

## Serial Bluetooth version 5 Smart® Adapter - RS232, Low Energy BLE Datasheet and Quick Reference for S2B5232E

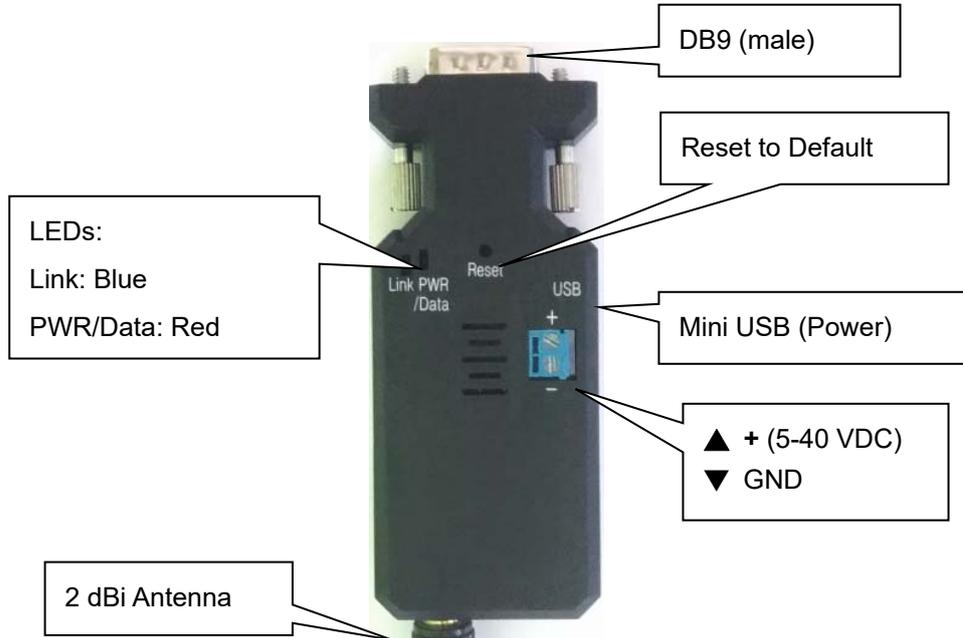


### Package content:

BLE RS-232 adapter x 1

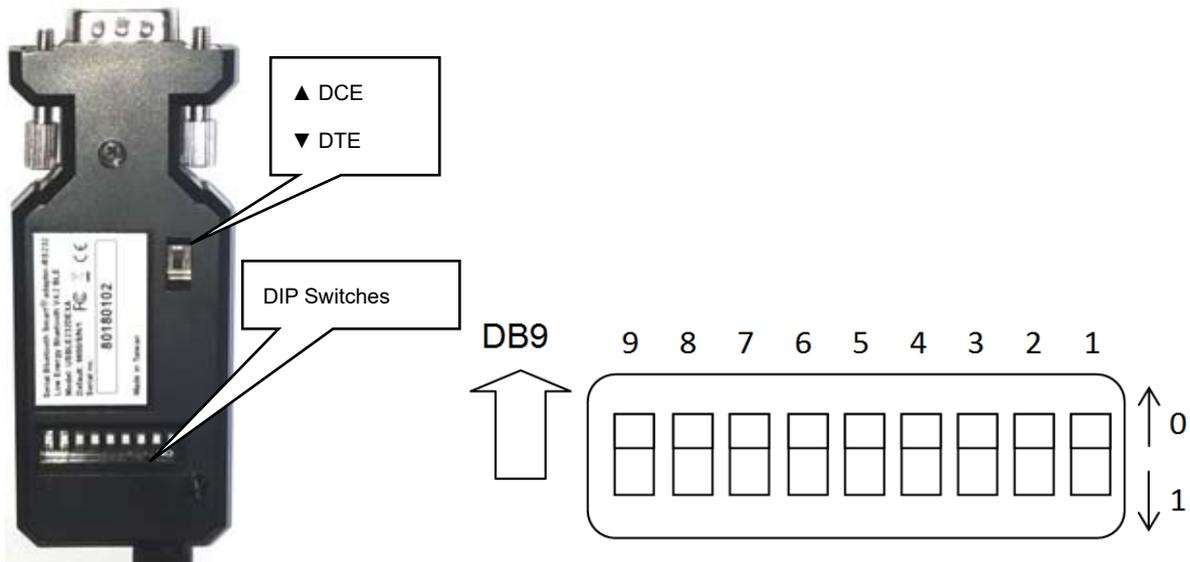
User manual x 1

Mini USB Cable x 1



SPECIFICATIONS	
Part number	S2B5232E
Operating systems	iOS 5 and later, Windows Phone 8.1, Windows 8 and later, Android 4.3 and later, BlackBerry 10, Linux 3.4 and later through BlueZ 5.0.
Processor	Nordic NRF52832
Data payload	251 bytes
Interface type	RS232
Mode	Central or Peripheral (Master or Slave)
Works with iPad/iPod?	Yes
Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400
Parity	None, even
Stop bits	1
Data bits	8
Flow control	None, CTS/RTS
LED lights	TX, RX, Bluetooth and Power
DEC/DTE	Manual switch
Parameters configurable by	<ul style="list-style-type: none"> <li>- Over the air by iOS and Android app</li> <li>- Via COM port by AT commands</li> <li>- DIP switches</li> </ul>
RS232 Signals	TX, RX, CTS, RTS, GND
Serial port	1-port male D-sub 9-pin
Bluetooth version	Version 5
Programming interfaces	GATT / UUID
Frequency range	2.4GHz ISM (2.40000 – 2.4835GHz)
TX Power	Max. 4 dBm
RX Sensitivity	-96 dBm typical
TX current consumption	16.6 mA (radio only, 4 dbm)
Antenna	External
Antenna Gain	max. 2 dB
Power supply	Mini USB, screw terminals or DB9 pin 9: 5 - 40VDC
