



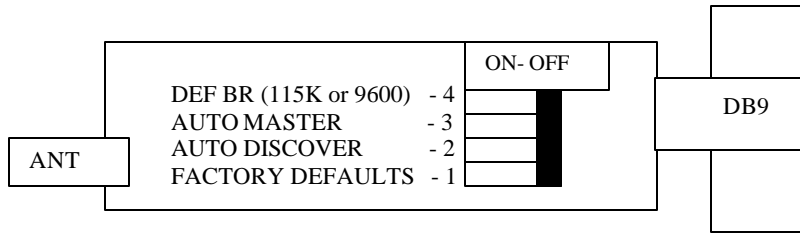
# BluePort-XP Install Guide

## OPERATING MODES

- 0-Slave Mode** - The default mode, whereby other devices can discover and connect to the BluePort.
- 1 - Master Mode (SM,1<CR>)** Enables outbound connections. To connect, use the "C" command.
- 2-Trigger Mode (SM,2<CR>)** Automatically connects to stored address, when data is received on local serial port of master.
- 3-Auto Master Mode (SM,3<CR>)** Automatically connects to stored address on power up.

NOTE: In all master modes the device will not be discoverable or remote configurable.

## CONFIGURATION SWITCHES ( ALL SWITCHES ARE SET OFF FROM FACTORY )



- 1- FACTORY DEFAULTS-** Set this switch ON, power up the unit, and toggle the switch OFF-ON-OFF to return the unit to factory settings.
- 2-AUTO DISCOVER MODE** – In Slave mode, will set a special class of device which is used by a remote Blueport Master to auto connect. IF Switch 3 also SET (auto master), the device performs a search, stores, and connects to a remote slave which has this switch 2 set .
- 3- AUTO MASTER MODE-** BluePort will act as master, and auto-connect to a stored remote address. You first set the BT address of the device to connect to using the SR command. Or, have BluePort auto discover and connect by setting this AND Switch 2.
- 4- DEFAULT BAUDRATE-** OFF (factory setting) = 115K, ON = 9600, (overridden if configured).

## LEDs

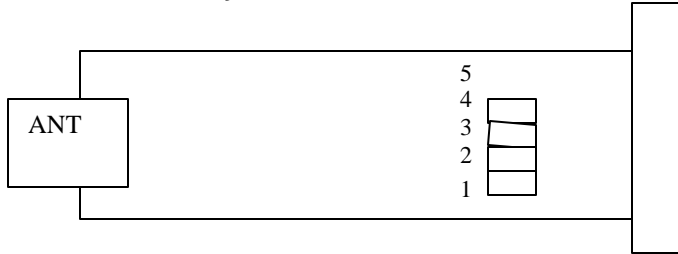
MODE	GREEN LED BLINK
Configuring	Fast, 10 x per second
Boot up, Remote Configurable	2 times per second
Discoverable/Idle	1 time per second
Connected	On Solid

The YELLOW Led shows physical state of the data pins, pulse stretched for eye visibility, and blinks when data is TRANSMITTED or RECEIVED on the TX and RX pins. The RED Led indicates battery status: If the Led is blinking, battery is low and needs charging. When charger is connected, RED Led will glow solid, and turn off when charge is complete.

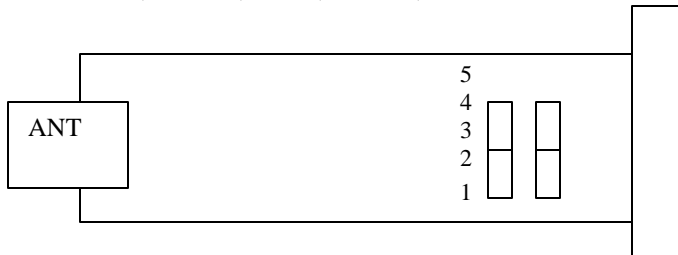
**SERIAL PIN CONFIGURATIONS (you must remove the plastic enclosure to access the jumpers below).**

NAME	DB-9 male	IO DIR	DCE(PC)*	DTE	3-WIRE-DCE
1-DCD	NC				
2-RX	2-RX	IN←		--	
3-TX	3-TX	OUT→		--	
4-DTR	NC				
5-GND	5-GND	←→			
6-DSR	NC				
7-RTS	7-RTS	OUT→		--	
8-CTS	8-CTS	IN←		--	X
9-RING	V+	IN←			

