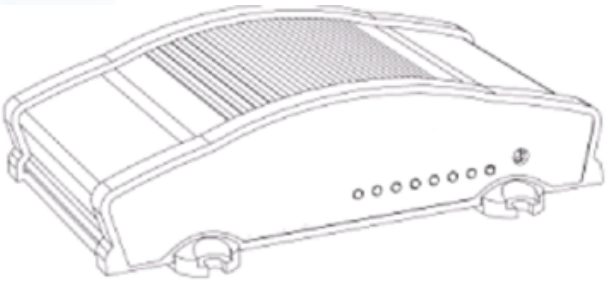

BT4600 (IP Series)
BT5600 (GPS Series)

CDMA 1xEvDO Modems

Product Manual

BLUE·TREE
WIRELESS DATA INC.

BlueTree Wireless
BT4600 and BT5600 CDMA 1xEvDO Modems

Product Manual

November 2005

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www.bluetreewireless.com

Patents

Portions of this product are covered by some or all of the following patents:

Declaration of Conformity

FCC Compliance and Industry Canada Statement

FCC ID: (TBD)

Industry Canada: (TBD)

The device complies with Part 15 of FCC rules and with ICES-003 of Industry Canada Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

⚠	**Caution**: Unauthorized modifications or changes not expressly approved by BlueTree Wireless Data, Inc. could void compliance with regulatory rules, and thereby your authority to use this equipment.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instructions, may cause interference harmful 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.

	**Warning:** “Antenna must not exceed 3 dBi for Cellular band and 4 dBi for PCS band. This device must be used in mobile configurations. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30 cm or 12 inches from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and Installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance”	

Liability Notice

While every effort has been made to achieve technical accuracy, information in this document is subject to change without notice and does not represent a commitment on the part of BlueTree Wireless Data, Inc., or any of its subsidies, affiliates, agents, licensors, or resellers. There are no warranties, express or implied, with respect to the content of this document.

Safety

Do not operate the BlueTree Wireless Data BT4600 or BT5600 modem in areas near medical equipment, where blasting is in progress, where explosive atmospheres may be present, or near any equipment that may be susceptible to any form of radio interference.

Contents

Chapter 1: Introduction

Welcome

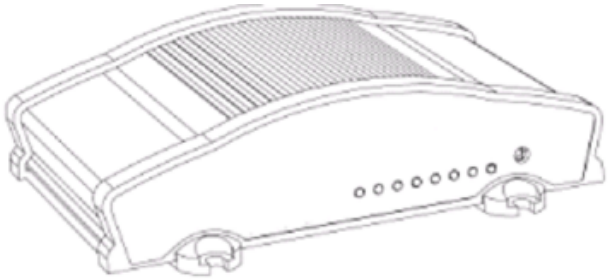
Thank you for choosing the BT4600/5600, BlueTree's CDMA wireless data modem.

Customer Support

Help desk	Toll-free	1-877-422-9110
	Phone	(514) 422-9110
	Hours	09:00 - 17:00 Eastern Time
	Email	support@bluetreewireless.com
Sales desk	Phone	(514) 422-9110
	Hours	09:00 - 17:00 Eastern Time
	Email	info@bluetreewireless.com
Mail	BlueTree Wireless Data, Inc. 2425 46th Avenue Lachine, QC, Canada H8T 3C9	
Fax	(514) 422-3338	
Web	www.bluetreewireless.com	

Chapter 2: Product Description

Overview



The BT4600/5600 modem gives today's mobile organization the reliable, instant access to information that is critical for its teams.

The unit is a fully integrated CDMA modem, which adds wireless 1xEvDO functionality to remote and mobile applications. These are designed for harsh environment installations and are tested to meet strict military and automotive standards.

These modems are intended for use with a host platform such as a computer or remote data terminal unit. These modems also contain an embedded processor and the intelligence to transfer data from one source to another over the wireless network without the need for any additional computing device.

BlueVue Device Manager software

The modem package also includes BlueVue Device Manager software. The Device Manager application makes configuring and monitoring your modem simple and quick. With this software modem administrators can:

- Provision modem on wireless network (Activation)
- Configure operating parameters
- Monitor status information

Note: Refer to BlueVue Device Manager manual for more details.

Available Models

BlueTree offers two models of CDMA wireless rugged modem:

- BT4600 wireless modem - base model with TCP/IP capability.
- BT5600 wireless modem - GPS model with TCP/IP and positioning capabilities.

