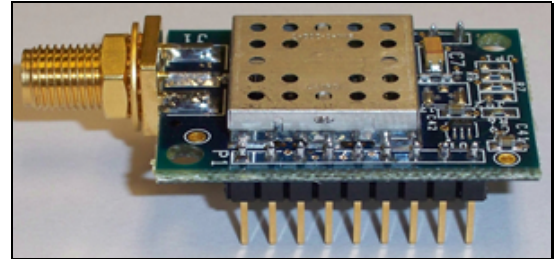


Long Range Module (+1 mile)

BR-SC40-1W Bluetooth® ver2.0+EDR

OUTLINE

- **AT HOME. AT WORK. ON THE ROAD.** USING BLUETOOTH WIRELESS TECHNOLOGY MEANS TOTAL FREEDOM FROM THE CONSTRAINTS AND CLUTTER OF WIRES IN YOUR LIFE.
- With Female Reverse SMA RF bulkhead board edge connector. Includes male SMA full wave coaxial dipole external swivel antenna.
- Jumper selectable USB HCI interface or UART data interface (4-wire with CTS/RTS) ships defaulted to UART.
- 13-bit PCM, 8k samples/s, synchronous bidirectional audio interface
- FCC, IC, and *Bluetooth* certified ISM 2.4GHz band module.
- Includes integrated software stack, profiles, and AT modem like commands
- Embedded *Bluetooth* Stack Profiles Included (*requires no host MCU stack*): SPP, DUN, LAN, Headset, HFP, eSCO, SCO, Audio Gateway, FTP Client/Server, OBEX, OPP – Push/Pull, GAP, SDP, RFCOMM, and L2CAP protocols



FEATURES

- The serial radio modem can be configured, commanded, and controlled through simple ASCII strings over the *Bluetooth* RF link or directly through the hardware serial UART.
- Dedicated PCM voice channel for audio applications, and eSCO for exceptional audio clarity
- UART baud rate speeds: 1200bps up to 921.6Kbps, and customized
- **+1 mile** distance Line-of-Sight (LOS) with supplied dipole omni-directional "rubber-duck" antenna
- Software adjustable transmitter power from short to long range applications
- Small-form factor 18 pin DIP radio modem package (0.1" pitch X 0.8" socket width)
- Operating temperature range: -60~+50°C (20°C tighter than the C40N for high temp. applications)
- Secure and robust communication link
 - ✓ FHSS (Frequency Hopping Spread Spectrum)
 - ✓ Encryption and 16 alphanumeric Personal Identification Number (PIN) 56 or 128 bit encryption versions
 - ✓ Error correction schemes for guaranteed packet delivery

SPECIFICATIONS

Item	Specifications
Frequency	2402 ~ 2480MHz
Modulation	FHSS/GFSK
Channel intervals	1MHz
Number of channels	79CH
Power supply voltage	5.0Vdc ± 0.1Vdc
Current consumption	750 mA worst case peak
Transmission rate (over the air)	3 Mbps over HCI or 250kbps w/embedded stack
Receive sensitivity	-99 dBm typ.
Output level (variable)	+30 dBm max.
Dimensions	Main PCB
	24.25(W) X 33.75(L) X 8(H)mm

PIN DEFINITIONS

 **BR-SC40-1W (With External SMA Antenna)** *make from BR-C40N SMT module*

Note: SPI is for BlueRadios internal use only.
Part is not 5Vdc tolerant on I/O
Reset is active **low**; pulse >5msec.
PIO Sink Current is 4mA max.
Unused pins can float except for PIO(4), tie to ground if not used or disable via software.

Firmware Options:

- **AT Command**
 - Multi-point
 - Point-to-point
 - Repeater
- **HCI or BCSP**
- **128 bit Encryption (special order) export restrictions apply.**
- **Custom**

Part Number Ordering:

BR-SC40-1W	{UART with <i>Bluetooth</i> ATMP Stack}
BR-SC40-1W-128	{UART with <i>Bluetooth</i> ATMP Stack, and 128 Bit Encryption}
BR-SC40-1W-HCI	{UART HCI Only, 115.2Kbps baud rate}
BR-SC40-1W-HCI:128	{UART HCI Only, 115.2Kbps baud rate, and 128 Bit Encryption}
BR-SC40-1W-BCSP	{UART BCSP Only, 115.2Kbps baud rate}
BR-SC40-1W-BCSP:128	{UART BCSP, 115.2Kbps baud rate, and 128 Bit Encryption}
BR-SC40-1W-USB	{USB HCI Only}
BR-SC40-1W-USB:128	{USB HCI, and 128 Bit Encryption}
BR-S-1W	{DIP 2.4GHz AMP Only, no RF Engine}. RF passes into micro coax on board connector. Use with 2.4GHz Wifi, Zigbee, Bluetooth, and proprietary radios. <i>Special order item!</i>

Custom baud rates available for any of the above UART configurations.

