

WedgeLink ATTM

RS-232 Hardware Wedge

User's Guide

WedgeLink AT Keyboard Wedge

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1 Introduction



WedgeLink AT is a hardware keyboard wedge that allows you to transfer RS-232 data into any application that supports keyboard input. WedgeLink AT looks like a standard HID (human interface device) peripheral to a PC. Other HID peripherals that we are all familiar with are the USB keyboard and USB mouse. Since WedgeLink AT looks like a standard HID peripheral to your PC, you do not need to install any drivers for using the wedge feature of WedgeLink AT.

WedgeLink AT is easily configured with the included [Setup Program](#)¹³. The Setup Program communicates with WedgeLink AT via the "RS-232 & Prog" port on the back of WedgeLink AT. You may need to install the [virtual serial port drivers from the WedgeLink AT CD](#)⁵ before using the Setup Program. WedgeLink AT uses a serial to USB IC manufactured by FTDI. If you have previously installed the FTDI USB drivers, you do not need to reinstall them to use the WedgeLink AT Setup Program.

Features

The key features of WedgeLink AT are as follows:

- Compact size: 2.61" x 2.61" x 1.10".
- No driver installation required for the keyboard wedge function (driver installation may be required for the Setup Program).
- Supports baud rates from 600 to 57.6K
- Includes 6' USB cable.
- Sends commands to your serial device by pressing the push button or remote read switch.
- Extensive data parsing options.
- Automatically detects serial baud rate and communication parameters of the connected serial device (must have a send or print button on the serial device).
- Serial port Communications Test Program (ComTestSerial) included to assist you in understanding what is actually being sent from your serial device.
- Firmware updates available at no charge from the [MicroRidge web site](#).

Supported Characters & Data Output

WedgeLink AT supports the standard ASCII characters found on North American keyboards. When a supported character is received by WedgeLink AT, the character will be processed per the current setup. If WedgeLink AT receives an unsupported character, the unsupported character will be discarded.

The characters supported by WedgeLink AT in the Wedge mode (USB cable connected to the "Wedge" port) include the following:

- Human readable characters found on the standard keyboard. This includes ASCII characters from ASCII 32 to ASCII 126 (space, a to z, A to Z, 0 to 9, #, &, etc.).
- Control characters (less than ASCII 32) backspace, carriage return, escape and tab.
- Function keys (F1, F2, etc.) that can be added to the input data via the prefix and suffix features.

The characters supported by WedgeLink AT in the RS-232 mode (USB cable connected to the "RS-232 & Prog" port) include the following:

- All 8-bit characters from ASCII 0 to 255 ({\x00} to {\xff}). This includes all control, standard keyboard and extended characters.
- Keys such as F1 will be output as a character string. F1 = {F1}, F2 = {F2}, etc.

Parsing and Sending Results via the Keyboard Wedge or Serial Port

Normally WedgeLink AT is used as a keyboard wedge to get data into applications such as Excel or other database programs. WedgeLink AT also has the ability to capture and parse the input data and send it to a USB serial port on your PC. It is not uncommon for a serial device to output a considerable amount of data and all you really want is a number that is contained within that data. With WedgeLink AT you can extract the number (or data) that you want and send it to the PC via the keyboard wedge or a serial port connection.

User's Guide Organization

This User's Guide covers the WedgeLink AT Setup Program. This document has been designed for double-sided printing on a color printer. If you print this document single sided, there will be several blank pages included in the printout.

If you are viewing the PDF version of this User's Guide, you will see page numbers to the right of the links within the PDF document. For example the number to the right of the [Contact MicroRidge Systems](#)⁴³ link indicates the actual page number this link is directed to.



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2 Using WedgeLink AT

The WedgeLink AT Keyboard Wedge has numerous configuration options so that you can tailor WedgeLink AT to meet your specific requirements. WedgeLink AT is configured with the [WedgeLink AT Setup Program](#)¹³. You should install the Setup Program from the CD and review this User's Guide before using WedgeLink AT.

Software Installation

The WedgeLink AT Setup Program can be installed from the WedgeLink AT CD. In addition to the Setup Program, you may also need to install the FTDI USB drivers. These drivers are only required to communicate with the "RS-232 & Prog" port. If you are going to install the FTDI USB drivers, be sure to disconnect WedgeLink AT before starting the installation. If you are not sure if you already have these drivers installed, you can re-install them without any harm to your PC. This WedgeLink AT port is set to 9600-N-8-1 and cannot be changed by the user.

No drivers are required to use with the "Wedge" port.

2.1 Startup Initialization

When you connect WedgeLink AT to a USB port on your PC or press the Reset button, WedgeLink AT must complete an initialization and start-up procedure before you can send data to it. This initialization and start-up procedure uses the LEDs to indicate the steps in the process.

- | | |
|-------------------------|--|
| Firmware initialization | The red LED will come on. Typically this takes less than 2 seconds. It can take longer if you are doing a reset from the Setup Program. |
| Auto baud detection | If the " <i>Automatic Baud Rate Detection</i> " is enabled, the green LED will come on for up to 5 seconds while WedgeLink AT is waiting for a baud rate detection ⁹ string from your serial device. At the end of this procedure the red or green LED may blink. |
| Wedge initialization | If WedgeLink AT is connected to you PC via the "Wedge" port, the keyboard wedge firmware will initialize and establish an HID connection with your PC. During this process the LED will be yellow (both red and green LEDs are on). |

Once the LEDs turns off, WedgeLink AT is ready to use.

2.2 Front Panel



LED & Read Switch Read Switch Port DB9 Input Port

WedgeLink AT Front Panel

The WedgeLink AT front panel contains the following elements.

- Red/Green bi-color LED
- Built-in read switch
- Connector for external read switch. This read switch connector requires a 2.5 mm sub-miniature phone plug. [Foot and hand switches](#)³⁷ are available from MicroRidge. If you build your own, all that is required is a switch to provide a contact closure.

- DB9 male connector. This connector is similar to a standard PC serial port connector. The function of each of the pins is described in the following table.

Pin	Function	Direction	Comments
1	DCD	--	This pin is used for modem signals and is not connected on WedgeLink AT.
2	RxD	Input	Receive data. This line must be connected.
3	TxD	Output	Transmit data. This line must be connected if you are sending commands to your serial device.
4	DTR	Output	Output handshake line. This line is normally high. If you select " <i>DTR low for 150 msec</i> " on the Read Switch Tab ¹⁹ , this line will toggle low to high when the read switch is pressed.
5	Ground	--	Signal ground. This line must be connected.
6	DSR	Input	Input handshake line. This line is not monitored by WedgeLink AT.
7	RTS	Output	Output handshake line. The high/low state of this line is controlled by an internal jumper ⁹ on the WedgeLink AT circuit board.
8	CTS	Input	Input handshake line. This line is not monitored by WedgeLink AT.
9	RI	--	This pin is used for modem signals and is not connected on WedgeLink AT.

2.3 Back Panel



**RS-232 &
Prog Port**

**Reset
Button**

**Wedge
Port**

WedgeLink AT Back Panel

The WedgeLink AT back panel contains the following elements.

