

# BLUETOOTH SERIAL PORT ADAPTER TOOLBOX - GETTING STARTED

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# 1 Table of Content

- 1 [Table of Content](#)
- 2 [Introduction](#)
  - 2.1 [Related Documents](#)
  - 2.2 [Overview](#)
- 3 [Select Product](#)
- 4 [Connect to Module](#)
- 5 [AT Mode](#)
- 6 [Configuration](#)
  - 6.1 [Basic Settings](#)
  - 6.2 [Security](#)
  - 6.3 [Server](#)
  - 6.4 [Client](#)
  - 6.5 [Serial](#)
  - 6.6 [Optimization](#)
  - 6.7 [Misc](#)
- 7 [User Defines](#)

## 2 Introduction

### 2.1 Related Documents

- The **Bluetooth Serial Port Adapter Toolbox - Getting Started**, this document, shortly describes how to use the toolbox to configure the Bluetooth serial port adapter.
- The **Bluetooth Serial Port Adapter AT Commands** document contains a short introduction to the concepts of the Serial Port Adapter as well as a description of the AT commands supported.
- The **Bluetooth Serial Port Adapter Electrical Mechanical Datasheet** contains important information about the OEM Serial Port Adapter. Read this document if you are using the OEM Serial Port Adapter.
- The **Bluetooth Serial Port Adapter Optimization** document describes how to optimize the module for throughput, latency, range or power consumption.

### 2.2 Overview

The Serial Port Adapter Toolbox provides an easy way to configure a connectBlue Serial Port Adapter module. It supports the Bluetooth, WLAN and 802.15.4 Serial Port Adapter as well as some different firmware variants.

Each command that is executed by the Toolbox is an AT command that is described in the AT command specification. Hence, the Toolbox and the AT command specification should be used in parallel.

To configure a module with the Toolbox the following steps must be performed.

1. Select what product is being used when the Toolbox is started
2. Connect to module (basically opening a COM port with correct settings)
3. Enter AT mode
4. Configure the module according to the requirements
5. Go back to Data mode
6. Disconnect from module

The toolbox consists a File menu, configuration area, console and a status bar.

- File menu: Provides functionality to save and download complete configurations. A configuration is stored in a text file as plain AT commands. Hence, it can be both edited and read using a plain text editor.
- Configuration area: Consists of tabs, buttons, text boxes, radio buttons and other typical window options

to support easy configuration. A set configuration is not executed until the "Write" button is pressed.

- Console: All executed commands are plain AT commands and all commands and responses are shown in the console window. A Copy/Paste menu is available by right clicking on the mouse.
- Status bar: Some info is presented at the bottom of the Toolbox.

### 3 Select Product

When the Toolbox is started the correct product must be selected.

For the Bluetooth Serial Port Adapter, select the "Bluetooth SPA" and press the OK button.