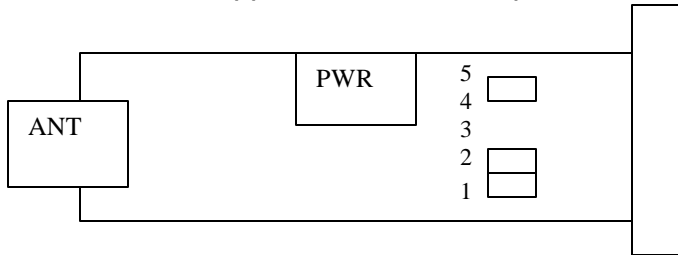
**DCE Factory Default, RX=2, TX=3, RTS=7, CTS=8**



**DTE , RX=3, TX=2, RTS=8, CTS=7**



**DCE 3 Wire ( CTS shorted to RTS ) , remove 3<sup>rd</sup> , 4<sup>th</sup> jumpers and install 1 jumper in position 5**



## **Battery/Charging**

To charge the battery, insert the power adapter and set the slide switch ON. The RED Led comes on SOLID while charging the battery, then turns off when charging is complete. A BLINKING RED Led indicates low battery condition. Battery life between charges depends on use, but you should get at least 24 hours of continuous use between charges.

**Power Jack** Center pin is +5V, outer cylinder is GND. Input **MUST be 5VDC** for proper battery charging. Higher voltages can permanently damage the charger and battery.

## **Making a Connection**

Blueport shows up under Service discovery as "BluePort-zpdq" where the zpdq is the last 2 bytes of the Bluetooth address. To connect to BluePort, browse for services, you should see: "SPP on BluePort-zpdq". **Default baudrate is 115200, no parity, 8 bits, 1 stop.** Blueport uses Serial Port Profile and can be connected to as a Virtual COM port on PCs, Palms, PocketPCs, or other clients.

NOTE: Only one client can connect to BluePort at a time, and there is a limit of 7 total devices in a Bluetooth Piconet network.

If authentication is not required, generally you can simply connect to the Blueport by clicking on the service shown by your client. If authentication is required, the default passkey of "1234", or the passkey that has been configured should be entered.

## **Changing Configuration**

**FROM LOCAL SERIAL PORT-** Connect a null-modem cable (pins 2,3 swapped) from a PC or a straight cable from an ASCII terminal to the Blueport. Communication settings of your program should match the stored settings, for example: the default is 115,200Kbps, 8 bits, No Parity, 1 stop bit. Once you change these parameters, they will be stored permanently.

Run your favorite terminal emulator, Hyperterminal\*\*\* or other program. (a free emulator for the PC is available at [www.rovingnetworks.com/support/teraterm.zip](http://www.rovingnetworks.com/support/teraterm.zip)) Type \$\$\$ on your screen (3 dollar signs) and follow it with a <CR> (carriage return) . You should see **CMD** returned to you. This will verify that your cable and settings are correct. Valid commands will return an **AOK**. Errors in format will return **ERR**, and unrecognized commands will return a ?. Type "h"<cr> to see a list of commands, and "d"<cr> to see a summary of current settings.

**REMOTE VIA BLUETOOTH-** Make a connection via Bluetooth, use a terminal emulator, and follow the directions above for local configuration. To return to data mode, type "----" ( 3 minus signs) <cr>, or reset the device and connect again.

**NOTE:** remote configuration can only occur if the bootup configuration timer (default 60 seconds) has not expired. This timer is set to 0 ( remote config disabled) for master mode, and auto-connect slave mode, so that data can immediately flow between the 2 devices in cable replacement fashion. \*\*\* Roving recommends you download the free teraterm program from our website, as we have found many bugs with Hyperterminal that render it ineffective in talking to local serial ports.