- USB connector for RS-232 and Programming. In order to use this port, you must [install the FTDI USB drivers](#) ⁵ from the WedgeLink AT CD.
- Reset button. Pressing this button will restart the WedgeLink AT. Pressing this button will not change any of the setup information in WedgeLink AT.
- USB connector for keyboard wedge mode. Driver installation is not required for using this port.

Power Supply & Data Transfer Port

The WedgeLink AT is powered through one of the USB ports accessible on the back panel. WedgeLink AT will detect which port ("*RS-232 & Prog*" or "*Wedge*") is connected to your PC and send the appropriate data to that port. If you connect both USB ports to your PC, WedgeLink AT will send the data to the "*RS-232 & Prog*" port. There is no reason or advantage to connect both of the WedgeLink AT USB ports to your PC.

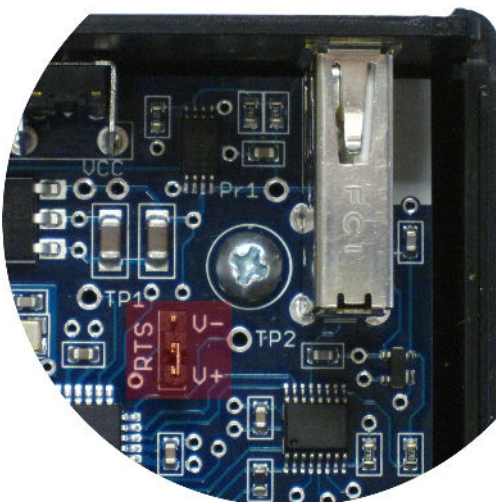
Wedge Port

To use WedgeLink AT in the wedge mode, connect this port to a USB port on your PC. No driver installation on your PC is required to use this port. This port will appear as an HID device (Human Interface Device) to your PC. Both your keyboard and mouse are HID devices.

RS-232 & Prog Port

When using the Setup Program, or when you want to send your parsed data to a serial port on your PC, connect this port to a USB port on your PC. In order to use this port you may need to [install the FTDI USB drivers](#) ⁵ from the WedgeLink AT CD.

2.4 Internal Jumper



WedgeLink AT Internal RTS Handshake Jumper

The output on the RTS handshake line ([pin 7 of the DB9 connector](#)⁶) is controlled by an internal jumper. To set the line to the high state, put the jumper in the V+ position. To set the line to the low state, put the jumper in the V- position. The factory default for this jumper is the V+ position.

2.5 Auto Baud Rate Detection

In order to communicate with an RS-232 connection, the serial parameters for WedgeLink AT must match the serial parameters of the connected serial device. It is not uncommon for the user to be unaware of the current serial parameters for their serial device. When you restart WedgeLink AT, it can enter a mode that can determine the serial parameters of the connected serial device. The serial parameters supported by WedgeLink At are as follows.

Baud Rates Supported

- 600
- 1200
- 2400
- 4800
- 9600
- 14.4K
- 19.2K
- 38.4K
- 57.6K

Communication Parameters (Parity - Data bits - Stop bits) Supported

- N-8-1
- N-8-2
- E-8-1
- E-8-2
- O-8-1
- O-8-2
- N-7-1
- N-7-2
- E-7-1
- E-7-2
- O-7-1
- O-7-2

Enabling Auto Baud Rate Detection

By default the Auto baud rate detection feature is enabled on WedgeLink AT. Enabling and disabling this feature is accessed from the [Home Tab](#)¹⁵ in the Setup Program.

Auto Baud Rate Detection

In order for WedgeLink AT to detect the serial parameters of the connected serial device, your serial device must have a Send or Print button. If you must send a command to your serial device to get a measurement, you will not be able to use the Auto Baud Rate Detection feature. To automatically detect the serial parameters follow the steps below.

- Connect one end of the USB cable to the WedgeLink AT "Wedge" or "RS-232 & Prog" port.
- Connect the other end of the USB cable to a USB port on your computer and wait for the front panel LED to turn off.
- Connect your serial device to the DB9 male serial port on the WedgeLink AT.
- Press and release the Reset button on the back of the WedgeLink AT.
- The LED will briefly display red and then display green for 5 seconds.
- When the LED displays green, the WedgeLink AT is in the Auto Baud Rate Detection mode.
- Press the Print or Send button on your serial device while the green LED is on.

- The results of the Auto Baud Rate Detection will be indicated by the red and green LEDs.
 - Green LED turns off without blinking No test data was received from a connected serial device. No changes were made to the current WedgeLink AT serial parameters.
 - Green LED blinks 5 times The serial parameters were determined from the received data. If these serial parameters are different than those currently stored in WedgeLink AT, the new parameters will be stored in WedgeLink AT.
 - Red LED blinks 5 times The serial parameters for the data received could not be determined. No changes were made to the current WedgeLink AT serial parameters.

If WedgeLink AT is unable to determine the serial parameters, it may be due to one of the following reasons:

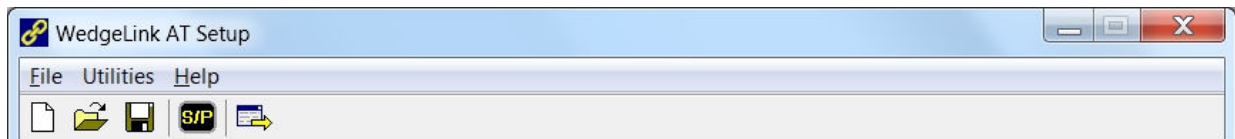
- The baud rate of your serial device does not match one of the supported baud rates.
- The communication parameters of your serial device does not match one of the supported sets of communication parameters.
- Not enough data characters were received from your serial device. Depending on the characters being sent, WedgeLink AT can determine the serial parameters with as few as 3 characters or may require as many as 8 characters.

3 Setup Program

The WedgeLink AT Setup Program is used to configure the parsing options and transfer these options to and from the WedgeLink AT. Each tab in the Setup Program will be individually discussed in the following sections. The setup tabs are as follows:

- [Home Tab](#)¹⁵ This tab is used to locate the WedgeLink AT connected to your computer and to transfer the setup information to and from the WedgeLink AT. Additionally, the baud rate of your serial device and the end-of-packet identification methods are set on this tab.
- [Read Sw Tab](#)¹⁹ The Read Switch tab is used to define the operation of the built-in and external read switches.
- [Remove Tab](#)²⁰ Any characters to be removed from the input data packet are defined on this tab.
- [Replace Tab](#)²¹ This tab allows you to replace specific characters with other characters.
- [Parse Tabs](#)²² The 3 Parse tabs allow you to configure up to 3 parsing routines for the input data packets.


Menu & Toolbar



The menu and toolbar provide access to the File New, Open and Save functions, Communications Test Program (S/P), Send Setup to WedgeLink (Send Setup to WedgeLink), and the Help items. The File New, Open and Save functions are only enabled when a WedgeLink AT is detected by the Setup Program.

The Communications Test Program (ComTestSerial) is a serial communications test program that is useful in determining what information is actually being sent from your serial device. Refer to the [ComTestSerial section](#)³³ for more detail.

Parameters Update Notice

If you make changes to any of the configuration parameters, you must transfer the updated parameters to the connected WedgeLink AT. The transfer is accomplished by clicking the "Send Setup to WedgeLink" button on the [Home Tab](#)¹⁵ or the  toolbar button. To make it apparent that the WedgeLink AT contains the parameters specified in the Setup Program or that the parameters need to be updated, a message in **red text** or **green text** is displayed on each of the tabs.

