



# **BlueMAX**

## Reference Manual

Part Number 875-0117-000  
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- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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In order to obtain warranty service, the end purchaser must bring the Product to a CSI Wireless approved dealer, along with the end purchaser's proof of purchase. For any questions regarding warranty service or to obtain information regarding the location of any of CSI Wireless's dealers, contact CSI Wireless at the following address:

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## Preface

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Welcome to the BlueMAX Manual and congratulations on choosing to purchase this high quality serial to *Bluetooth*® wireless dongle.

The BlueMAX dongle provides a conversion from serial or RS-232 level to *Bluetooth* wireless communications.

We have written this document to assist a customer in becoming familiar with the BlueMAX operation and configuration.

## Customer Service

If you encounter problems during the installation or operation of this product, or cannot find the information you need, please contact your dealer, or CSI Wireless Customer Service. The contact numbers and e-mail address for CSI Wireless Customer Service are:

Telephone number:	+1-403-259-3311
Fax number:	+1-403-259-8866
E-mail address:	techsupport@csi-wireless.com

Technical Support is available from 8:00 AM to 5:00 PM Mountain Time, Monday to Friday.

To expedite the support process, please have the product model and serial number available when contacting CSI Wireless Customer Service.

In the event that your equipment requires service, we recommend that you contact your dealer directly. However, if this is not possible, you must contact CSI Wireless Customer Service to obtain a Return Merchandise Authorization (RMA) number before returning any product to CSI Wireless. If you are returning a product for repair, you must also provide a fault description before CSI Wireless will issue an RMA number.

When providing the RMA number, CSI Wireless will provide you with shipping instructions to assist you in returning the equipment.

## World Wide Web Site

CSI Wireless maintains a World Wide Web home page at the following address:

[www.csi-wireless.com](http://www.csi-wireless.com)

A corporate profile, product information, application news, GPS and DGPS literature, beacon coverage information, and software are available at this site.

## Document Conventions

**Bold** is used to emphasize certain points.

## Notes, Cautions, and Warnings

Notes, Cautions, and Warnings stress important information regarding the installation, configuration, and operation of the BlueMAX receiver.

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**Note - Notes outline important information of a general nature.**

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**Cautions - Cautions inform of possible sources of difficulty or situations that may cause damage to the product.**

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**Warning - Warnings inform of situations that may cause harm to you.**

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# I. Operation

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The purpose of this chapter is to introduce you to the operation of your BlueMAX dongle.

## I.1 Receiving Your Shipment

If you find that your BlueMAX is damaged due to shipment, please contact the freight carrier immediately for assistance.

When you unpack your BlueMAX, please ensure that it is complete by comparing the parts received against the packing slip. Unless your system has been equipped differently than a standard BlueMAX system, you should find the following parts in your system:

- One BlueMAX Dongle (P/N 805-0008-00A)
- One 3 Meter Power Cable (P/N 054-0009-000)
- One 3 Meter Data Cable (P/N 050-0011-022) (Optional)
- One BlueMAX Reference Manual (P/N 875-0117-000)

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**Note - If, for some reason, you find a discrepancy between your packing slip and the contents of your shipment, please contact the sales person with which you placed your order immediately.**

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## I.2 Cable Connections

The connections required by the BlueMAX are very straightforward. All cables necessary for complete operation are provided. The BlueMAX needs to be connected to a power supply (9 to 32 VDC) and to a RS-232 serial cable.

The power connector on the BlueMAX is a miniature 2-pin, circular locking connector and the data port is a standard DB9 connector. The power connector is labeled 'PWR' and the data input connector is labeled 'I/O'. There is no power switch to turn on the BlueMAX. Once the proper voltage input is applied to the connector, the system will start up.

There are two ways to communicate with the BlueMAX. One DB9 socket connector is available, labeled 'I/O', giving access to the full duplex RS-232 serial port of the BlueMAX. The other option is *Bluetooth* wireless communication using a *Bluetooth* wireless-enabled device (such as a PDA with *Bluetooth* wireless compatible software such as CSI's PocketMAX).

The following figure shows the BlueMAX.



Figure I-1 BlueMAX

## I.3 Cable Interface

The BlueMAX receiver requires power and data cable interfaces.

### I.3.1 Routing and Securing the Cable

When choosing a route for BlueMAX cables:

- Avoid running cables in areas of excessive heat
- Keep antenna cables away from corrosive chemicals
- Do not run the extension cable through door or window jams
- Keep the cable away from rotating machinery
- Do not bend excessively or crimp the extension cable
- Be careful not to apply tension to the cable
- Remove unwanted slack from the cable at the opposite end to the antenna
- Secure the cable route using plastic tie wraps

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**Warning – Improperly installed cables near machinery can be dangerous.**

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## I.4 PocketMAX

PocketMAX is a free utility that CSI Wireless has developed to assist you with controlling and monitoring your receiver through the BlueMAX. It requires a device that runs a Windows PocketPC 2000, 2002, or 2003 operating system. The PocketMAX Manual provides detailed information on how to interact through both serial and bluetooth communications between your receiver plus BlueMAX and your PDA based PocketMAX utility. This program allows you to graphically monitor the status and function of the receiver, in addition to providing an interface for its control. The PocketMAX Manual is available for download from the CSI Wireless website.

## I.5 Default Parameters

The only parameter that can be changed in the BlueMAX is the baud rate at which it communicates. The procedure to do this is outlined in detail in Chapter 2.