Max comm range	Up to 160 feet (50m) in open space and ideal conditions
Operating temp.	-40°F to 185°F (-40°C to 85°C)
Dimensions	87mm x 34mm x 18mm
Certifications	CE, FCC, RoHs

**Rear Side:**



**Switch configuration** (default values are in bold red color):

Configuration by	CTS/RTS	UNUSED	Parity	Role	Baud Rate
9	8	7 - 6	5	4	3-2-1
<u>S/N: 91180001</u> and higher: <b>0: AT commands</b> or app 1: DIP switches <u>S/N: 91080001</u> and lower: refer to included datasheet	<b>0: Disable</b>  1: Enable		<b>0: None</b>  1: Even	<b>0: Peripheral</b>  1: Central	110:2400 111:4800 <b>000:9600</b> 001:19200 010:38400 011:57600 100:115200 101:230400

The GATT service / apps and AT commands supports more functions than the DIP switches.

**RS232 Interface (male)**

Pin	Signal	Description
1	N/A	
2	RX	Received data
3	TX	Transmitted data
4	N/A	
5	GND	Ground
6	N/A	
7	RTS	Request to send (Default)
8	CTS	Clear to send
9	VCC	Power Input (5-40 VDC)

LED Status	Description
Data LED (red) flash	Data transmission
Data LED (red) solid on	No data transmission
Link LED (blue) solid on	BLE Link
Link LED (blue) flash	No Link
Data & Link LED solid on	DFU/OTA Mode

**Power supply:**

Voltage: 5 - 40 VDC, **Do NOT exceed 40VDC!**

The adapter can be powered by: Mini USB (5VDC), Screw terminals (5 - 40VDC), DB9 pin 9 (5 - 40VDC).