Home Tab

The update message on the Home tab is displayed below the "Send Setup to WedgeLink" button.

WedgeLink parameters are current: Parameters displayed are the same as stored in WedgeLink.

WedgeLink parameters need to be updated: Parameters have changed. You need to send the values to WedgeLink.

Other Tabs

The update message on the other tabs is displayed at the bottom of the program window.

WedgeLink parameters are current: The parameters displayed are the same as stored in WedgeLink.

WedgeLink parameters need to be updated: The WedgeLink parameters have been modified. You need to send the modified values to WedgeLink.

3.1 Entering Special Characters

Several of the tabs allow you to enter special characters such as carriage returns, tabs, function keys, etc. These special characters are entered by including the character code within brackets.

For example, to enter a carriage return or enter key you can enter any of the following strings: `{x0d}`, `{x0D}`, `{cr}` or `{CR}`. The `{x0d}` and `{x0D}` represent the hex code for a carriage return. If you enter one of these hex codes or `{cr}`, the entered string will be changed to `{CR}` when you leave the input field. These same rules apply to other special characters such as Tab and Esc.

To enter the function keys, put the name of the function keys within brackets. You can enter function keys `{F1}` to `{F12}`. Function key combinations that are preceded with a Shift, Ctrl or Alt are not currently supported. Function keys can only be entered in the prefix and suffix field on the [Parsing Tabs](#)²².

Remember that WedgeLink AT in the wedge mode will only send normal keyboard characters to your PC. If you enter characters such as `{LF}`, `{x0a}`, `{xa2}`, etc., WedgeLink AT will not send these characters to the wedge port. If you are sending the data out the RS-232 port, WedgeLink will send these special characters.

Following is a list of the more common special characters that you may need to use:

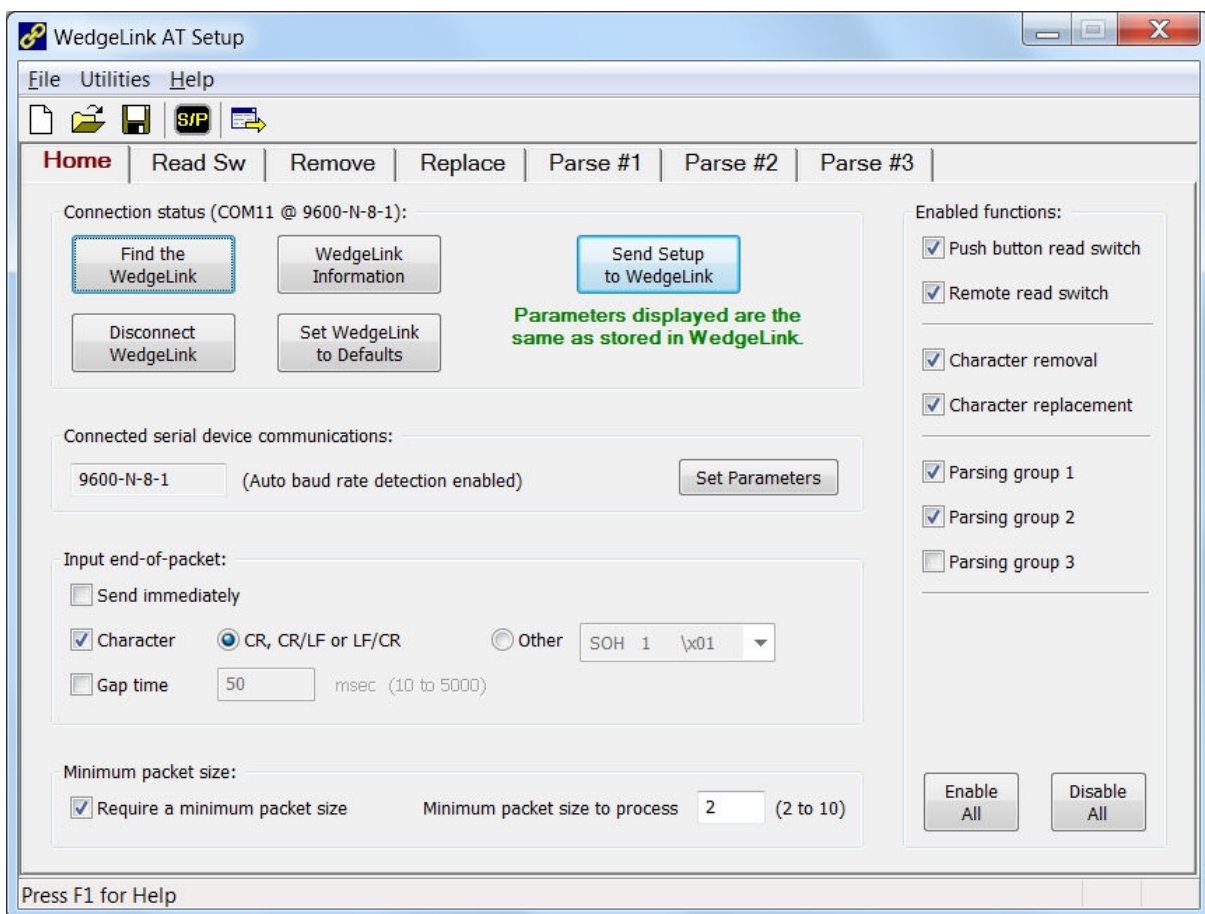
Carriage return	<code>{CR}</code>
Tab	<code>{Tab}</code>
Esc	<code>{Esc}</code>
F1	<code>{F1}</code>
F2	<code>{F2}</code>
F11	<code>{F11}</code>

3.2 Program Tabs

The WedgeLink AT Setup Program consists of a series of tabs for the various configuration functions. The functions on each tab can be enabled or disabled from the Home Tab or from each individual tab. An easy way to test your parsing setup is to run ComTestSerial (**S/P**) from the toolbar and then send data from your serial device.

Remember, in order to use the Setup Program, you must connect WedgeLink AT to your PC via the "RS-232 & Prog" port.

3.2.1 Home Tab




The Home Tab is initially displayed when you run the Setup Program. ***If you are not using read switches or not doing parsing, this is the only tab you will need to access.*** To use the Setup Program, connect WedgeLink AT to your computer using the "RS-232 & Prog" port and then press the "Find the WedgeLink" button. When the Setup Program finds the WedgeLink AT, the Setup Program will appear similar to the screen shown above.

The Setup Program examples shown in this User's Guide illustrate a user defined setup. The WedgeLink AT default parameters will be different than those shown in the examples.

Connection status

This group of controls allows you to send and receive setup data to and from WedgeLink AT. To view information about WedgeLink AT (serial number, version, etc.) press the "*WedgeLink Information*" button. If you have made changes to the setup, a message below the "*Send Setup to WedgeLink*" button will be displayed in red to indicate that you need to send the new setup information to WedgeLink AT.

Pressing the  toolbar button, is equivalent to pressing the "*Send Setup to WedgeLink*" button. The advantage of the toolbar button is that this button is accessible from all of the tabs.

