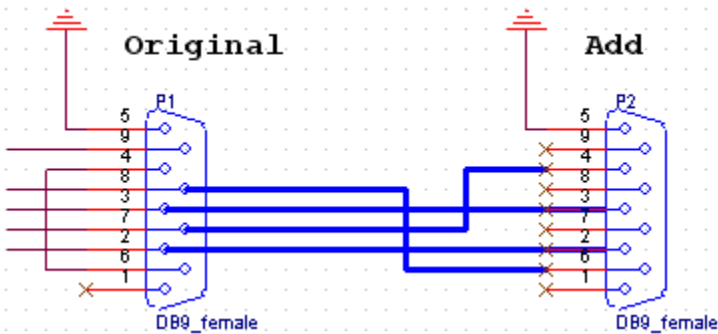| No	Command	Not available command in the conditions
1	ROLE=S	SEARCH=?, CONNECT=?, CONNECT=P, CONNECT=xxxxxxxxxxxx, CONNECT=DEVICE
2	AUTO=Y	SEARCH=?, CONNECT=?, CONNECT=P, CONNECT=xxxxxxxxxxxx, CONNECT=DEVICE
3	DIP=Y	ROLE=M, ROLE=S, AUTO=Y, AUTO=N ,DISCOVER=Y,DISCOVER=N
4	<<<	SEARCH=?, CONNECT=?, CONNECT=P, CONNECT=xxxxxxxxxxxx, CONNECT=DEVICE, DFU=Y
5	>>>	SEARCH=?, CONNECT=?, CONNECT=P, CONNECT=xxxxxxxxxxxx, CONNECT=DEVICE, DFU=Y
6	Not connection	RSSI=?, CONNECT=Y, CONNECT=N

6. RS232 Interface
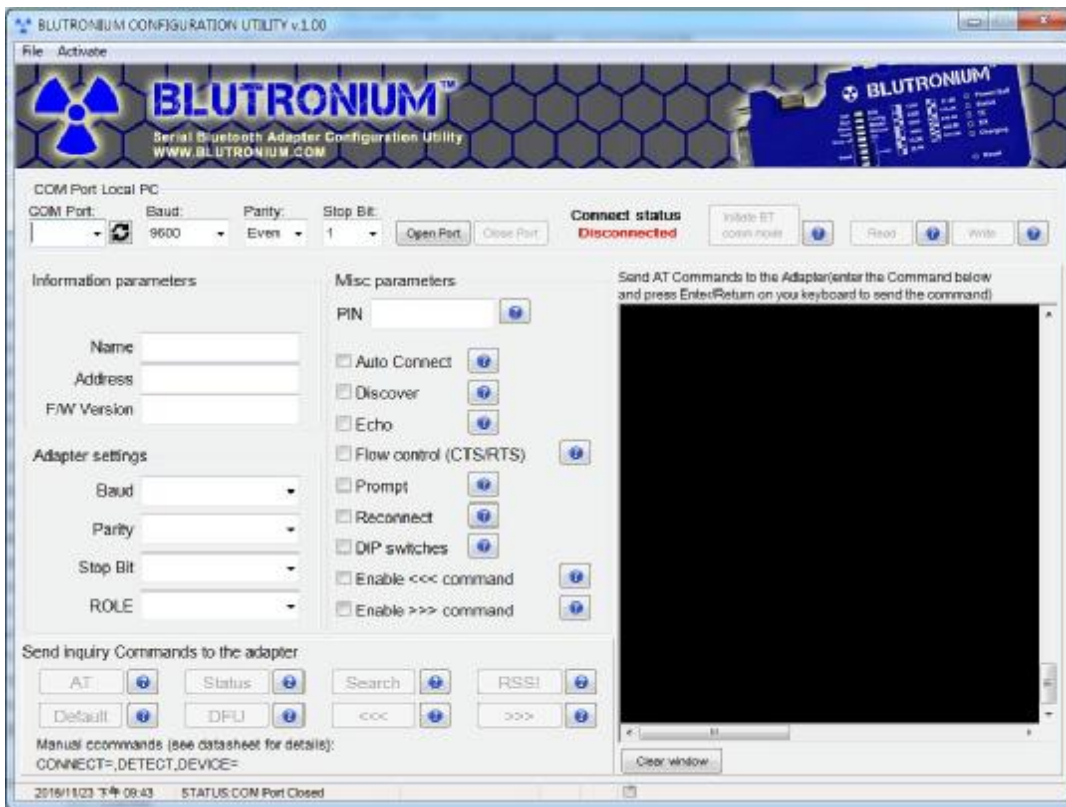6.1 Pin-out:

6.2 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	Contact manufacturer to set this
5	GND	N/A	N/A	Signal ground
6	DTR	Output	Input	Contact manufacturer to set this
7	CTS	Input	Output	Clear to send
8	RTS	Output	Input	Request to send (Default)
9	Vcc	Input	Input	Power supply (5VDC, 1.5A Max.)

Remark: DSR/DTR Connection:

Original Pin 2 ↔ Add Pin 2
Original Pin 3 ↔ Add Pin 3
Original Pin 7 ↔ Add Pin 4
Original Pin 8 ↔ Add Pin 6

7. Set the Software:

8. Warning Statements:
15.19:
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.

15.21:
The user manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

15.105(b):
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.   These limits are designed to provide reasonable protection against harmful interference in a residential installation.   This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.   However, there is no guarantee that interference will not occur in a particular installation.   If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
   - Reorient or relocate the receiving antenna.
   - Increase the separation between the equipment and receiver.
   -Connect the equipment into an outlet on a circuit different from that to which the receiver
     is connected.
   -Consult the dealer or an experienced radio/TV technician for help.

RF Exposure:
This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of human body.