**Do NOT power the adapter by more than one source**

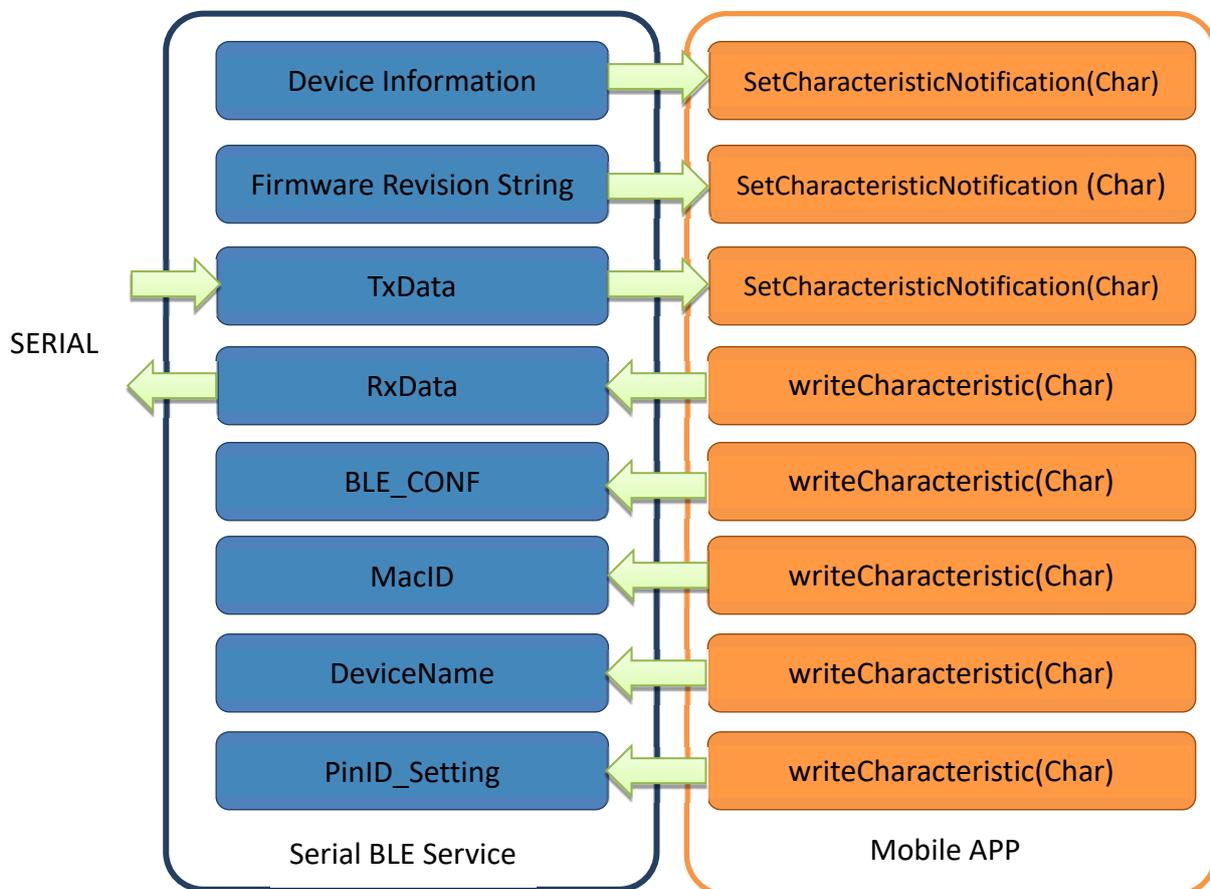
**Default settings:**

- Baud rate: 9600 bps
- Data bit: 8
- Parity: none
- Stop bit: 1
- Flow control: none
- Device Name: BLE232
- Pin code: none

**Reset button:**

Press the reset button for about 5 seconds and the adapter will reset to factory settings. A power cycle is recommended after reset.