After a WedgeLink AT is found, the group title will be updated to indicate the serial port that the WedgeLink AT is connected to. The baud rate and communication parameters for the "RS-232 & Prog" port is fixed at 9600-N-8-1.

Connected serial device communications

The first item in this group displays the baud rate and communication parameters for the input DB9 serial port. This is the port that you will connect your serial device to. This port is configured similar to a standard PC serial port. The baud rate and communication parameters setting for this port must match the setting in your serial device. For a description of the function of each pin on the DB9 connector refer to the [Front Panel section](#) ⁶.

You can manually set the baud rate and communication parameters for the connected serial device or have WedgeLink AT automatically determine the serial port settings. Refer to the [Auto Baud Rate Detection section](#) ⁹ for more details. To enable auto baud rate detection or manually set the serial communication parameters, press the "[Set Parameters](#)" ¹⁸ button. The default setting is to automatically detect the baud rate and communication parameters.

Input end-of-packet

Normally, WedgeLink AT processes packets when an end-of-packet identifier is received. If you select "*Send immediately*", all parsing is disabled and WedgeLink AT will send the data to your PC as soon as it is received. What gets sent to your PC depends on what port on the WedgeLink AT is connected to your PC.

Wedge Port Only standard keyboard characters will be sent to the HID connection on your PC. Standard keyboard characters consist of BkSp (\x08), Tab (\x09), CR (\x0d), Esc (\x1b) and ASCII 32 (\x20) to 126 (\x7e). Any other characters will not be sent to your PC

RS-232 & Prog Port All received characters will be sent to a virtual serial port on your PC.

Most serial devices send data packets terminated with a carriage return (CR) or a carriage return and a line feed (CR/LF). If this is the case for your serial device, simply select the "*Character*" for the end-of-packet type and select the "*CR, CR/LF or LF/CR*" radio button. If your serial device sends a different character such as a Tab, select the appropriate character in the "*Other*" list box.

If your serial device does not send a specific character, select the "*Gap time*" for the end-of-packet type and enter the gap time in milliseconds (msec). You may have to try various gap times if you use this feature.

Minimum packet size

You can specify a minimum packet that must be received in order for the packet to be processed.

For example, your serial device sends a series of carriage returns (CR) between the real data packets. If WedgeLink AT is looking for a {CR} as the end-of-packet character, simply require the minimum packet size to be 2. WedgeLink AT will disregard those single character {CR} packets.

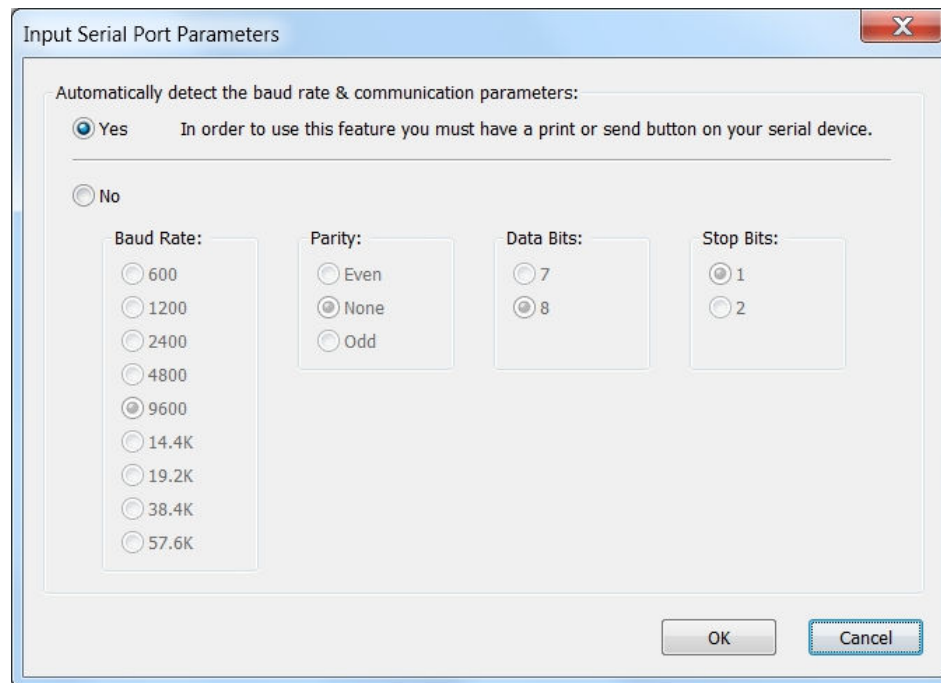
Enable functions

The check boxes in the "*Enable functions*" group allow you to enable and disable specific parsing features. These features can also be enabled and disabled by a check box on the individual tabs.

File Save & Read

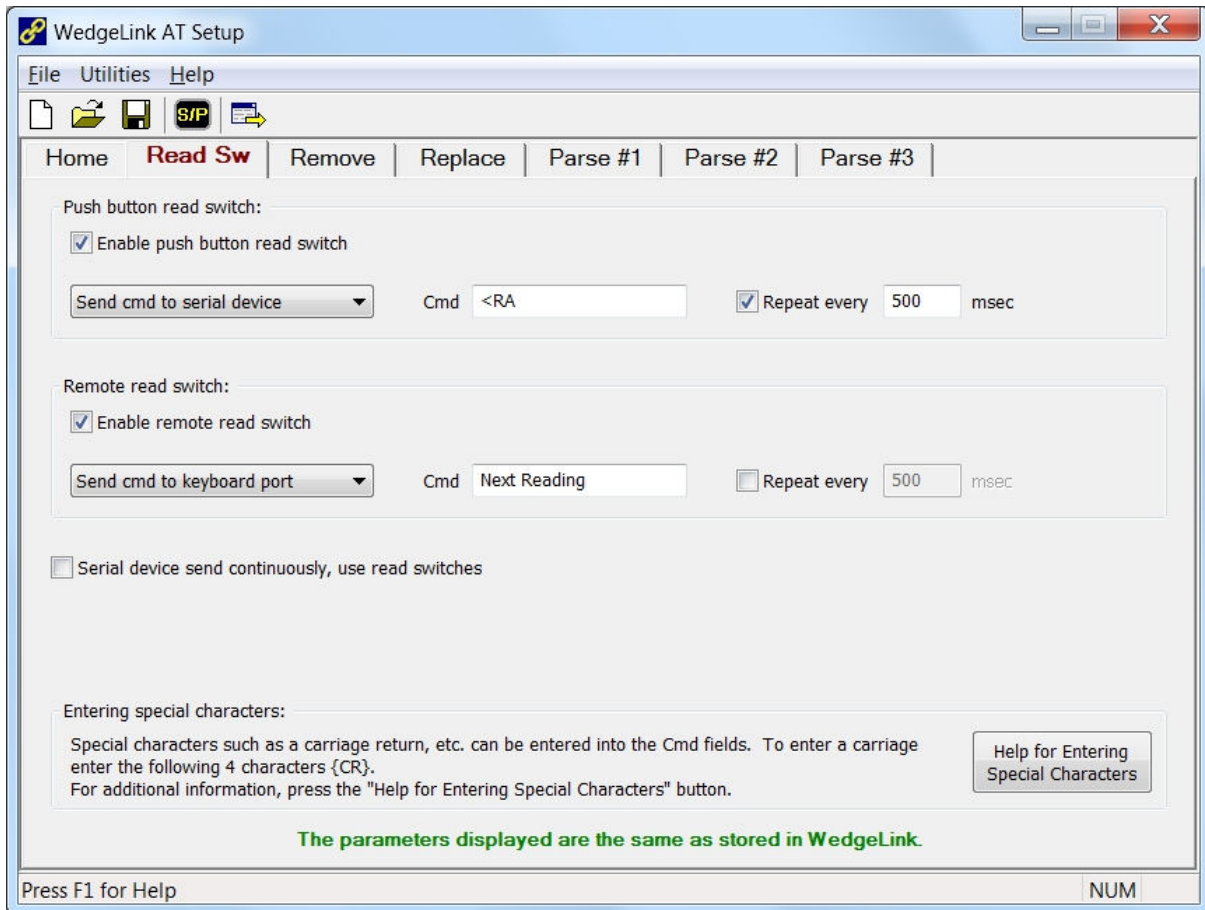
You can save WedgeLink AT setups and reload them from a file. In order to use the file read and write functions, the Setup Program must have found a WedgeLink AT. The file read and write functions will be disabled when no WedgeLink AT is connected to the Setup Program. This feature is useful if you have multiple WedgeLink ATs to program with the same parameters or if you want to have a backup copy of the configuration parameters in a WedgeLink AT.

