

## BlueWAVE Serial Wireless Cable

Bluetooth™ Serial 'Wireless Cable' with Stub Antenna

Part Number: BW\_SWC\_C1\_EA



### Overview

The BlueWAVE Serial Wireless Cable pair of modules provides a complete end-to-end Bluetooth™ cable replacement for UART or RS232 systems. This is a true, out of the box, wireless cable!

The BlueWAVE Serial Wireless Cable is aimed at OEM's and systems integrators planning to deploy a single point-to-Bluetooth™ solution into their product range. By choosing the BlueWAVE Serial Wireless Cable, we offer the opportunity to remove R&D costs, reduce time to market and eliminate development risk.

The BlueWAVE Serial Wireless Cable will provide a secure, out of the box, point-to-point connection without configuration. The BlueWAVE Serial Wireless Cable is also compatible with all other devices supporting Bluetooth™ SPP such as iPAQ™, Palm™, Laptops with integrated Bluetooth™, USB adaptors and cell phones etc.

### Bluetooth™ Serial Port Profile

BlueWAVE Serial Wireless Cable instantly also provides either a Bluetooth™ slave or master connection fully supporting the Serial Port Profile

### Features

- Fully Bluetooth™ Class 1 v1.1 SPP compatible
- Wireless range of over 100m (330ft). 300m in free air.
- Integrates with RS232 or UART systems.
- Small footprint
- Platform independent
- Supports baud rates from 2400 – 115200 baud
- Configurable Digital I/O
- Various low power sleep modes
- SMA Antenna connection for direct antenna connection or coax

### Important Note

The BlueWAVE Wireless Cable is, in actual fact, 2 BlueWAVE Serial terminals that have been pre-configured to connect with each other.

### How it works

The BlueWAVE Wireless Cable encapsulates all of the Bluetooth™ protocols on a single chip, providing a simple serial interface to the host, therefore removing any need for software drivers or experience in developing wireless technology

### General Specification

Supply Voltage (VCC)	3.5V – 16V DC
Carrier Frequency	2400MHz to 2483.5MHz (USA, Europe)
Modulation Method	GFSK, 1Mbps, 0.5BT Gaussian
Transmission Power	Class 1 (max 20dBm)
Hopping	1600 hops/sec, 1MHz channel
Receiving Signal Range	-84 to -20dBm
Receiver IF Frequency	1.5MHz centre frequency
Output Interface	UART (3.3v), EIA 232 (5V)
Operating Temperature	-20 ~ 75 degrees
Storage Temperature	-40 ~ 85 degrees
Humidity	95% non-condensing
Compliant	Bluetooth™ Specification v1.1
Baud Rate	1200 - 115200baud
Operating Range	100m (328 ft)
Dimensions	40 x 30 x 5 (mm)
Antenna	Flextronics 2.4 GHz Stub Antenna (SMA Type)

### Power Consumption Specifications (Class 1 figures)

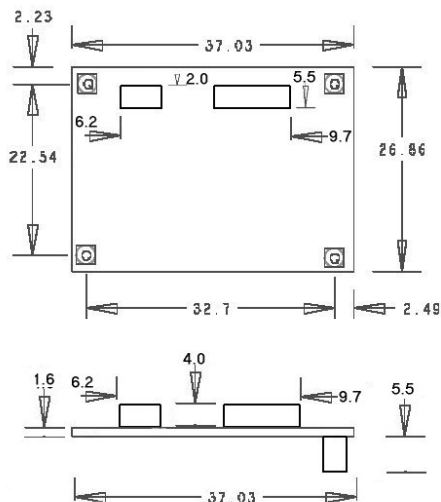
Average Current Consumption at 7.5V		
Temperature = 20 Degrees Centigrade		
Mode	Avg	Unit
Standby – idle	4	mA
Discovery	10	mA
Connected	37	mA
Sleep (AT+BWZ)	2.5	mA

### Connector A – Interface Connector

(12 way Dual row 0.05" micro header- FTSH series)

NO	PIN NAME
1	VCC (3.5v-16V DC)
2	DIO A
3	RS232 RTS (out)
4	RS232 CTS (in)
5	RS232 RxD
6	RS232 TxD
7	UART RxD
8	UART TxD
9	UART RTS (out)
10	UART CTS (in)
11	DIO B
12	GND (0v)

### Mechanical Drawing



### Serial Interface Configuration Commands (Settings are persistent through power cycles)

Command	Function
ATE1	Turn local echo on
ATE0	Turn local echo off
AT+BWB=n	Set baud rate to 1200 – 115200 baud
AT+BWD=n	Set Data Bits to 7 or 8
AT+BWP=n	Set Parity to None, Odd or Even
AT+BWS=n	Set Stop Bits to 1 or 2

### Information Commands

Command	Function
ATI3	Display the BlueWAVE Model
ATI6	Display the firmware version
ATI8	Display the date of software build
ATI9	Display the country of manufacture

### Bluetooth™ Common Commands (Master/Slave and Wireless Cable modes)

Command	Function
+++	Three '+' characters separated by 100ms or more. Enter COMMAND mode and exit DATA mode
AT+BWE	Exit COMMAND mode – return to DATA mode
ATI0	Display the current Bluetooth connection status
AT+BWX	Disconnect. The current Bluetooth™ connection will be disconnected
AT+BWN=nnnn	Set Bluetooth™ PIN to nnnn.
AT+BWN=0	Turn PIN authentication off
AT+BWN=?	Display the current PIN
AT+BWM=xxxx	Set the Bluetooth™ unit 'friendly name'.
AT+BWM=?	Display the current 'friendly name'.
AT+BWA=?	Return the Bluetooth address of this device.
AT+BWC=?	Return the address of the remote device that this unit is connected to.
AT+BWZ	Allow the unit to go into sleep mode.
AT+RESET	Reset the unit. This will reboot the device and return to DATA mode.