*For technical details of the products in this page, refer to Sales Dept., BlueRadios, Inc.

BR-SC40-1W (DIP)	BR-C40N (SMT) <i>BlueRadios</i>	Misc. Info.
1. GND	1. GND	All Connected
2. SPI_MOSI	2. SPI_MOSI	Reserved
NC	3. PIO[6]	
NC	4. PIO[7]	
3. RESET	5. RESET	
4. SPI_CLK	6. SPI_CLK	Reserved
5. PCM_CLK	7. PCM_CLK	
6. PCM_SYNC	8. PCM_SYNC	
7. PCM_IN	9. PCM_IN	
8. PCM_OUT	10. PCM_OUT	
9. VDD (5.0Vdc)	11. VDD (3.3Vdc)	±0.1Vdc, max. 10mVpp ripple
GND	12. GND	
10. UART_RX	13. UART_RX / USB+	0-3.3Vdc logic levels
11. UART_TX	14. UART_TX / USB-	0-3.3Vdc logic levels
12. UART_RTS	15. UART_RTS	0-3.3Vdc logic levels
13. UART_CTS	16. UART_CTS	0-3.3Vdc logic levels
H/W Configurable	17. Not Used	USB_D+
H/W Configurable	18. Not Used	USB_D-
14. PIO[2]	19. PIO[2]	<i>Bluetooth</i> Connection
NC	20. PIO[3]	
15. PIO[5]	21. PIO[5]	Radio Status
16. PIO[4]	22. PIO[4]	Factory Default Reset
17. SPI_CSB	23. SPI_CSB	Reserved
18. SPI_MISO	24. SPI_MISO	Reserved
GND	25. GND	
NC	26. NC	
1.	27. GND	
1.	28. GND	
1.	29. GND	

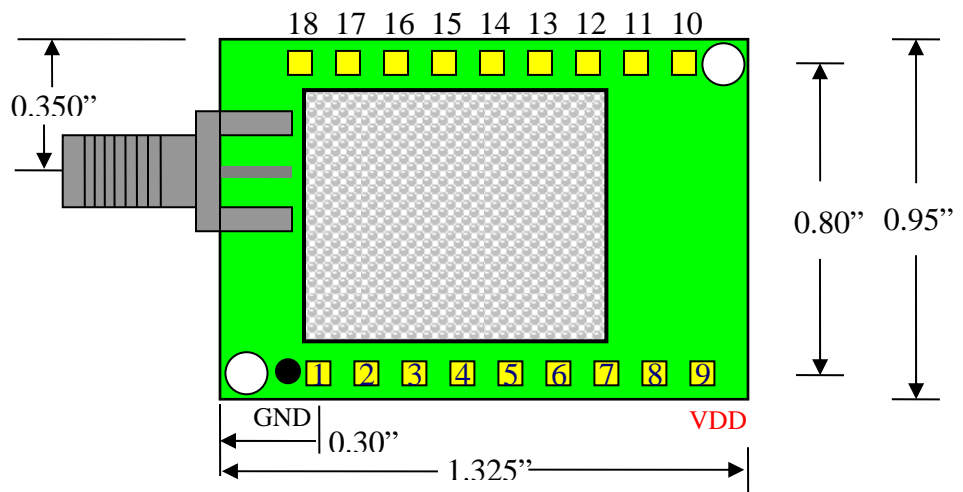
STANDARD PIN DIMENSIONS

BR-SC40-1W (With External SMA Antenna) *make from BR-C40N*

The module design already includes a RF ground plane and female Bulkhead SMA board edge PCB RF Connector.

18 Pin DIP (Through-hole)
0.1" Pitch and 0.8" Wide Socket
with 0.125" mounting holes

Note: Keep metallic components, wires, and connectors from the antenna area.



Heat Sink:

USB mode Continuous high speed data streaming in one direction is not recommended in USB over HCI mode. To maximize performance for other applications use metal face plate on RF bulkhead connector and apply heat transfer compound tape on the bottom of the metal shield to transfer heat into target PCB mounting board. This requires copper ground patch with no solder mask directly underneath the bottom of the unit to transfer heat away from the DIP module into mating board.