Modem Features

The BT4600/5600 modems offers the following features:

CDMA Dual-band	Supports both North American frequency bands: 800 and 1900 MHz
CDMA 1xEvDO	Compatible with CDMA IS-2000 (1xEvDO) Wireless data services. Backward compatible with IS95 protocols.
Short Message Services (SMS)	Supports both mobile originate and mobile terminate text messaging
3 different data connection interfaces	Serial/RS-232, Ethernet, and USB. Note: USB is not available on product release 1.0
TPC/IP Stack	Fully integrated TCP/IP protocols allowing the modem to connect autonomously to the packet network (internet). This feature enables capabilities such as: In-call diagnostic, Serial-IP, stand-alone GPS, remote configuration, and remote firmware upgrade.
In-call diagnostic	Allows the user to get modem status information while in a data call, without interrupting the data session.
Serial-IP	Encapsulates data coming from the serial port into a TCP or UDP packet and sends it to a remote server on the packet network. Decapsulates IP packets coming from the network and sends raw data to the serial port.
Remote configuration	Using the BlueVue Device Manager, this feature allows the administrator to remotely configure or perform remote diagnostics on the modem. Note: For more information, refer to the BlueVue Device Manager manual.
Remote firmware upgrade	Using the BlueVue Device Manager, this feature allows the administrator to remotely upgrade the modem's firmware. Note: For more information, refer to the BlueVue Device Manager manual.
Remote access security	For remote configuration, the modem offers access protection through username and password authentication.
Integrated GPS Receiver	Available on the BT5600 only, a Trimble GPS receiver is embedded into the modem for Automatic Vehicle Location (AVL). The modem can report this positioning data locally to any of the data interfaces (serial, Ethernet, USB), or also remotely to a predefined server (see stand-alone).

Stand-alone GPS	Available on the BT5600 only, this feature allows remote asset tracking by sending GPS data to a remote server without the need for a client application on the data terminal.
Store and Forward	Available on the BT5600 only, this feature allows GPS data storage. If a unit loses communication, the data being collected through GPS will be stored in memory and forwarded when communication is reestablished.
Inputs and Outputs	Not available on the product release 1.0.

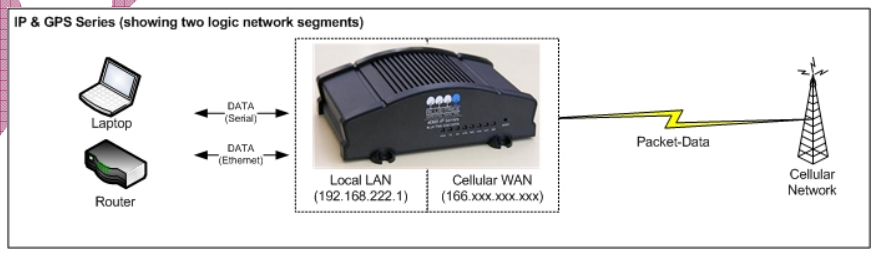
Operational Description

Wireless connection modes

The BT4600/5600 can connect to the wireless data network in three different ways:

- **Packet Data (1xEvDO/1xRTT)**: allows outgoing calls using either IS-2000 1xEvDO or 1xRTT cellular protocols, in the same order of priority. It is intended for TCP/IP connections to the internet. 1xEvDO allows speed up to 2.4Mbps.
- **Packet Data (1xRTT)**: allows outgoing calls only using either IS-2000 1xEvDO cellular protocols. It is intended for TCP/IP connections to the internet. 1xEvDO allows speed up to 2.4M.
- **Packet Data (QNC)**: allows outgoing calls only using IS-95 QNC cellular protocols. It is intended for TCP/IP connections to the internet. QNC allows speeds of up to 14.4Kbps.
- **Circuit Switched Data**: allows for both outgoing and incoming calls using the circuit-switched IS-95 cellular protocol. It is intended for direct connections with a landline analog modem. Allows speeds of up to 14.4Kbps.

Modem operating modes



The BT-5000/4000 series modems are capable of operating in two different networking modes, Router and Simple Modem modes.

The mode that is in effect when a connection is established depends on the modem startup configuration and/or on the dialing strings used when a host or a terminal attached to the modem's serial port initiates a connection.