## COMMAND SUMMARY

\*\*\*SET COMMANDS\*\*\*stored in flash, and only take effect AFTER reboot

Example: SU,9600 sets Uart Baudrate to 9600

SN,myname sets Bluetooth name to “myname”  
 SA,1 enables secure authentication  
 SP,secret sets security pincode to “secret”  
 SF,1 restores all values to factory defaults

CMD	VALUE	TYPE	DEFAULT	DESCRIPTION
SA	0,1	dec	0	Enable Authentication
SE	0,1	dec	0	Enable encryption
SF	1	dec		Reset to Factory Defaults
SL	E,O,N	char	N	Parity, Even, Odd, or None
SM	0,1,2,3	dec	0	Mode (0-slav, 1=mstr, 2=trigr,3=auto mstr)
SN	string	1-16 char	Blueport-x	Bluetooth Name
SO	string	1-8 char	NOT SET	Status string or break character(s)
SP	string	1-16 char	1234	Security Pin Code
SR	string	12 chars	NOT SET	Remote Address (123456789ABCDEF)
ST	word	seconds	60	Config Timer(0=no config, 255=always on)
SU	string	2-4 char	115K	Baudrate:1200,2400,4800,9600,19.2,38.4,57.6,115k,230k,460k)
SX	0,1	dec	0x1F00	Bonding (locks to a single remote address)

### \*\*\* DISPLAY COMMANDS \*\*\*

CMD	DESCRIPTION
D	Basic Settings
E	Extended Settings
G<X>	A single setting matching the commands above
GB	Bluetooth Address of this device
&	I/O Ports (shows the value of the switches)
V	Firmware Revision

### \*\*\* OTHER COMMANDS \*\*\*

CMD	VAL1	VAL2	DESCRIPTION
C	<addr>		Connect to Remote Address( in Master Mode only)
H			Help, Show list of commands
I	<time>	<COD>	Inquiry Scan, time= xx seconds ,optional COD filter
R	1		Reboot device immediate
U	<rate>	<E,O,N>	Temporary UART Change, immediate, not stored

## **NOTES ON OPERATION:**

**Master Modes:** There are 3 different master modes which can be enabled:

1. Manual Mode. In this mode, the Blueport makes connections when a Connect Command "C", is received. This command also contains the Bluetooth address of the remote device to connect to. If no device is specified, then the store remote address is used. The connection can be broken if the special break character or string is sent (use the SO command to set the break character) **This is a low speed connect mode**.
2. Trigger Mode. In this mode, the Blueport makes connections automatically when a character is received on the serial port. The connection will continue as long as characters are received. There is a configurable timeout (which is set using the ST command) which will cause a disconnect after XX (from 1 to 254) seconds of inactivity. **This is a low speed connect mode**.
3. Auto Mode. In this mode, the Blueport makes connections automatically on powerup, and re-connects when connection is lost. This mode can also be enabled by setting Dip Switch #2. This is the high speed connect mode, and cannot be broken by software break characters.

**Low Speed Connect Mode NOTE:** in Manual and Trigger mode, the Blueport is making a LOW speed connection, that is, data is being processed by the Blueport before being sent over the air. There are a couple of limitations of these modes. The first is that because the Blueport is looking for break character(s), the latency and data rate will be decreased in these modes. The second has to do with the limit (20 bytes) in the buffer of the Blueport, such that if a large burst of characters are received, some characters may be dropped.. Thus it is recommended that for data rates above 19.2K, these modes should not be used.

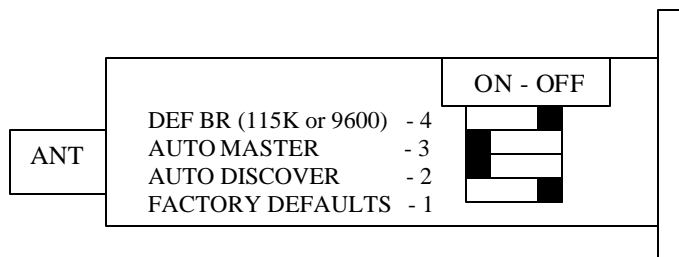
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**Security Issues, Pin Codes and Link Keys :** If A> authentication is enabled, or B> the device attempting to connect to the Blueport has authentication enabled, the following process occurs: The first time a connection is made, the user will be prompted for a Passkey or PinCode. This is a series of numbers or characters, "1234" is the default for the Blueport. Once this is entered, the remote Bluetooth device and the Blueport compare their passkeys and if they match, a link key is generated, which is stored by the Blueport, and usually, but not always stored by the remote device. Upon subsequent connection attempts, the devices will first compare link keys and if they are correct, no pin code will have to be re-entered.