3.2.1.1 Input Serial Port Parameters



This dialog is displayed when you press the "Set Parameters" button on the Home Tab, and allows you to enable and disable the [Automatic Baud Rate Detection](#)⁹. All combinations of the baud rates and communication parameters shown in the dialog are supported by WedgeLink AT.

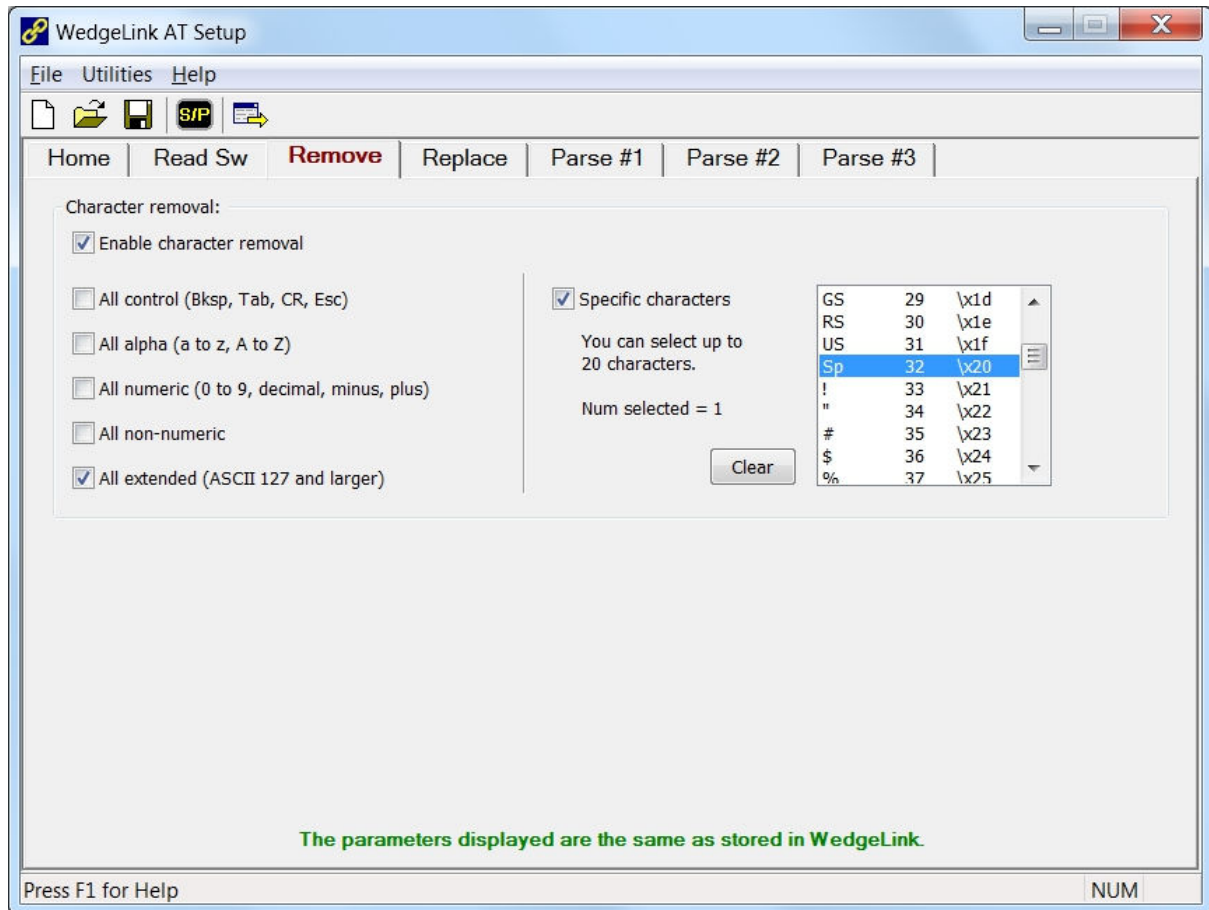
3.2.2 Read Switch Tab



There are 2 read switch options available on WedgeLink AT. The built-in read switch is located in the lower left corner of the front panel. An external read switch can also be plugged into the front panel. Both of the read switches operate in the same manner and each read switch can be individually configured. The options available for each read switch depend on the state of the "Serial device send continuously, use read switches" check box.