Router mode: In router mode, the modem establishes a PPP Client connection with the network on the WAN side while a PPP Server accepts connections on the LAN side over the serial port. Packets are routed between the two connections for proper forwarding.

Note: Ethernet and future USB LAN-side connections automatically assume a router mode.

Simple Modem mode: In Simple Modem mode, there are no PPP negotiations established by the modem. The modem simply operates at the physical layer and the PPP negotiations are passed-through between the LAN and WAN sides.

The next sections assume host connections over the serial port.

Modem configured to start in Always-On mode

The modem can be configured to start in Always On mode. The modem configuration is accomplished using AT commands from a connection terminal like Microsoft® HyperTerminal, or using BlueTree Device Manager. Upon modem startup, this mode causes the modem to automatically establish and maintain a PPP connection with the network on the WAN side.

This connection requires a connection profile to be configured in the modem prior to connecting.

Note: In this mode, the modem can achieve autonomous communication, like reporting GPS data to preconfigured IP destinations, without the need for a host.

When a host, attached to the serial port of a modem in the Always-On mode, sends a dial command to the modem, the following connection behavior applies:

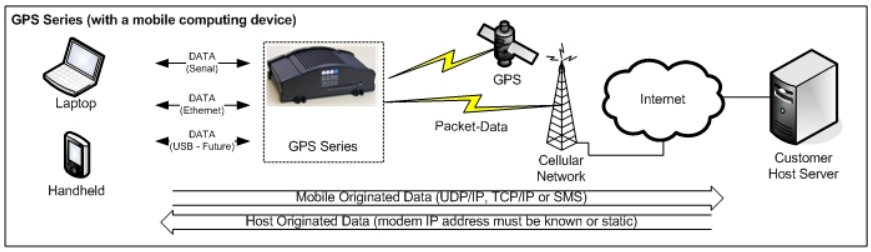
- If the dial string is the special string "#BTPPPS" or is the same dial string used in the modem connection profile of the modem, router mode comes in effect, PPP server is started and accepts the connection.
- If the dial string is not "#BTPPPS" and is different from the one used in the configured connection profile, then the WAN-side connection is terminated and the modem reverts to the Simple Modem mode as described above.

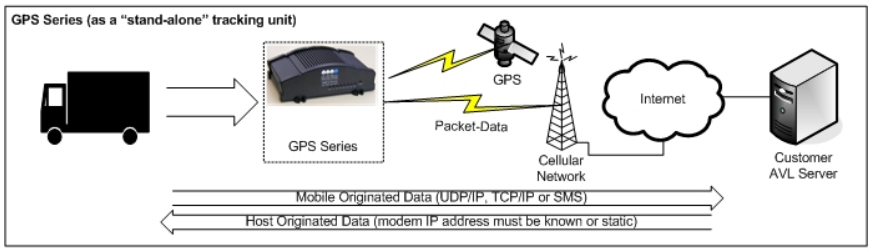
Modem configured to start in On-Demand mode

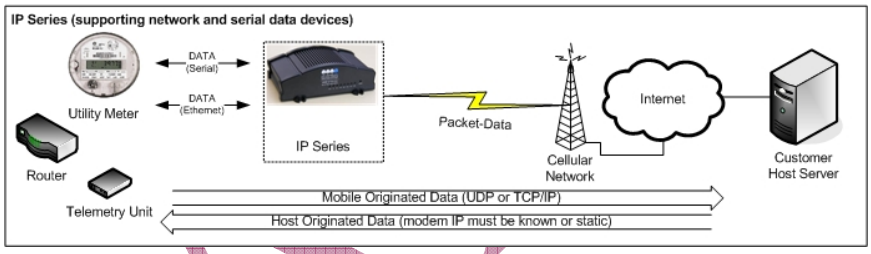
In this mode, the same logic applies as in the Always-On mode with the exception that the WAN connection is established only when a dial command is received from the LAN-side.

If no connection profile is configured in the modem, the On-Demand connection always puts the modem in Simple Modem mode except when the "#BTPPPS" dial string is used. In this case, PPP server starts on the LAN side and a PPP connection is established with the modem only.

Diagrams of typical applications







Physical Description

Front View

Rear View

Top View

Bottom View

LED indicators

On the front plate of the modem, eight green LEDs are displayed: PWR, TX, RX, DTR, REG, ACT, LNK, and SER or GPS.

Those eight indicators offer a user-friendly means of inquiring the modem's operating status. They are described in the table below.