**GATT Service.**



UUID\_1800\_SERV = ("00001800-0000-1000-8000-00805F9B34FB")

- UUID = 2A00, Device name, Default: BLE232

UUID\_180A\_SERV = ("0000180A-0000-1000-8000-00805F9B34FB")

- UUID= 2A26, Firmware version, Format: x.x.x, ASCII/read only
- UUID= 2A24, BLE version, Format: x.x, ASCII/read only, Value: 4.2 or 5.0

UUID\_BLE\_SERV = ("0003ABCD-0000-1000-8000-00805F9B0131") (Self defined UUID).

- UUID\_BLE5DATA = ("00031201-0000-1000-8000-00805f9b0130"), Data from BLE232\_TxData (Notification).
- UUID\_BLE5SENT = ("00031202-0000-1000-8000-00805f9b0130"), Data to BLE232\_RxData max244bytes/package (write only).
- UUID\_BLE5CONF = ("00031203-0000-1000-8000-00805f9b0130"), Configuration, 4bytes, (read/write).

UUID_BLE_Config (4 bytes) 00031203-0000-1000-8000-00805F9B0130:			
Byte0 (Read Only)	Byte1	Byte2	Byte3
Product model	Baud Rate	N/A	Port setting
0xAA: RS232	0x00: 1200 bps		bit 0: Parity (0: NONE 1: EVEN)
0xAF: RS485/422	0x01: 2400 bps		bit 1: Flow control (0: Disabled 1: Enabled) (for RS232 model Only)
	0x02: 4800 bps		bit 2: N/A
	0x03: 9600 bps		bit 3: Port Type (0: RS485 1: RS422) (Available on RS485 model only)
	0x04: 19200 bps		bit 4: BLE Role (0: Peripheral 1: Central) (indication Only)
	0x05: 38400 bps		bit 5: ControlSet (0: set by APP or command 1: set by 9P switch)
	0x06: 57600 bps		(indication Only)
	0x07: 115200 bps		
	0x08: 230400 bps		

- UUID\_BLE5ADDR = ("00031204-0000-1000-8000-00805f9b0130"), Target Peripheral Mac. Address, 6 bytes, (read/write).
- UUID\_BLE5NAME = ("00031205-0000-1000-8000-00805f9b0130"), Device name, Max. 15bytes, UTF-8, (read/write).
- UUID\_BLE5PIN = ("00031206-0000-1000-8000-00805f9b0130"), Pin code, 6bytes, (read/write).
- UUID\_BLE5RBT = ("00031210-0000-1000-8000-00805f9b0130"), Reboot, 2bytes, (read/write).

**Command set via COM port:**

Command	Value	Description
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.
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
	?	Inquire the current baud rate.
DEFAULT=		This command is used to restore the default settings and originate a warm start.
	Y	Restore the default settings. The command will re-start the system for 1 second.
DFU=		Device Firmware Upgrade via PC software. OTA (Over the air) is available to upgrade the firmware by APP
	Y	
ECHO=		This command is used to specify whether the adaptor 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 device 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".
(Default)	BLE232	Default device name
	xx...xx	"xx...xx" is a character string with the length from 2 to 30.
	R	Restore the default name
	?	Inquire the name of the local adaptor.
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
	E	Even parity
	?	Inquire the current setting.

PIN=		This command is used to specify a PIN code. Disabled by default.
(Default)	000000	Pin code disabled. Simple fast pairing enabled.
	xxxxxx	The pin code can be set as a 6 digit string or English character (in capital or lower case) code
	?	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.
(Default)	Y	Prompt result messages.
	N	Not prompt result messages.
	?	Inquire the current setting.
ROLE=		This command is used to specify whether the adapter is in the central or peripheral role. If the device role is changed, the adapter will reboot and all paired addresses will be cleared.
	C	Set the adapter to the central role.
(Default)	P	Set the adapter to the peripheral role.
	?	Inquire the current role of the adapter.
STATUS=		Inquire all the current setting of the adapter.
	?	Display the current setting of the adapter
VERSION=		This command is used to inquiry the firmware version.
	?	Inquire the version codes.