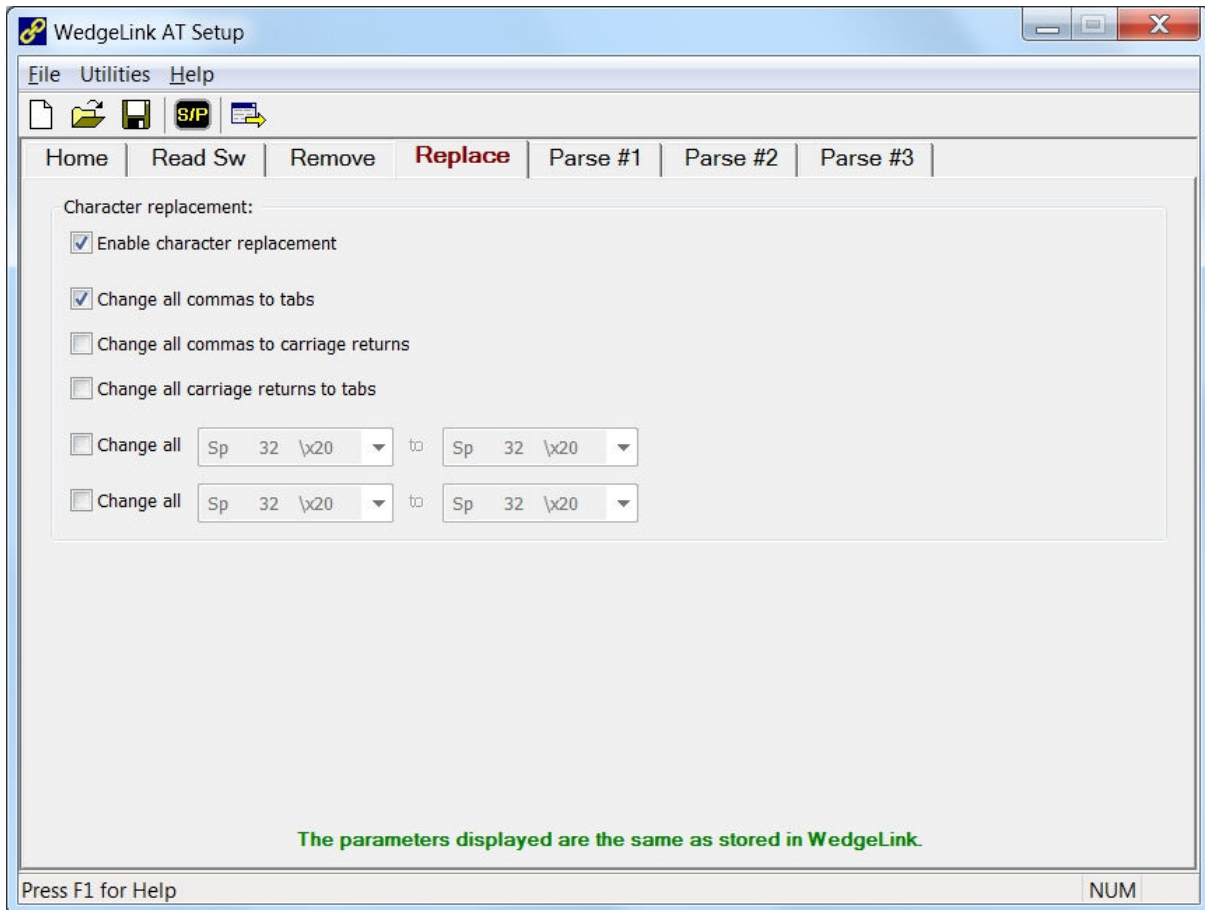
Some serial devices require that a handshake line be briefly pulled low and then high before the serial device will send any data. If the "Serial device send continuously, use read switches" check box is not checked, you can select "DTR low for 150 msec" from the drop down list. DTR is pin 4 on the DB9 connector. Refer to the [Front Panel section](#)⁶ for a description of the DB9 pins.

3.2.3 Character Removal Tab



This tab allows you to specify individual and groups of characters to be removed from the data received from your serial device. If items on this tab are enabled, each character that is received is checked to see if it is to be removed. If a match is found, the character is immediately discarded and never saved.

3.2.4 Character Replacement Tab



This tab allows you to change a specific character to another character. If items on this tab are enabled, each character that is received is checked to see if it is to be replaced with another character. If a match is found, the character is immediately replaced.

A very common use of the replace feature is to replace commas with tabs or carriage returns. If you are sending to a program such as Excel, replacing the commas with tabs or carriage returns can allow you to place each number from the input packet into a different cell. For example, let's assume your input packet is:

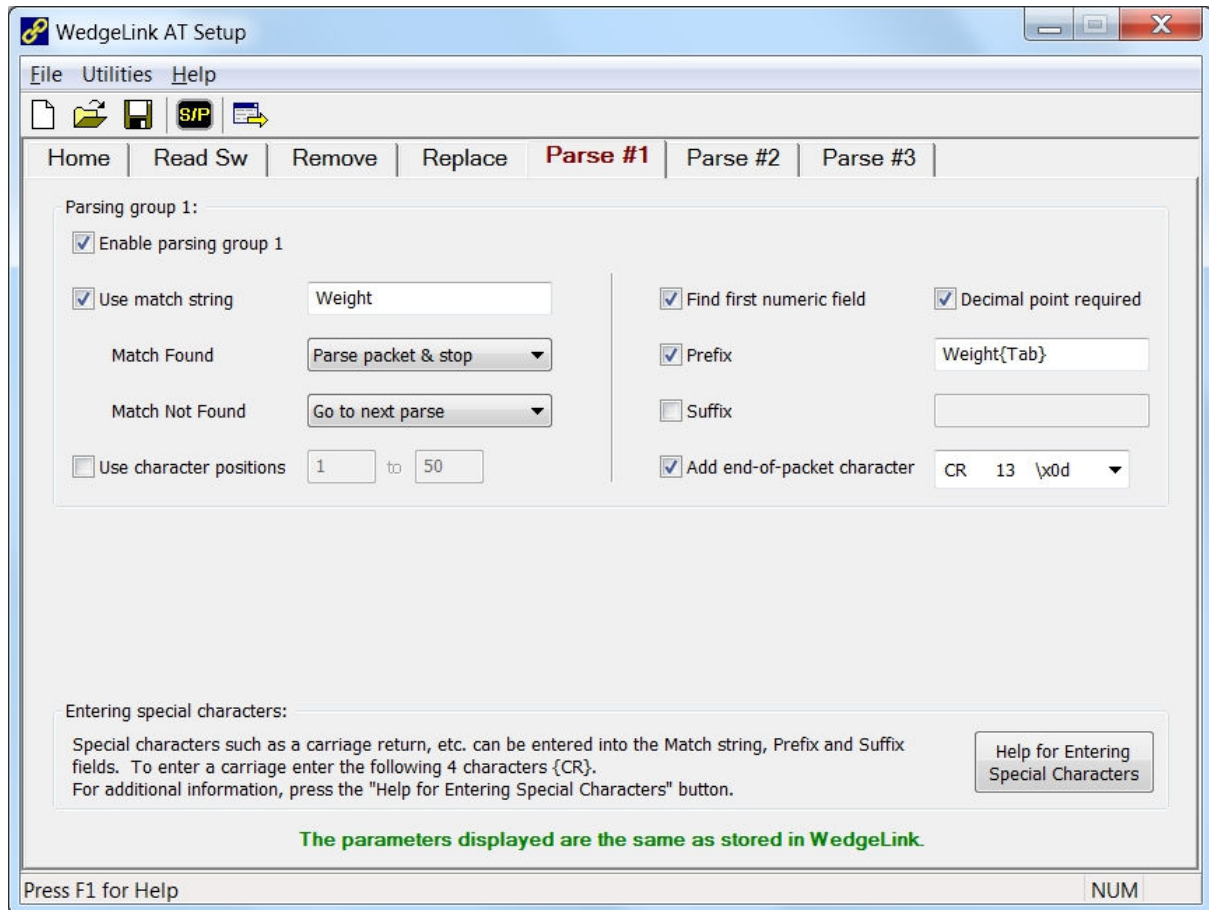
```
2.456, 7.932, 12.343{CR}
```

After removing the spaces ([Character Removal Tab](#)²⁰), and replacing commas with tabs, you end up with the following:

```
2.456{Tab}7.932{Tab}12.343{CR}
```

Excel will now place each of the 3 numbers in a different cell.