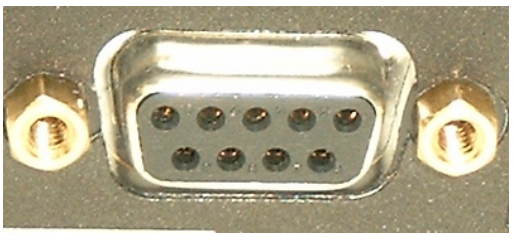
Table: 1: LED description

LED	Label	Full Name	Color	Corresponding State
1	PWR	Power	OFF	Modem is turned OFF.
			Flashing	Modem failure.
			ON	Modem is ON.
2	TX	Transmit	OFF	Terminal is not transmitting data to modem.
			Flashing	Terminal is transmitting data to modem.
3	RX	Receive	OFF	Terminal is not receiving data from modem.
			Flashing	Terminal is receiving from modem.

4	DTR	Date Terminal Ready	OFF	No terminal is detected.
			Flashing	Problem.
			ON	Terminal host is detected.
5	REG	Registration	OFF	Network not found.
			Flashing	Registered on network.
			ON	Searching for network.
6	LNK	RF link	OFF	Not in a call.
			Flashing	In a circuit-switched call.
			ON	In a packet-switched call.
7	ACT	RF activity	OFF	No transmit/receive from network.
			Flashing	Transmitting/receiving data from network.
8	SER	Serial mode	OFF	AT command mode.
			Flashing	On-demand serial IP mode.
			ON	Always-on serial IP mode. (Model BT4600 only)
9	GPS	GPS	OFF	No position fix available.
			Flashing	2D position fix is available.
			ON	3D position fix is available. (Model BT5600 only)

Serial Port (DB9)

The modem's serial port is an RS232 DCE, compliant with EIA-232 standard. The connector used is DB9 female and is shown in the illustration below.



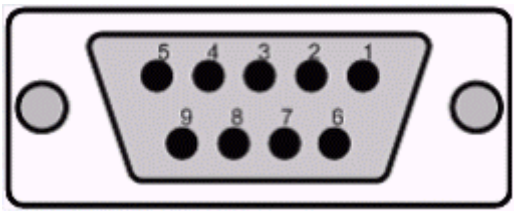


Table: 2: RS-232 connector pinout

Pin number	Name	Description	Direction
1	DCD	Data Carrier Detect	Modem to PC
2	RXD	Receive Data	Modem to PC
3	TXD	Transmit Data	PC to Modem
4	DTR	Data Terminal Ready	PC to Modem
5	GND	Ground	Common
6	DSR	Data Set Ready	Modem to PC
7	RTS	Request To Send	PC to Modem
8	CTS	Clear To Send	Modem to PC
9	RI	Ring Indicator	Modem to PC

USB Port (Type B)

This feature is not supported on product version 1.0.

Ethernet Port (RJ-45)

The Ethernet port of the modem is configured as shown in the illustration below. The Ethernet port is compliant to EIA-568 standard, and requires a crossover cable to connect to host terminals.

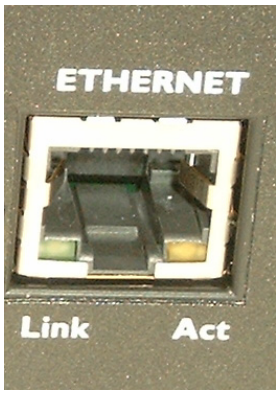


Table: 3: Ethernet connector pinout

Pin number	Name	Description	Direction
1	TX+	Transmit +	Modem to PC
2	TX-	Transmit	Modem to PC
3	RX+	Receive +	PC to Modem
4	N.C.	None	None
5	N.C.	None	None
6	RX-	Receive -	PC to Modem
7	N.C.	None	None
8	N.C.	None	None

Input and Output Ports (Digital & Analog I/O)

This feature is not supported on product version 1.0

Power Connector

The power interface (or power supply) connector is configured as described in the table below. The connector used for this application is a MiniFit 4-pin Molex connector.