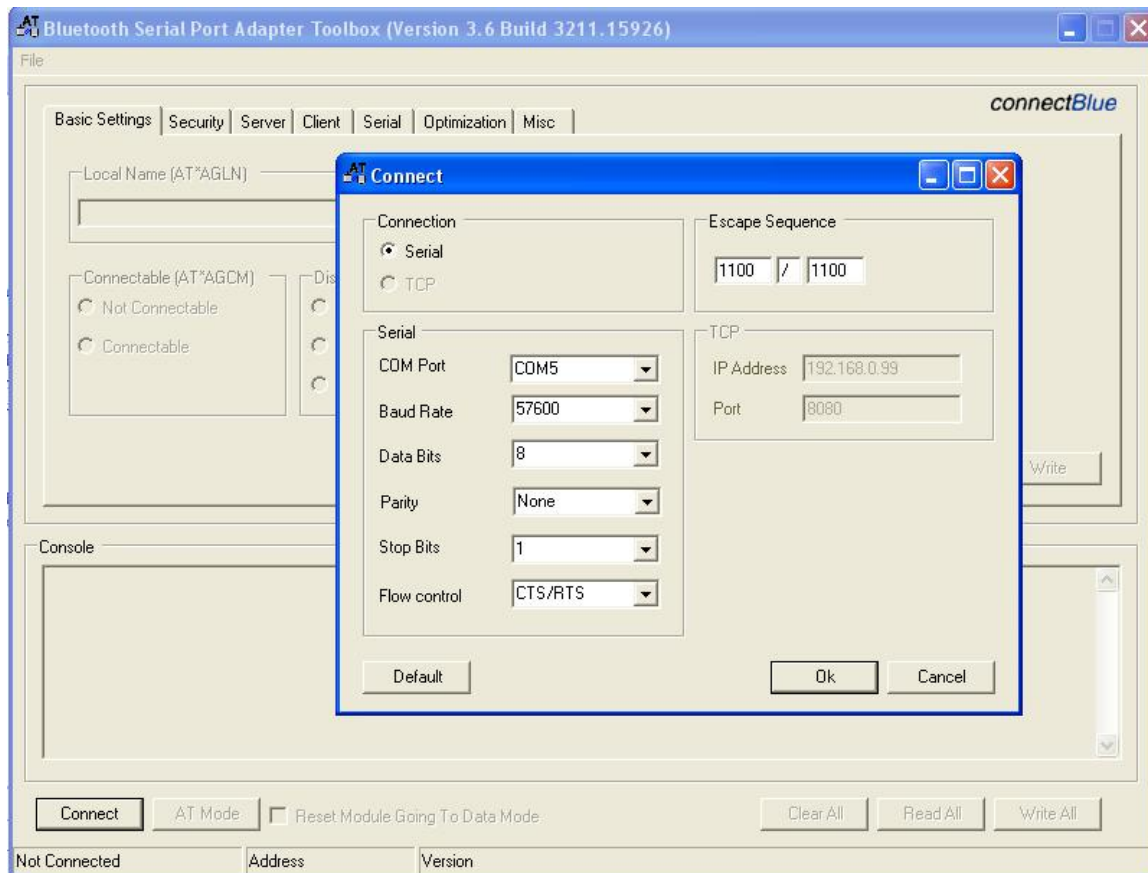


There is no way to change product once the Toolbox is started. Instead a new instance of the Toolbox must be started where the other product is selected.

### 4 Connect to Module

To start communication with the module, the correct COM port must be opened with the correct serial port settings.

Press the "Connect" button to get the "Connect" form where the serial settings are input.



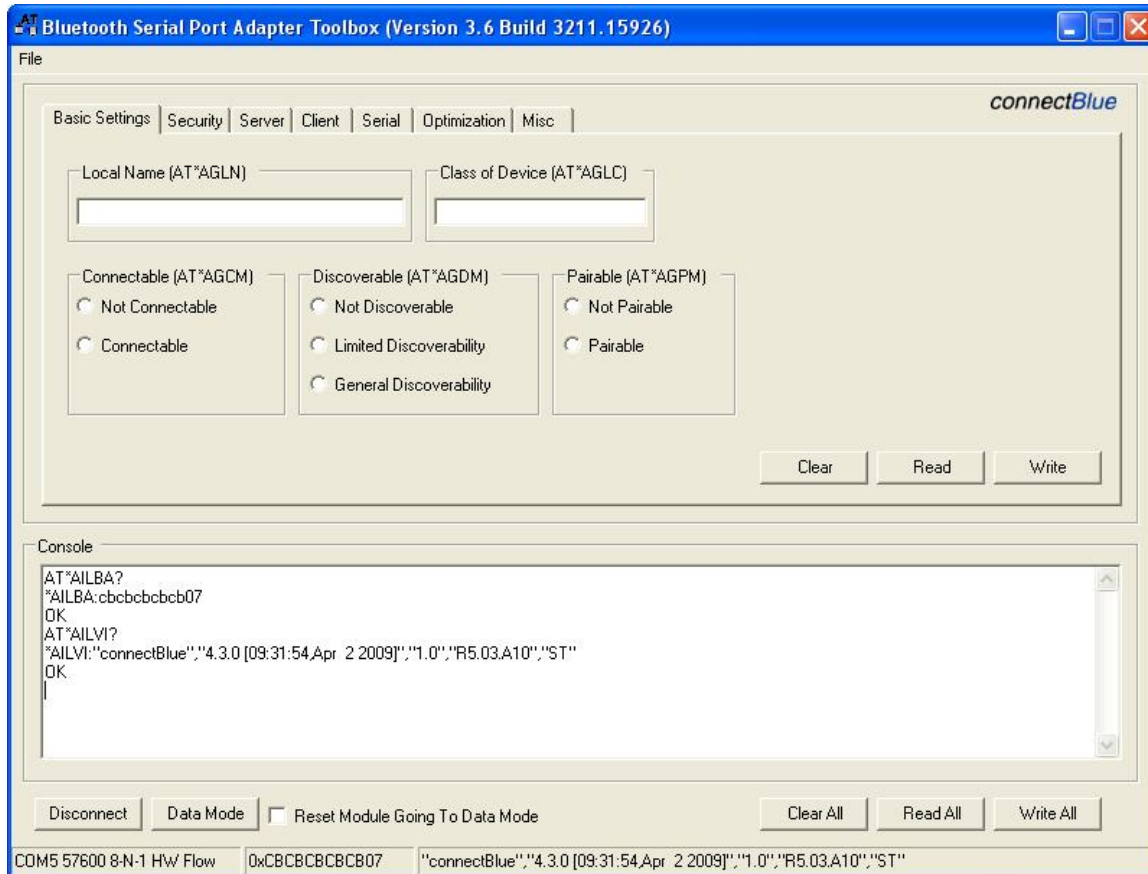
Also, there is an option to change the default escape sequence if needed. Note that this does not change the escape sequence of the module. Instead it should be used to connect to a module where the escape sequence has already been changed.