**Table I-1 Default Port Settings**

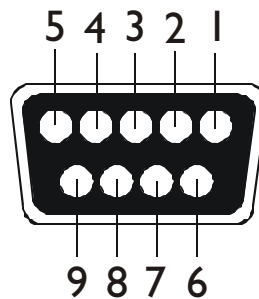
Port	Baud Rate	Data Bits	Parity	Stop Bit	Interface Level
Serial	4800	8	None	1	RS-232C

## I.6 Pin-Outs

The following tables detail the pin-out of the serial port of the BlueMAX. Below is a figure of the DB9 socket numbering.

**Table I-2 Serial Port Pin-out, RS-232C Interface Level**

Pin	Signal	Description
2	TXD – serial	NMEA 0183, binary, and RTCM output
3	RXD – serial	NMEA 0183, binary, and RTCM input
5	Sig. Ground	Signal return



**Figure I-2 DB9 Socket Numbering**

## I.7 Environmental Requirements

The equipment supplied with the BlueMAX system has specific environmental limits that you should ensure are met when storing and using the system.

The BlueMAX receiver is designed to be stored between  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$ . The operating temperature range is  $-32^{\circ}\text{C}$  and  $+74^{\circ}\text{C}$ . The BlueMAX is specified to operate with humidity up to 95% non-condensing.

## I.8 Power Requirements

The BlueMAX is powered via a power cable that interfaces to the enclosure's 'PWR' connector. This system accepts an input voltage between 9 and 32 VDC. Refer to Table I-3 for the power

requirements. For best performance, the supplied power should be continuous and clean. The following table details the power specifications of the BlueMAX.

**Table I-3 Power Requirements**



Input Voltage	Input Current	Input Power
9 to 32 VDC	< 40 mA @ 12 VDC	< 480 mW

## I.9 LED Indicators

The BlueMAX features diagnostic LEDs that provide a quick indication of the receiver's status. These LEDs are visible on the top of the product.

The two LEDs provide the following information:

**Table I-4 LED Indicator Definitions**

LED	Color	Function
	Red	Power indicator – when the BlueMAX is powered, this LED will illuminate solidly
	Blue	<i>Bluetooth</i> wireless indicator – this LED will illuminate when there is a <i>Bluetooth</i> wireless connection between the BlueMAX and a <i>Bluetooth</i> wireless compatible device and off when there is no <i>Bluetooth</i> wireless connection.

## I.10 Bluetooth Wireless Interface

*Bluetooth* wireless technology enables seamless data connections between a wide range of devices through short-range digital two-way radio communication. In the case of the BlueMAX, it is equipped with *Bluetooth* wireless technology and requires another *Bluetooth* wireless device with which to communicate (a *Bluetooth* wireless-capable PDA, for example). The *Bluetooth* wireless module inside the BlueMAX is a power class I device supporting version 1.1 of the *Bluetooth* wireless standard, and has been certified.

The BlueMAX should not be used for firmware updates to your receiver; it is recommended you use the serial port directly on your receiver for any software updates.

## 2. Configuration

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This chapter provides detailed instructions on how to change the baud rate of the BlueMAX. There are several baud rates at work when dealing with *Bluetooth* wireless communications. The baud rate that talks over the air is called the RF baud rate, this baud rate is irrelevant since it adjusts to whatever device is trying to connect to it (PDA, etc.). The UART baud rate (**U**niversal **A**synchronous **R**eceiver/**T**ransmitter) is the internal BlueMAX baud rate that needs to match the baud rate of the receiver it is connected to by the serial cable. This is the baud rate that you will need to change if you wish to have your receiver at a baud rate other than the default of 4800.

### 2.1 Changing the Baud Rate

The following directions allow you to change the baud rate of your BlueMAX.

1. Connect through the serial port on the BlueMAX to a computer with a terminal program (HyperTerminal, etc.). Ensure that carriage return/line feed are turned on, along with local echo (to see what you are typing).
2. Issue the following command 'ATMC'
3. The *Bluetooth* wireless module should respond with 'OK'
4. Issue the command 'ATSW20,39,1' where '39' represents 9600 baud in *Bluetooth* wireless module terms. There are different numbers for each baud rate available, see Table 2-1 below for each available baud rate and its 'representative ascii value'.
5. Issue the command 'ATURST'
6. The *Bluetooth* wireless link should drop out, as the ATURST command soft-resets the module.
7. Re-connect to the product at the baud rate you've just programmed, continue as normal.

**Table 2-1 Ascii Values Corresponding to Baud Rates**

Baud Rate	Ascii Value
1200	5
2400	10
4800	20
9600	39
19200	79
38400	157
57600	236
115200	472

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**Note - For successful communications, the baud rate of the BlueMAX must be set to match that of the device to which it is connected.**

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# Appendix A - Specifications

This appendix provides the *Bluetooth* wireless, serial, power, physical, mechanical and environmental specifications of the BlueMAX.

**Table A-I BlueMAX Specifications**

Bluetooth Wireless Communications	
Item	Specification

Specification Version	1.1
Power Class	I
Profile Support	Serial Port Profile

Serial Interface Specifications	
Item	Specification

Serial port interface level	RS-232C
Data Port	DB9 Socket
Data Port available baud rates	4800, 9600, 19200, 38400, 57600 and 115200 Baud
Serial Port	One full duplex

Power Specifications	
Item	Specification

Input voltage	9 to 32 VDC
Reverse Polarity Protection	Yes
Power consumption	480 mW
Reverse Polarity Protection	Yes
Current Consumption	<40 mA @ 12 VDC

Mechanical Characteristics	
Item	Specification

Enclosure	ABS Plastic
Length	3.527"
Width	2.429"
Height	1.016"
Weight	66 g
Power Connector	2-pin miniature
LED Indicators	Power (Red), Bluetooth Lock (Blue)
Data Connector	DB9 Male

Environmental Specifications	
Item	Specification

Storage temperature	-40°C to 85°C
Operating temperature	-32°C to 74°C
Humidity	95% Non-Condensing