Table: 4: Power connector pinout

Pin number	Name	Description
1	GND	Ground
2	POS	Power supply input 8 to 30 Vdc
3	IGN	Ignition sense
4	OUT	Not connected

Technical Specifications

Category	Specification
Data Interface Connectors	DB-9 female for serial RS232 (1200 to 115600 bps) USB Type B receptacle RJ-45 host female for Ethernet
Cellular Antenna Connector	2x SMA 50 ohm female
GPS Antenna Connector	SMA 50 ohm female
Power Input	8.0 - 30VDC (nominal 12 VDC)
Current Consumption @ 12 VDC	Online: 150 mA (average), 300 mA (peak) Standby: 40 mA Ignition off: 1 mA
Cellular RF specifications	Effective Radiated Power 0.327 W / 23 dBm at 1900 MHz 0.247 W / 23 dBm at 800 MHz Receiver Sensitivity: -104 dBm
GPS specifications	8 channels, 32 correlators Protocols: NMEA 0183 v3.0, TSIP, TAIP Accuracy: Horizontal: <6 meters (50%), <9 meters (90%) Altitude: <11 meters (50%), <18 meters (90%) Velocity: 0.06 m/sec. Frequency: 1575.42 MHz Receiver Sensitivity: -118 dBm
Mechanical	Dimensions: 6.5” x 4.0” x 1.6” Weight: 400g (pounds) Body Material: aluminum extrusion
Environmental	Operating Temperature: -30 to +60 C Storing Temperature: -30 to +85 C Humidity: 95% non-condensing Shock: MIL 810F/202G Vibration: MIL 810F/202G Class I Division 2: Not Applicable
Regulatory	FCC Part 15 Class B Industry Canada ICES-003

Chapter 3: Installation Requirements

Cellular antenna

Before you install the modem you will need the following:

To comply with FCC and Industry Canada regulations, cellular antennas must meet the following specifications:

- Maximum rated gain of 3dBi for Cellular band and 4dBi for PCS band
- Dual-band 800 & 1900 MHz
- Nominal 50 ohm impedance
- VSWR less then 2.5:1
- Male SMA connector

It is recommended to use 2 cellular antennas (RF1 and RF2) for diversity and improved signal quality.

⚠	**Warning:** Antenna must not exceed 3dBi for Cellular band and 4dBi for PCS band. This device must be used in mobile configurations. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30cm or 12 inches from all persons and must not be co-located or operated in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance.	⚠

⚠	**Warning:** Only approved antennas may be connected to the modem. Unauthorized antennas, modifications, or attachments could impair data quality, damage the modem, or result in the violation of FCC regulations.	⚠

GPS antenna

The selected GPS antenna must meet the following specifications:

- Active antenna with 3.3 volts preamplifier
- Nominal 50 Ohms impedance
- Male SMA connector
- Frequency band: 1575 MHz

Note: The GPS feature is only available on the BT5600 model only.

Combined GPS and Cellular antennas are available. Contact your local representative for more details.

Serial cable

If you are connecting to the modem via serial port, you will need a standards straight through RS-232 cable with DB9 male to DB9 female connectors.

Ethernet cable

If you are connecting to the modem via the Ethernet port, you will need a cross over Category 5, RJ-45 cable, compliant with EIA-568 standard.

USB cable

This feature is not supported on product version 1.0.

Power source

You will need to provide a 12 Vdc nominal power source to the modem (8Vdc to 30Vdc). Please see electrical specifications for more details.

Mounting Hardware

For mounting, the modem requires four #4 screws (3/16") pan or fillister head, as well as corresponding lock washers.

Wireless network account

Contact your wireless service provider and request a CDMA account activation with the "packet data" (1xEvDO) service option.

You will need to provide the service provider the Electronic Serial Number (ESN) of the modem you wish to activate. The ESN is located on a label under the modem.

The wireless service provider should give you the following parameters for you to complete the activation:

- Mobile Directory Number (MDN). This is the10-digit telephone number assigned to your unit, including the area code.
- Service Provisioning Lock Code which is a 6-digit number representing the Master Lock Code (MSL).
- Mobile Station ID (MSID or IMSI or MIN). This is a 10-digit or 15-digit number required for Local Number Portability, and is optional.
- Username/Password for packet network access.

Note: Keep a written record of the account information that your wireless service provider gives you. Store it in a secure location. You will need this information if required to re-enter the account information.