## 5 AT Mode

The module starts in data mode by default. In data mode it does not execute AT commands. It transfers data transparently between the serial port and the Bluetooth connection (if any).

Before the module can be configured it must be made to enter AT mode.

Press the "AT Mode" button for the module to enter AT mode.



As soon as the module has entered AT mode it executes the address and version information commands and presents the information in the status bar with the serial settings.

In the console window the AT commands with responses can be seen.

The module is now ready to be configured.

## 6 Configuration

By default the module is configured as an SPP server (accepts incoming connections) with no security enabled and pin code "0".

To configure a client (sets up connection to a remote peer), the commands on the client tab are used.

The client/server notation concerns which side that initiates a connection attempt (client) and which side that accepts an incoming connection (server). Do not confuse this with master/slave which is something different and only interesting in case of multipoint.

The commands are separated on different tabs where each tab contains a collection of associated commands.

- **Basic Settings:** Commands to set the basic behaviour (e.g. local name, discoverability, connectability) of the module.
- **Security:** Enable/Disable security and to set a pin code.
- **Server:** Commands to configure the server behaviour of the module. A server accepts incoming connections.
- **Client:** Commands to configure the client behaviour of the module. A client sets up a connection to one or more remote peers. Specifically the profile, number of remote peers and for each remote peer connect information is configured.

- Serial: Commands to configure serial settings and escape sequence.
- Optimization: Commands to optimize the behaviour of the module to a specific application. Typically range, power consumption and throughput is considered.
- Misc: A number of miscellaneous commands including the watchdog command and a command to enable configuration over air.

Once the configuration for a tab is set, the "Write" button for the tab is pressed. The AT commands are then executed as can be seen in the console window.

It is also possible to type commands directly into the console window. Right click on mouse to get a copy/paste menu.

