

BlueSnap-XP Install Guide

OPERATING MODES

0-Slave Mode- The default mode, whereby other devices can discover and connect to the BlueSnap.

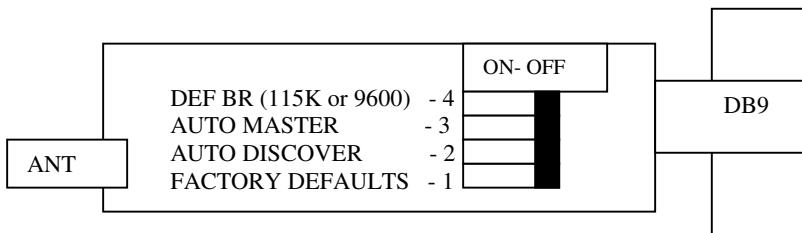
1 - Master Mode (SM,1<CR>) Enables outbound connections. To connect, use the “C” command.

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 BlueSnap 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- BlueSnap 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 BlueSnap auto discover and connect by setting this AND Switch 2.

4- DEFAULT BAUDRATE- OFF (factory setting) = 115K, ON = 9600, (overridden if configured).

LEDS

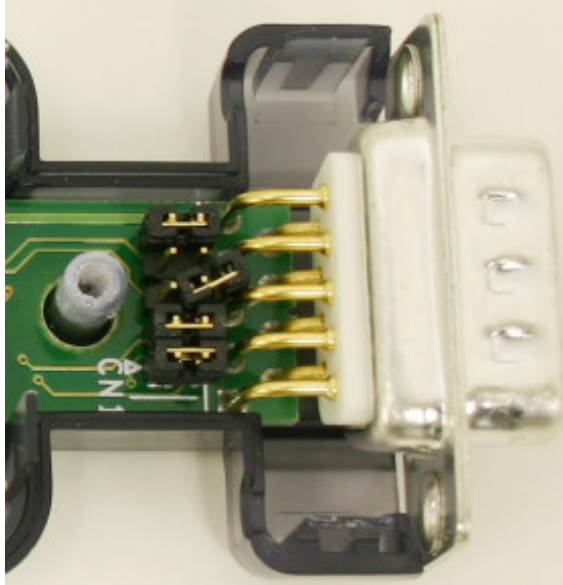
| MODE | GREEN LED BLINK |
|------------------------------|-----------------------|
| Configuring | Fast, 10 x per second |
| Boot up, Remote Configurable | 2 times per second |
| Discoverable/Idle | 1 time per second |
| Connected | On Solid |

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.

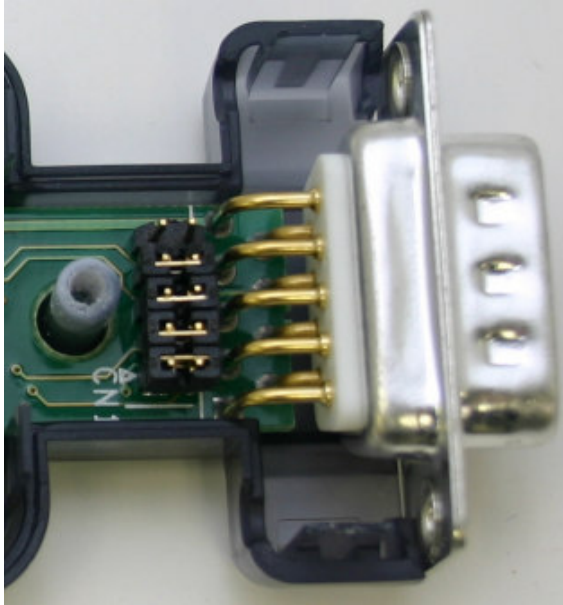
SERIAL PIN CONFIGURATIONS (you must remove the plastic enclosure to access the jumpers below).

| 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← | | | |

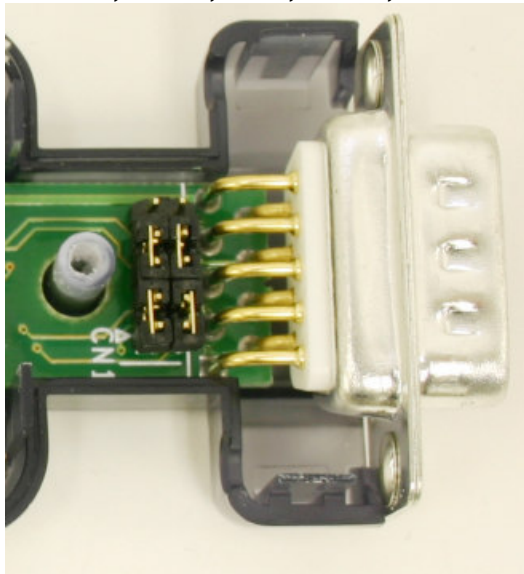
DTE 3 Wire Factory Default (CTS shorted to RTS) , remove 3rd , 4th jumpers and one jumper in position 5