Chapter 4: Installing the Modem

Installing the modem is a nine-step process:

1. Unpacking the modem
2. Mounting the modem
3. Installing the cellular antenna
4. Installing the GPS antenna (BT5600 model only)
5. Installing the power cable
6. Connecting the data cables
7. Configuring the modem
8. Connecting to a wireless network using the serial port (DB9)
9. Connecting to a wireless network using the Ethernet port (RJ45)

1) Unpacking the Modem

When the modem arrives, check that the package contains the following items:

- BT4600 or BT5600BT-1000 1010 1100 1110 2000 2010 modem
- 15-foot power cable with 2A in-line fuse
- Extra serial number label
- Quick Start Guide

Any items missing from this list, please call your local representative.

2) Mounting the Modem

Place the modem in a location where you can connect the power, antenna and data cables (refer to mechanical dimensions).

3) Installing the Cellular Antenna

- Cellular band antennas should be mounted more than 30 cm (12 inches) from other antennas.
- Do not install the antenna in a closed metallic enclosure (such as a cabinet or the trunk of a car).
- For safety reasons, mount the antenna at least 30 cm (12 inches) away from the body of a person.
- The length of the antenna cable may affect the signal strength. Choose the appropriate cable type and length refer to table below.

⚠	**Warning:** Antenna must not exceed 3 dBi for Cellular band and 4 dBi for PCS band. This device must be used in mobile configurations. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 30 cm or 12 inches from all persons and must not be co-located or operated in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance.	⚠

Recommended Cable type and maximum length:

Cable type	Loss per 100 feet	Recommended max length
8216 (RG58)	31 dB	20 ft.
8267 (RG213)	7.6 dB	40 ft.
LMR-400	3.9 dB	60 ft.
LMR-500	3.15 dB	80 ft.
LMR-600	2.5 dB	100 ft.
LMR-1200	1.26 dB	140 ft.

Installation procedure

1. Thread the antenna cable through the vehicle so the cable can reach the front plate of the modem.
2. Connect the cable to the SMA connector finger tight. Do not use tools.

4) Installing the GPS Antenna

For BT5600 models only, follow these steps to install the GPS antenna:

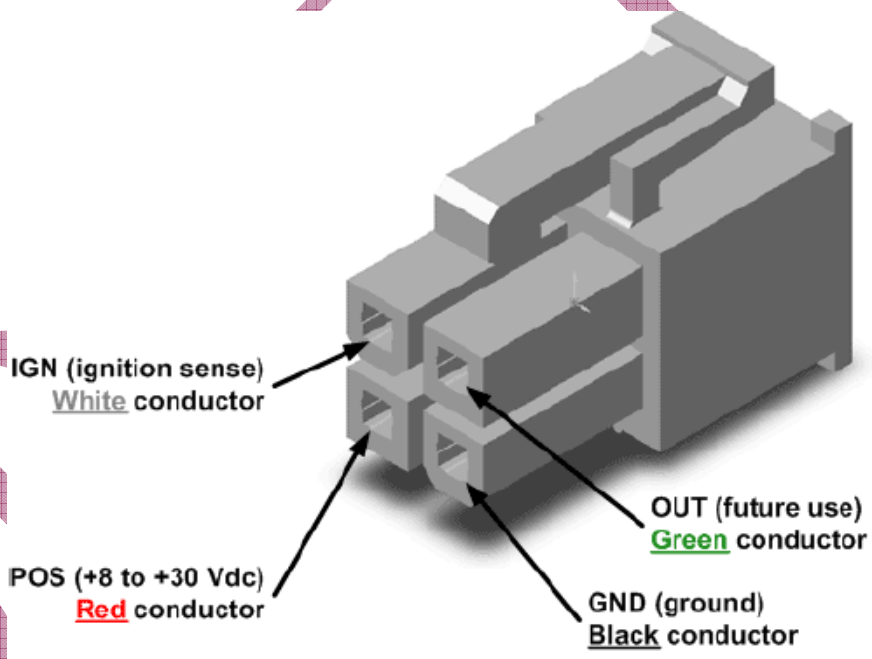
1. Thread the antenna cable through the vehicle so the cable can reach the front plate of the modem.
2. Connect the cable to the SMA connector finger tight. Do not use tools.

5) Installing the Power Cable

The modem includes a 15-foot power cable with 2A in-line fuse.

Power cable connector

As shown below, the power cable connects to the modem through a Molex type connector (MiniFit 4-pin).