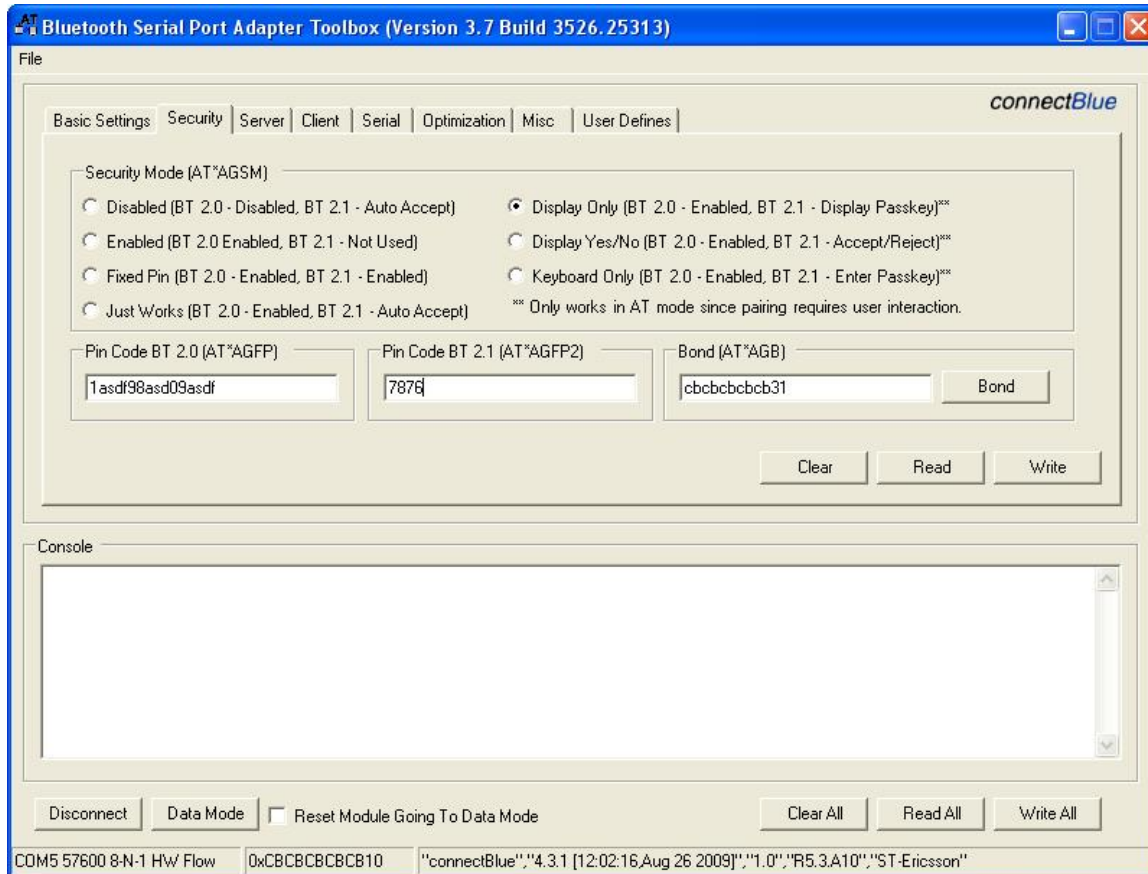
Also, in the bottom right corner of the Toolbox there are "Read All/Write All" buttons to read and write all tabs at the same time. For example, to look at the configuration of a module, press the "Read All" button and then look at the different tabs to see the configuration. As before, all executed commands and responses can be seen in the console window.

## 6.1 Basic Settings

- Local Name: Seen by remote devices that searches for the device.
- Connectability: Enabled if remote devices are allowed to setup a connection to the device. Not necessary if the device is a client.
- Discoverability: Enabled if remote devices shall be able to find the device when searching.
- Pairability: Enabled if remote devices shall be able to pair with the device. Pairing is needed to setup a connection if security is enabled on either side.
- Class of device: Used by remote devices to identify what kind of device it is. Can be changed to identify e.g. as a PC, mobile phone, etc.

## 6.2 Security

Both the security of Serial Port Adapters supporting BT 2.0 and BT 2.1+EDR can be configured using the toolbox. See Bluetooth Serial Port Adapter Security document for details.



It is recommended that a pin code (AT\*AGFP) for BT 2.0 consists of at least 8 alphanumeric characters.

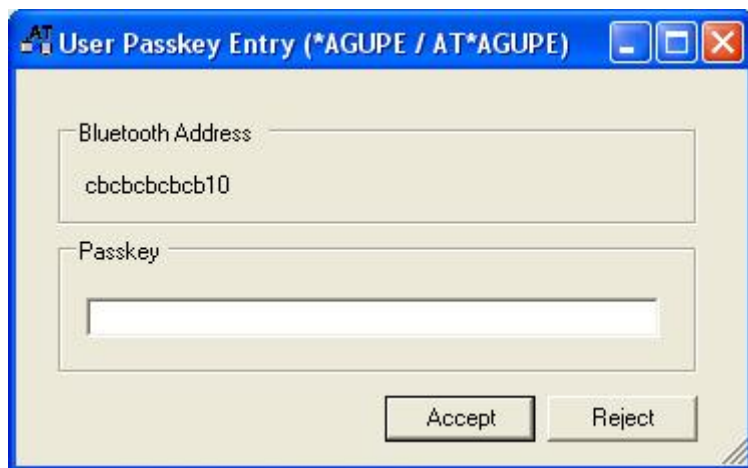
The passkey (AT\*AGFP2) is used for the Fixed Pin BT 2.1+EDR security mode.