3.2.5 Parsing Tabs



The 3 parsing tabs allow you to do the following parsing on the input data packet:

- Parse the packet with the setup on the tab if the data contains a specific string.
- Disregard the packet if the data does not contain a specific string.
- Use a specific range of character positions in the packet.
- Find the first numeric field in the specified range of character positions.
- Add a prefix to the output data packet.
- Add a suffix to the output data packet.
- Add an end-of-packet character to the output data packet.

Match String

The "*Use Match String*" feature allows you to control if the packet is parsed with the setup specified on the tab. If the "*Parsing Group*" is enabled and the "*Use Match String*" is not enabled, the input data packet will always be parsed based on the features selected on the tab.

The match string is a case sensitive string and the steps to take depend on whether a match is found or not found. The maximum length of a match string is 20 characters. Special characters such as {Tab} count as 1 character, not 5 characters.

Match Found

If the match string is found, the following actions can be taken:

Delete Packet	Delete the packet. Nothing will be sent to your PC.
Parse packet & stop	Parse the packet based on the features you have selected on the parsing tab. The parsed packet will be sent to your PC. The parsing processing will stop at this point.
Parse & go to next parse	Parse the packet based on the features you have selected on the parsing tab. The parsed packet will be sent to your PC. Go to the next enabled parsing tab and follow the procedures on this next tab. This option is not displayed for the Parsing #3 Tab.
Go to next parse	Do not parse the data packet with the features specified on the tab. Go to the next enabled parsing tab and follow the procedures on this next tab. This option is not displayed for the Parsing #3 Tab.

Match Not Found

If the match string is not found, the following actions can be taken. These actions are identical to the actions available when a match is found.

Delete Packet	Delete the packet. Nothing will be sent to your PC.
Parse packet & stop	Parse the packet based on the features you have selected on the parsing tab. The parsed packet will be sent to your PC. The parsing processing will stop at this point.
Parse & go to next parse	Parse the packet based on the features you have selected on the parsing tab. The parsed packet will be sent to your PC. Go to the next enabled parsing tab and follow the procedures on this next tab. This option is not displayed for the Parsing #3 Tab.
Go to next parse	Do not parse the data packet with the features specified on the tab. Go to the next enabled parsing tab and follow the procedures on this next tab. This option is not displayed for the Parsing #3 Tab.

Using the match string feature can be very useful when you have multiple data fields contained within an input data packet. For example, let's assume you are receiving a data packet that contains X, Y and Z coordinate values. An example of what the input data packet might look like is shown below. In this example, it is assumed that the measurements are always right justified in an 8 character field. The first 2 rows show the character positions and the 3rd row is the actual data received from your serial device.

```

          1         2         3         4         5         6
123456789012345678901234567890123456789012345678901
Coordinate measurements = X:  12.435, Y:  -3.451, Z:   2.498{CR}

```

What you want is to extract the 3 measurements and output a {Tab} after the X and Y measurements, and output a {CR} after the Z measurement. The final output string would appear as follows.

```
12.435{Tab}-3.451{Tab}2.498{CR}
```

An overview of the setup required to parse this data is as follows:

Parse #1 Tab

Match string = X:
 Match found = Parse & go to next parse
 Match not found = Delete packet
 Find first numeric field = Checked
 Add end-of-packet character = Tab

Parse #2 Tab

Match string = Y:
 Match found = Parse & go to next parse
 Match not found = Delete packet
 Use character positions = 39 to 49 (you could also use 41 to 48)
 Find first numeric field = Checked
 Add end-of-packet character = Tab

Parse #3 Tab

Match string = Z:
 Match found = Parse packet & stop
 Match not found = Delete packet
 Use character positions = 51 to 61 (you could also use 53 to 60)
 Find first numeric field = Checked
 Add end-of-packet character = CR

Use Character Positions

This feature allows you to specify the character positions in the input data packet that will be used by the parsing on the current tab. If you enter a starting character position larger than the ending position, the numbers will be reversed when you leave the tab.

Find First Numeric Field

A numeric field consists of at least 3 characters. The first character can be a space, + (plus), - (minus), . (decimal point) or 0 to 9. The second and following characters must be a decimal point or 0 to 9. Only a single decimal point is allowed in the selected field. If you do not check "*Decimal point required*", it will not matter if a decimal is present in the numeric field.

If you use the "*Find first numeric field*" feature, the data that is sent to the output packet is only the number that has been found. You will typically need to add an end-of-packet character to the output string.

Prefix & Suffix

You can add a prefix or suffix string to be included with the output data packet. The maximum length of a prefix or suffix string is 25 characters. Special characters such as {Tab} count as 1 character, not 5 characters. You can also add function key F1 to F12 to a prefix and suffix. For F1 enter {F1}, for F2 enter {F2}, etc.

Add End-of-Packet Character

This feature allows you to add a specific end-of-packet character to the output data packet. You can add this character here or you could include the character as part of a suffix string. If you use the "*Find first numeric field*" feature, you will typically need to add an end-of-packet character.

4 Keyboards

The WedgeLink AT factory default configuration emulates the United States keyboard. A total of 5 keyboards are currently emulated by WedgeLink AT. The emulated keyboards are as follows:

- English (United States, QWERTY). Supports all of the keyboard characters that generate an ASCII character code.
- French (Belgium, AZERTY). No support for characters that require multiple key presses to produce a single character.
- French (France, AZERTY). No support for characters that require multiple key presses to produce a single character.
- German (Germany, QWERTZ). No support for characters that require multiple key presses to produce a single character.
- Spanish (Mexico, QWERTY). No support for characters that require multiple key presses to produce a single character.

Since keys such as F1, F2, etc. are not represented by an ASCII character code, these keys are not supported. In order for your PC to properly receive characters from a WedgeLink AT, the keyboard selected via your PC Control Panel must match the keyboard selected in the WedgeLink AT.

Selecting a WedgeLink AT Keyboard Type

The keyboard type can be changed by sending one of the following commands from [ComTestSerial](#)³³ to WedgeLink AT. Each command is 5 characters long (<\$:KU, etc.). All characters in the command should be upper case. A carriage return (Enter key) is not required at the end of the command. In order to use the following commands, the WedgeLink AT must be connected to a PC USB port via the RS-232 & Prog port on the WedgeLink AT.

- <\$:KU English (United States, QWERTY)
- <\$:KB French (Belgium, AZERTY)
- <\$:KF French (France, AZERTY)
- <\$:KG German (Germany, QWERTZ)
- <\$:KM Spanish (Mexico, QWERTY)

When one of the keyboard type commands is sent to a WedgeLink AT, a response from the WedgeLink AT shows what the previous keyboard type was and what the new keyboard type is. An example of entering the <\$:KF command to switch to the France keyboard is shown below.

```
<$:KF
Previous keyboard type = English (United States, QWERTY)
New keyboard type     = French (France, AZERTY)
```

WedgeLink AT Help Text

When WedgeLink AT is connected to ComTestSerial via the RS-232 & Prog port, you can send the command <CK from ComTestSerial to get a summary of the keyboard change commands.

5 Keyboard Wedge Transfer Rate

The rate that the keyboard characters are sent to your PC can be adjusted by the user with ComTestSerial. The commands used to adjust the transfer rate and the approximate transfer rates are show below. The transfer rate number shown are for unshifted characters such as a, b, c, 1, 2,3 , etc. The transfer rate for shifted characters (A, B, C, etc.) will be slightly less since it take multiple key strokes to send shifted characters.