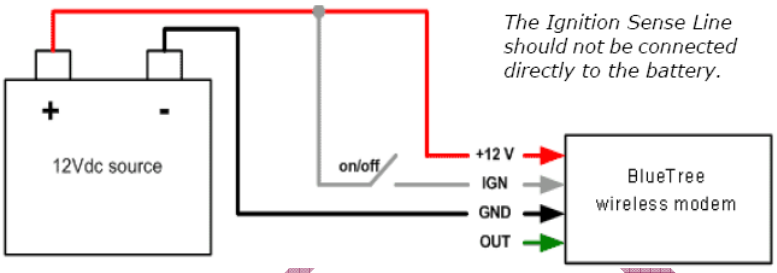
The ignition sense line (white wire) acts as an ON/OFF power switch. The modem will turn on when the ignition sense line is set between 8 and 30 volts DC. The modem will turn off if the ignition sense line is less than 5 volts DC.

Pin designations for the connector are shown below.

Pin	Annotation	Color	Description
1	GND	Black	Ground
2	POS	Red	Power supply input 5 to 30 Vdc

Pin	Annotation	Color	Description
3	IGN	White	Ignition input
4	OUT	Green	Not used

Powering up the modem



Note: Make sure that the antenna is connected to the modem before applying power.

The ignition Sense Line should not be connected directly to the battery. Make sure that the antenna is connected to the modem before applying power.

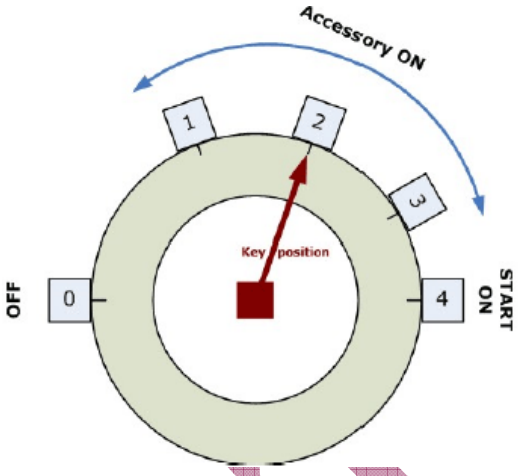
To connect the power cable:

- Connect the red wire directly to the battery's positive (+) terminal or to a source of 8-to-30Vdc.
- Connect the black wire directly to the battery's negative (-) terminal or to ground (GND).
- The white wire must be connected to either:

a) a switch for manually turning on and off the modem,

b) the vehicle's "Accessory for position 2", for turning ON the modem without turning on the engine,

c) the vehicle's "Accessory for position 3", for turning ON the modem only when the engine is turned on.



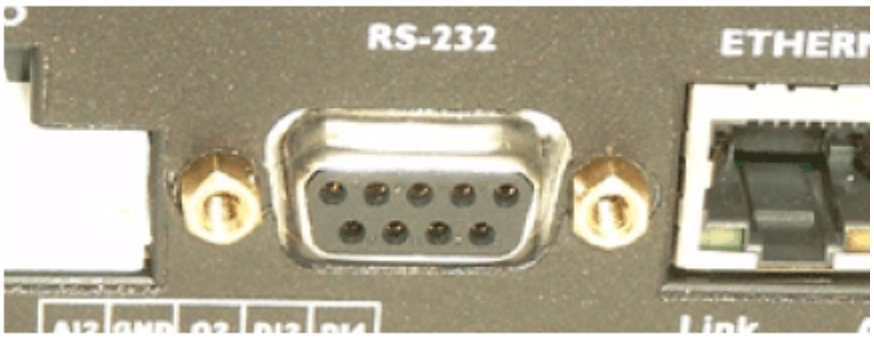
To test the power connection:

1. Check the modem's LED indicators.
   - If the PWR or Power indicator is turned on or if it flashes, the modem is powered.
   - If the PWR or Power indicator is not turned on, review the installation procedures or see Troubleshooting section.
2. If LED indicators are not accessible to the installer a personal computer can be used to verify it's functionality.
   - Start BlueVue Device Manager, it will automatically detect the modem (refer to BlueVue Device Manager section).
   - BlueVue Device Manager is not available initiate a Windows HyperTerminal session and execute the AT commands shown in Appendix C.