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



DCE , RX=3, TX=2, RTS=8, CTS=7





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

BlueSnap shows up under Service discovery as "BlueSnap-zpdq" where the zpdq is the last 2 bytes of the Bluetooth address. To connect to BlueSnap, browse for services, you should see: "SPP on BlueSnap-zpdq". **Default baudrate is 115200, no parity, 8 bits, 1 stop.** BlueSnap 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 BlueSnap 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 BlueSnap 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 BlueSnap. 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. Type \$\$\$ on your screen (3 dollar signs). 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. *** We strongly consider use of an alternative program to Hyperterminal as bugs with Hyperterminal have been found that often 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 | BlueSnap- 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 BlueSnap makes connections when a Connect Command “C”, is received. This command can also contain the Bluetooth address of the remote device. 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 BlueSnap makes connections automatically when a character is received on the serial port. The connection will continue as long as characters are received on either end. 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 BlueSnap 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 BlueSnap is making a LOW speed connection, that is, data is being processed by the BlueSnap before being sent over the air. Because the BlueSnap is looking for break or config character(s), the latency will increase and data rate will be decreased in these modes. Thus it is recommended that for data rates above 57.6K these modes not be used.

Configuration Timer Settings

| VALUE (decimal) | DESCRIPTION |
|--------------------|--|
| 0 | No remote config, No local config when connected |
| 1-252 | Time in seconds from powerup to allow config |
| 253 | Continuous config LOCAL only |
| 254 | Continuous config, REMOTE only |
| 255 | Continuous config, both LOCAL and REMOTE |

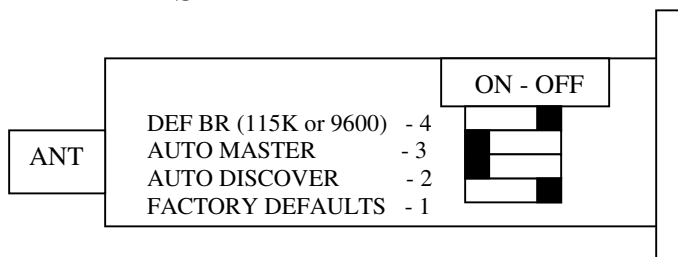
Security Issues, Pin Codes and Link Keys: If A> BlueSnap, or B> the remote device has authentication enabled, the following process occurs: The first time a connection is made, a “passkey” is used. This is a series of numbers or characters, “1234” is the



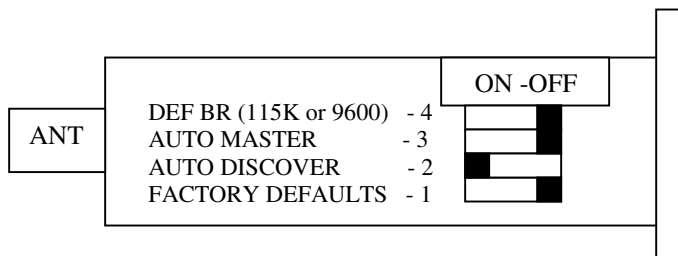
default for the BlueSnap. Once this is entered, the remote Bluetooth device and the BlueSnap compare their passkeys and if they match, a link key is generated, which is stored by the BlueSnap, and usually, but not always stored by the remote device. Upon subsequent connections, the devices will first compare link keys and if they are correct, no pin code will have to be re-entered. If the remote device is a PC or PDA, a prompt is generally made to the user to enter this pincode. To remove the stored link key on the remote device, generally you “unpair” with the BlueSnap. To remove the link key on the BlueSnap, you can change the Pin Code. This will remove any previously stored link keys from the BlueSnap, 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 BlueSnap 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 BlueSnap 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 BlueSnap 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 BlueSnaps 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 BlueSnap expects to use hardware flow control, so do disable this on the BlueSnap 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.