#### Example of linking two adapters for Central and Peripheral mode (similar to Master and Slave roles):

##### By DIP switches (the central will pair the slave automatically):

- Set DIP switch 9 to position '1' (DIP switches / hardware mode) in one adapter.
- Set DIP switch 4 to position '1' (Master mode) in the same adapter.
- The central will link with the neighboring peripheral automatically. The blue LED will be solid on. The central will link with the paired peripheral next time when powered on.
- Please reset to default and follow above procedure if you want to link with other BLE devices.

##### By AT command:

- Set "role=c" or "ROLE=C" in one adapter.
- The central will link with the neighboring peripheral automatically. The blue LED will be solid on. The central will link with the paired peripheral next time when powered on.
- Please reset to default and follow above procedure if you want to link with other BLE devices.

##### By APP setup: (apps can be downloaded from Google Play or Apple Store):

- The APP will search the BLE and select one as the central.
- Then select the other one as the peripheral and link.
- The central will link with the neighboring peripheral automatically. The blue LED will be solid on. The central will link with the paired peripheral on next time when power on.
- Please reset to default and follow the above procedures if you want to link with other BLE devices.

**Apps for Android and iOS.**

The apps can be used for configuring the parameters and can also be used for testing data transmission.

**Android:**

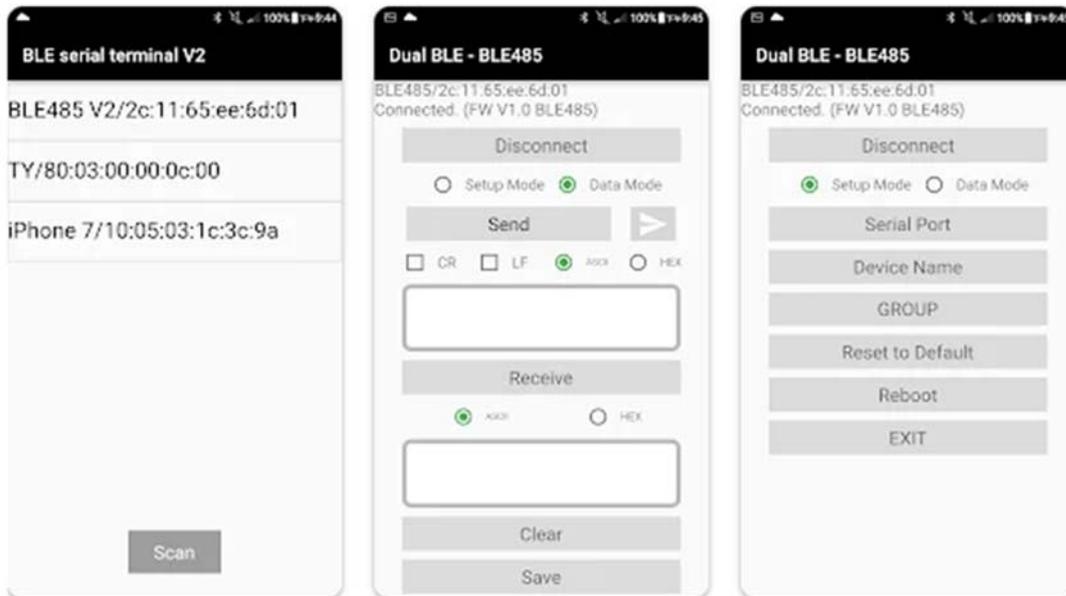
The Android app can be downloaded from the Google Play Store here:

<https://play.google.com/store/apps/details?id=com.uconnect.terminal2>

**iOS:**

The app for iOS can be downloaded from the Apple Play Store:

<https://apps.apple.com/us/app/ble-serial-terminal-v2/id6449844797>

Federal Communications Commission (FCC) Statement**RADIO FREQUENCY INTERFERENCE STATEMENT**

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 correcting the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into and outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning: A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

The information contained in this document is subject to change without notice.

FCC ID: XJ8-S2B5232E