### Bluetooth™ Wireless Cable Commands

AT+BWAC=11:22:33:44:55:66[,nnnn]	Autoconnect to remote slave device with optional PIN code. If PIN code not specified then no authentication is used. The unit will retry connections when the connection is dropped and at power up. (WC master mode).
AT+BWAL[=nn]	Autolisten. Listen for an incoming connection. The unit will resume listening when the connection is dropped and at power up. (WC slave mode). The optional value indicates the timeout for the listen.

### Bluetooth™ Slave Mode Commands (single module use)

AT+BWL[=nn]	Listen for an incoming connection. The optional value indicates the timeout for the listen. <b>Unit is present to listen.</b>
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### Bluetooth™ Master Mode Commands (single module use)

AT+BWI[=nn]	Perform a Bluetooth inquiry. The optional value represents the timeout for the inquiry in seconds.
AT+BWC=11:22:33:44:55:66[,nnnn]	Connect to remote slave device with optional PIN code. If PIN code not specified then no authentication is used. (Master mode)
AT+BWPT=nn	Set the timeout for a pair operation. The value represents the timeout for the pairing in seconds.
AT+BWCT=nn	Set the timeout for a connect operation. The value represents the timeout for connecting in seconds.

### Digital IO Control

Command	Function
AT+BWDIO=n	0 = (default) No function 1 = Connect and reset 2 = Pass through IO over the air. 3 = Configurable outputs
AT+BWDIOA=n	0 = Set DIOA to high (1) or low (0). 1 = Set Low (0). Only valid if BWIO=3
AT+BWDIOB=n	0 = Set DIOB to high (1) 1 = Set low (0). Only valid if BWIO=3



### How do I evaluate this product?

Wireless Futures offer a BlueWAVE Evaluation Kit for this product.



### What does the Evaluation Kit contain?

The BlueWAVE™ Evaluation Kit is a full resource that allows an engineer to evaluate the benefits and features of the BlueWAVE Bluetooth™ technology, quickly, simply and safe in the knowledge that it is backed by world-class support from Wireless Futures.

The aim of the BlueWAVE Evaluation kit is to provide the engineer with a one-stop development platform required to deploy Bluetooth™ UART or RS232 technology. Each kit contains the following:-

- 2 x BlueWAVE Serial Terminal Modules configures as a Wireless Cable pair.
- 2 x Flextronics 2.4 GHz Stub Antenna (SMA type)
- 2 x Ribbon Cable and FTSH Connector assembly
- 2 x 9 Way D type connector
- Technical Integration Guide
- Technical Support from Wireless Futures



### Why do I need an Evaluation Kit ?

- The easiest route to Bluetooth™ UART/RS232 connectivity
- Benefit from complete technical support from the experts throughout the development.
- Flexible design and easy to integrate to existing hardware/software.
- Remove all risk and technical uncertainty.
- Designed and built by one of the leading Wireless Technology organisations

Over 350 satisfied OEM customers adopting BlueWAVE across the world.



### Customer Promise

We are so confident that you will be delighted with our development kits and technical support that we will offer a **money back guarantee** should you not be happy with the product.



## FAQs

**Q. Does the BlueWAVE Serial Wireless Cable conform to any Bluetooth™ profiles?**

A. Yes, the BlueWAVE Serial Wireless Cable conforms to the serial port profile.

**Q. What is the actual range of the device?**

A. The device uses Bluetooth class 1. The range will depend on the physical environment ie) obstructive walls and the type of walls the signal will need to go through and on the antenna that is fitted. The range should be between 50 and 250 meters.

**Q. How do I connect my BlueWAVE Wireless Cable?**

A. The BlueWAVE Wireless Cable will transparently connect to its paired device. As soon as both units are powered then they will immediately connect to one another and provide, a wireless connection. No other interaction is required for this basic operation.

**Q. Can I connect to other Bluetooth™ devices?**

A. Yes, each end of the Serial Wireless Cable is in actual fact a BlueWAVE Serial Terminal that can connect to other Bluetooth™ devices.

**Q. How does the design license work?**

A. We are able to license the software and board design in order that it can be fully integrated into the customer's main board. This can reduce manufacturing costs dramatically for the customer for larger quantities. Please contact our sales office for more information.

**Q. How can I order in quantity?**

A. Wireless Futures are able to handle orders of any quantity. Please contact the sales office to discuss your requirements and we will consider the best ordering volume and frequency



## About Wireless Futures

Wireless Futures design, manufacture and integrate innovative, practical and easy to implement wireless solutions. These solutions provide our customers a fast track to either incorporate wireless technology within their current products, or to simply design a new product range with built-in wireless technology.

By leveraging our expertise in wireless technologies we are able to offer products and services to our customers to enable cost effective, rapid time to market wireless solutions.



Wireless Futures have over 350 OEM customers across the world from the UK, Europe, North America and the Far East.

The BlueWAVE solution has been successfully deployed across the globe in the following vertical markets:-

- Medical
- Telco
- Defence
- Automotive
- Utility
- Marine
- Many more...

### More Information...

For more information on our products and development kits, please use the following contacts

Adaptive Modules Ltd  
The Old School  
Somersham,  
Cambridge, Cambs, PE28 3EG  
United Kingdom

Tel: +44 (0) 1273 248977  
Fax: +44 (0) 1273 504374  
Cambridge sales +44 (0) 1487 741222  
Sales [sales@adaptivemodules.com](mailto:sales@adaptivemodules.com)  
Technical [info@adaptivemodules.com](mailto:info@adaptivemodules.com)  
Website [www.adaptivemodules.com](http://www.adaptivemodules.com)