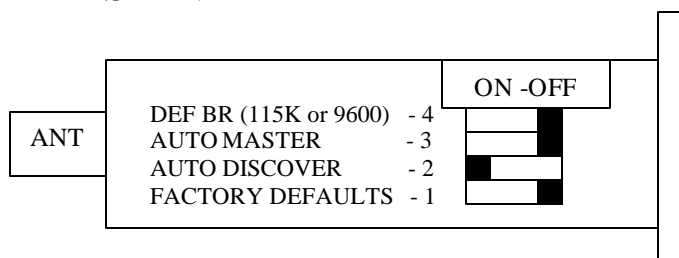
To remove the stored link key on the remote device, generally you "unpair" with the Blueport. To remove the link key on the Blueport, you can change the Pin Code. This will remove any previously stored link keys from the blueport, forcing a new Pin Code exchange process to occur upon subsequent connection attempts.

## INSTANT CABLE REPLACEMENT EXAMPLE:

### MASTER



### SLAVE



1. Set switches 2 and 3 as shown above.
2. Power up both devices
3. Master finds and store slave address, and auto connects.
4. Set Switch 2 on both Master and Slave back to OFF (so that they don't try to re-pair each time power is cycled).

## COMMON PROBLEMS and QUESTIONS:

**My Bluetooth client can see the Blueport and its serial service, but I can't connect:** This is most likely caused by a security setting on your client. If a pincode is required, the default is "1234". Some clients have these settings off by default, others have them on. To check and disable security: From your PC desktop, click My Bluetooth Places, go to the Bluetooth Device configuration (or Advanced Configuration) drop down menu, click on the client applications tab, Select the Bluetooth serial port application name, and click on the properties button, if "secure connection", or "authentication", or "encryption" is checked, un check it.

**Changing the clients COM port:** Widcomm stack, (and others) allows you to connect to BluePort using a "Virtual COM" port mapper. The software installs with a default COM port, usually COM3, COM4, or COM5. To change this setting: From your PC desktop, click My Bluetooth Places, go to the Bluetooth Device configuration (or Advanced Configuration) drop down menu, click on the client applications tab, Select the Bluetooth serial port application name, and click on the properties button, then you can change the com port.

**Connecting to more than one BluePort from the same client at the same time:** Bluetooth allows 7 devices at a time in a piconet. Widcomm stack allows you to create multiple instances of serial port profile and connect to multiple Blueports at the same time. To do this: From your PC desktop, click My Bluetooth Places, goto the Bluetooth Device configuration (or Advanced Configuration) drop down menu, click on the client applications tab, Select the Bluetooth serial port application name, and click on the ADD COM port button, then you can add another Bluetooth serial port and assign it to another virtual com port (such as COM9).

**Connections can be made but during data transfer, no characters flow, or bytes are dropped.** Check to see if your flow control signals are properly connected, and enabled in the serial software you are using. A common mistake is to connect during the boot config timer window, in this case, all characters will be ignored until a \$\$\$ is seen, and no characters are forwarded to the remote device. If remote configuration is enabled, the best way to ensure the device is not waiting for configuration is to issue "---<cr> at the beginning of a connection and before any user data is sent.

Another common problem is related to hardware flow control, it is not enough to simply disable flow control in your communications software, the Blueport expects to use hardware flow control, so do disable this on the Blueport you must either remove the CTS flow control jumper, or short pins 7 and 8 (RTS,CTS) of your cable to permanently enable the flow control.

## OTHER PRODUCTS AVAILABLE FROM ROVING NETWORKS

<b>RN-1000</b>	<b>Bluetooth Access Point &amp; Print Server</b>
<b>RN-700</b>	<b>Bluetooth Terminal Server &amp; Serial/Ethernet Gateway</b>
<b>RN-USB</b>	<b>Bluetooth Class I (long range) USB Adapter</b>
<b>RN-400U</b>	<b>Bluetooth USB Printer Adapter</b>
<b>RN-800S-AD</b>	<b>Bluetooth Sensor AtoD 16bit, 8 channel</b>
<b>RN-30S</b>	<b>Bluetooth embedded serial module, class I</b>
<b>RN-24S</b>	<b>Bluetooth embedded serial module class II</b>

(4-24Vdc input, 8 GPIO, high power switches)



**For more information and support:**

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