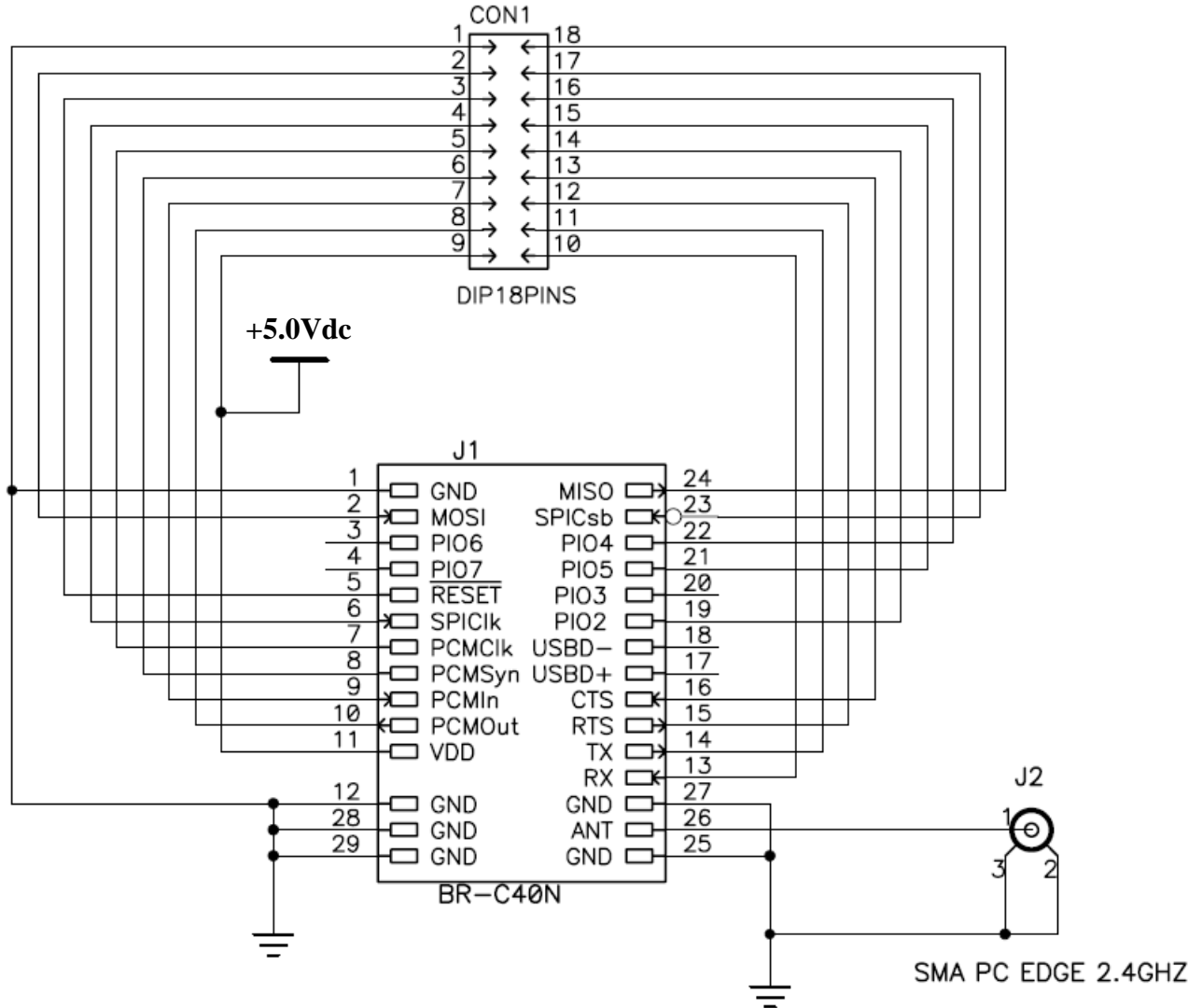
Bench Testing: When communicating point-to-point with two BR-SC40-1W modules you will need to remove the antenna on one unit because of the radios RX sensitivity the two units in close proximity in the same room will not communicate reliably.

Power-up Sequence: After 5Vdc is applied allow 1 sec. for the module to fully boot before issuing commands.

Please refer to BlueRadios Specification BR-AT_COMMANDS-100 hardware and software interface for detail information.

CONNECTOR SCHEMATIC (UART)

● BR-SC40N-1W (With External SMA Antenna) *make from BR-C40N*



ANTENNA SPECIFICATION

Electrical Specifications

Frequency	2400-2500 MHz
Gain	7 dBi
Horizontal Beam Width	360°
Vertical Beam Width	20° ±5°
Impedance	50 Ohm
Max. Power	50W
VSWR	< 2.0
Lightning Protection	DC Ground

Mechanical Specifications

Weight	1.7 oz. (50 g)
Length	10.6" (271 mm)
Max. Diameter	0.51" (12.9 mm)
Finish	Matte Black
Connector	SMA-Male
Operating Temperature	-40° C to 60° C (-40° F to 140° F)
Polarization	Vertical
Flame Rating	UL 94HB
RoHS Compliant	Yes

Dimensions



RF Antenna Patterns