To make the system more secure, with security enabled, pairing (or first connection) can be done in a secure environment. Once successfully done, Discoverability and Pairability (see Basic Settings) can be disabled which means that no devices hereafter will find the device if searching and will not be able to pair or connect to it.

For the three security modes that requires the module to be in AT mode (Display Only, Display Yes/No, Keyboard Only), the Toolbox provides some additional support. *The security tab must be selected for this support to be enabled.* Once one of the \*AGUPE, \*AGUC or \*AGUPD event is detected the Toolbox will display a pop-up window accordingly.

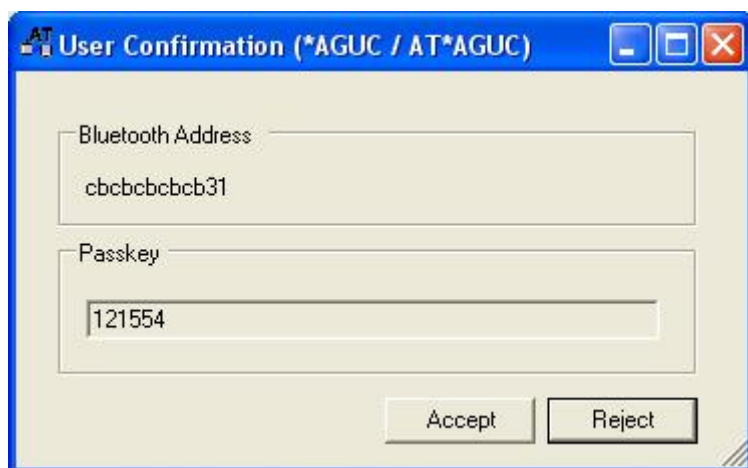
### Keyboard Only

The user may enter the 6 digit number in a pop-up window.



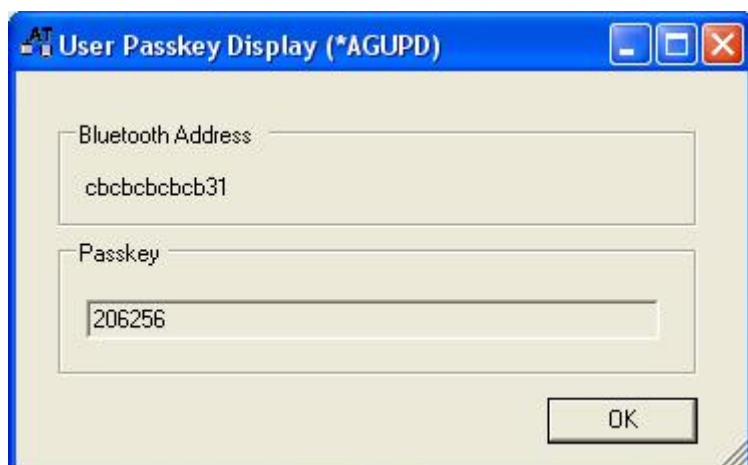
### Display Yes/No

A pop-up window displays a 6 digit number and the user may accept or reject the pairing attempt.



### Display Only

A pop-up window displays a 6 digit number which may be read or copied.



## 6.3 Server

A server is a module that accepts incoming connections from remote devices (e.g. a connectBlue module configured as a client).



The module is by default configured as an SPP server.