6) Connecting the Data Cables

Connecting the Serial data cable:

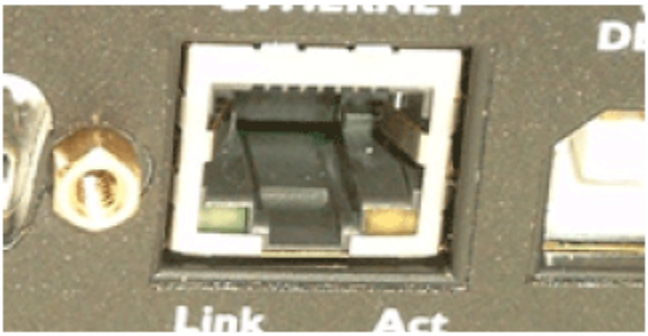
1. Connect one end of a serial cable to the modem at the connector labeled RS-232.



2. Connect the other end of the serial cable to an available connection on your terminal.

Connecting the Ethernet data cable:

1. Connect one end the Ethernet cable to the modem at the connector labelled ETHERNET.



2. Connect the other end of the Ethernet connection of your terminal.

Connecting the USB data cable:

This feature is not supported on product version 1.0

7) Configuring the modem

Once the physical installation is complete, the modem should be configured for:

- Activation on the wireless network
- Operation mode and network connection setup

This configuration is performed using:

- BlueVue Device Manager companion software, or
- through standard AT commands (refer to AT Command manual).

8) Connecting to a wireless network using the serial port (DB9)

Note: The following section is only required if you want to connect to the network using a PC/laptop with Windows 2000/XP. It is described here as an example of how a connection profile should be configured to work with the BT4600/5600 modems.

Adding the modem

To add a modem in Windows 2000 or XP

1. Click Start > Settings > Control Panel > Phone and Modem Options.

2. On the Phone and Modem Options box, click the Modems tab and then:

   a) Click Add.

   b) Check the box labelled “Don’t detect my modem;...” and then click Next.

   c) Select the **Standard 33600 bps Modem** and click Next.

   d) Select the COM port that the modem is attached to then click Next.

   e) Click Finish to complete the addition of the modem in Windows.

   f) Click the Modem tab and confirm that the Maximum Port Speed is set to 115,200.

   g) Click OK.

The modem profile is now configured.

Creating the DUN profile

To create a Windows XP DUN connection:

1. Click Start > Settings > Control Panel > Network Connects > New Connection Wizard.
2. On the New Connection Wizard welcome box click Next.
3. On the Network Connection Type box select **Connect to the Internet**, and then click Next.
4. On the Getting Ready box select **Set up my connection manually**, and then click Next.
5. On the Internet Connection box select **Connect to a dialup modem**, and then click Next.
6. On the Select a Device box select the **33600bps** modem and then click Next.
7. On the Connection Name box, type in a name for the connection (for example: CDMA) and then click Next.
8. On the **Phone Number to Dial** box type the phone number, as supplied by your wireless service provider. For example, type #777 for 1xEvDO packet data connections.
9. On the Internet Account Information box, type the username and password in the corresponding fields and then click Next.

The DUN connection is now set up and ready to connect to the wireless network.

9) Connecting to a wireless network using the Ethernet port (RJ45)

Note: The following section is only required if you want to connect to the network using a PC/laptop with Windows 2000/XP. It is

described here as an example of how a LAN connection between the PC and the BT4600/5600 modems is setup.

The BT4600/5600 modem has a DHCP server continuously running on its RJ45 Ethernet interface. As soon as a PC is connected to it, the modem will automatically assign and LAN IP address to the PC.

When this is done, the user will see the following message on its PC monitor.

Appendix A: Warranty and Customer Support

Warranty

The BT4600/5600 modem has a DHCP server continuously running on its RJ45 Ethernet interface. As soon as a PC is connected to it, the modem will automatically assign and LAN IP address to the PC.

When this is done, the user will see the following message on its PC monitor.

Bluetree Wireless Data Inc. warrants the BT4600/5600 cellular modem against all defects in materials and workmanship for a period of one (1) year from the date of purchase. The sole responsibility of Bluetree Wireless Data Inc. under this warranty is limited to either repair or, at the option of Bluetree Wireless Data Inc., replacement of the cellular modem. There are no expressed or implied warranties, including those of fitness for a particular purpose or merchantability, which extend beyond the face hereof. Bluetree Wireless Data Inc. is not liable for any incidental or consequential damages arising from the use, misuse, or installation of the BT4600/5600 cellular modem. This warranty does not apply if the serial number label has been removed, or if the cellular modem has been subjected to physical abuse, improper installation, or modification. The unit is automatically registered for warranty at the date it is purchased and/or shipped.