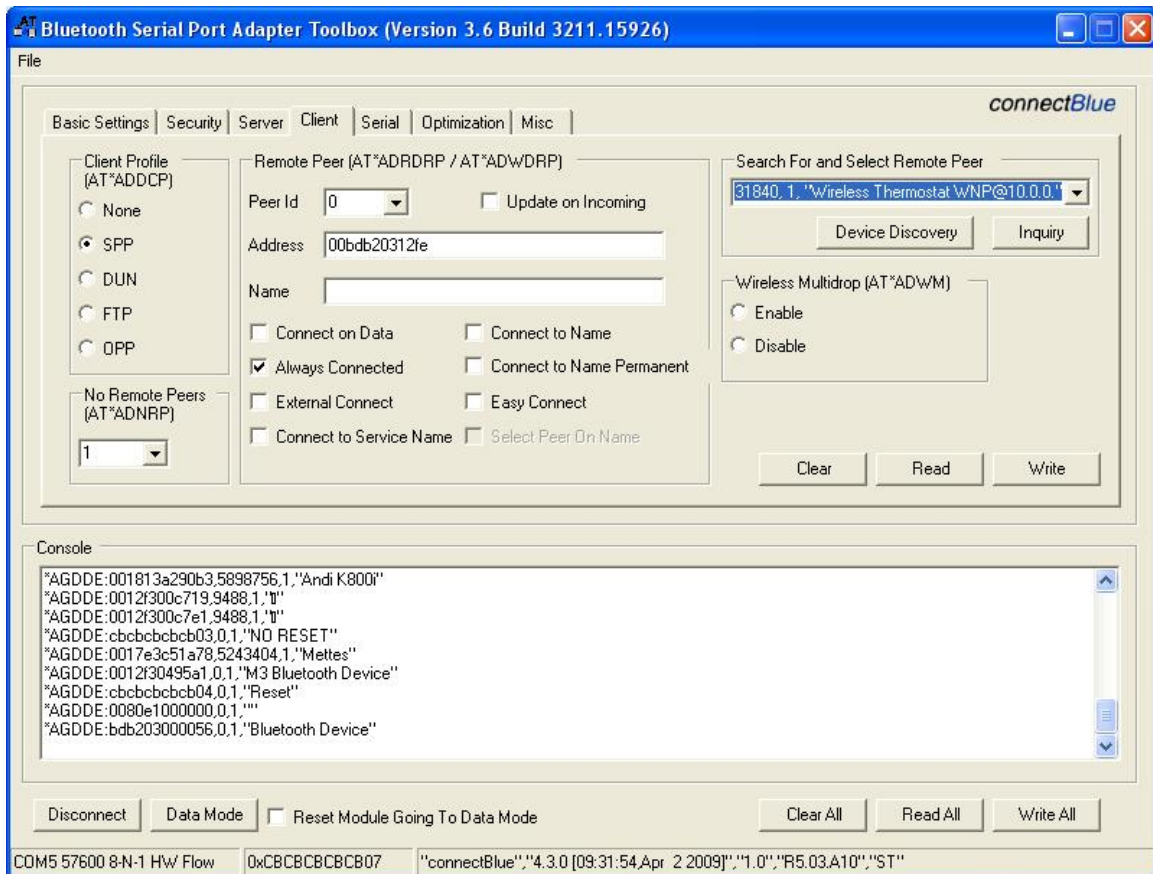
For server configuration the correct profile must be selected (e.g. Serial Port Profile (SPP), Dial-Up Networking (DUN)).

If Wireless Multidrop is enabled for the server, it may also be a good idea to set the "Always Master" policy to avoid scatternet (which has limited performance).

## 6.4 Client

A client is a module that sets up connections to remote devices (e.g. a connectBlue module configured as server). The remote device that the client shall connect to is called remote peer.

1. Select the correct client profile, e.g. Serial Port Profile (SPP)
2. Set the number of remote peers to e.g. 1 for point-to-point.
3. Configure the peer(s) with correct id, address and connect scheme.
  - The "Inquiry" or "Device Discovery" buttons can be used to find remote devices and to select them when found.
4. If more than one remote peer is to be configured, Wireless Multidrop must also be enabled.
5. Press "Write" button to execute the commands.



The "Name" edit box is only used when a "Connect to name" connect scheme is selected. If not leave blank.

Note that the client configuration will not be activated until the module enters Data mode.

To setup a connection in AT mode, the AT\*ADCP command must be typed into the console window. See AT specification for details.

## 6.5 Serial

The Serial tab provides support to change the serial settings, interface (RS232/422/485) and escape sequence (character and timing).

It is possible to change the serial settings after next power off/on or directly (toolbox changes with it).

## 6.6 Optimization

For most applications the default settings are good enough regarding throughput, latency, power consumption or range.

However, for some applications, the module must be optimized according to the application specific requirements.

The optimization tab provides some commands to optimize the module.

See the "AT command specification" and the "Bluetooth Serial Port Adapter Optimization" document for details.

## 6.7 Misc

The Misc tab contains some miscellaneous commands such as the watchdog, allow configuration over air and DTR/DSR configuration.

## 7 User Defines

The User Defines tab provides a way to connect specific AT commands to a button for easy execution.

To execute more than one AT command with one Execute button, the AT commands must be separated by "<LF>" (see last Execute in figure).