- <TF Fast transfer rate. This rate is the factory default and sends approximately 72 characters/second. This rate works for nearly every application.
- <TM Medium transfer rate. This rate sends approximately 30 characters/second. Try using this rate if your computer and/or application will not support the fast rate.
- <TS Slow transfer rate. This rate sends approximately 8 characters/second. Try using this rate if your computer and/or application will not support the fast or medium rates.

Once you set a new transfer rate, you must use one of the <T commands described above to change the rate. Doing a Reset, cold start (<Z) or updating firmware will not modify the transfer rate.

To view the current transfer rate setting you can send the Copyright command (<*) from ComTestSerial. The current Wedge transfer rate value is shown as part of the output from this command.

6 Configuration Commands

Some of the WedgeLink AT special features can only be enabled or disabled by sending a command from ComTestSerial. The features that require commands sent from ComTestSerial are features that once set would rarely be change. The special features that require the use of ComTestSerial are described below. Be sure you have the WedgeLink AT *RS-232 & Prog* port connected to a USB port on your PC.

Special Barcode Characters

By default, WedgeLink AT only supports the characters displayed on your keyboard. In some barcode applications, additional control and extended characters are also required. The additional characters for barcode applications that can be supported are as follows:

ASCII 29 This is the GS control character. Its hex value is 1d.

ASCII 245 This is an extended character with a hex value of f5.

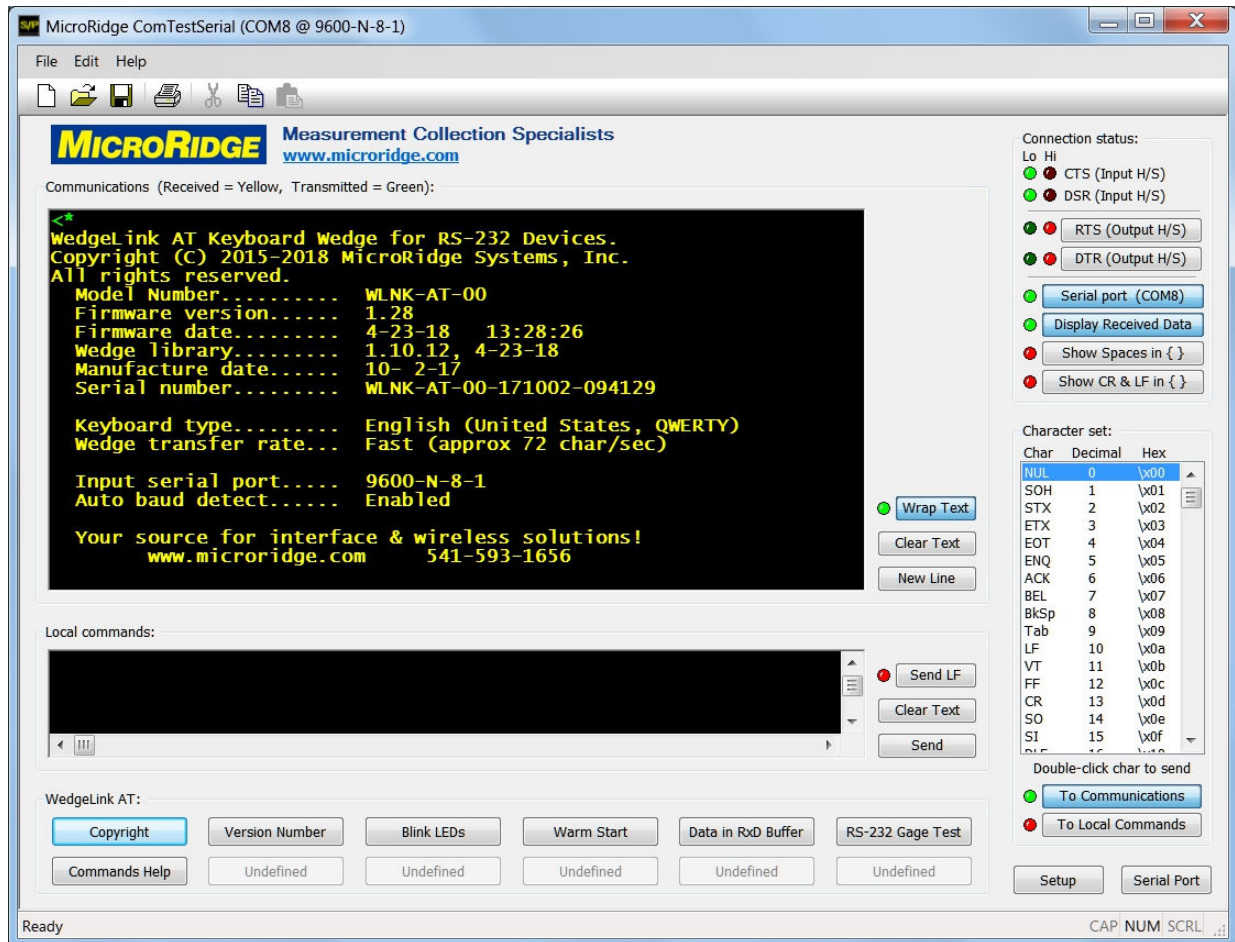
ASCII 247 This is an extended character with a hex value of f7.

To enable these characters, send the command `<%BCC1` from ComTestSerial to WedgeLink AT. To disable these characters, send the command `<%BCC0`. When either of these commands is processed by WedgeLink AT, the green LED on the front panel will blink 3 times. If these barcode characters are enabled and you send a copyright command (`<*`) to WedgeLink AT, an addition line of text in the copyright output will indicate the special *Barcode Characters* are enabled.

The method WedgeLink AT uses to send these special characters is to press the left Alt key, send a 0 (zero) followed by the ASCII character code and then release the Alt key.

This feature has only been tested on the US keyboard.

7 ComTestSerial



ComTestSerial is a Serial Communications Test Program and is included on the WedgeLink AT CD. A copy of ComTestSerial is also installed on your PC when you install the WedgeLink AT Setup Program. ComTestSerial is included so that you can test and verify the output coming from your serial device. If you access ComTestSerial from the Setup Program after you have found a WedgeLink AT, ComTestSerial will use the serial port that the WedgeLink AT is connected to.

When ComTestSerial is loaded from the WedgeLink AT Setup Program, there are several buttons that are predefined with commands for WedgeLink AT. The predefined buttons are shown below. The command for each of the buttons is shown in the parenthesis after the command button label.

- | | |
|---------------------|---|
| Copyright (<*) | Get copyright and some setup information from WedgeLink AT. |
| Version Number (<V) | Get the WedgeLink AT firmware version number. |
| Blink LEDs (<L) | Blink the LEDs on the WedgeLink AT. |

Warm Start (<W)	Make the WedgeLink AT do a warm start. This is the same as pressing the reset button on the back of the WedgeLink AT.
Data in RxD Buffer (<D)	If you send data to the WedgeLink AT DB9 port from your serial device and the red LED stays on, this indicates WedgeLink AT has not received an end-of-packet character. If you press this button, the number of bytes and the actual data in the WedgeLink AT input buffer will be displayed.
RS-232 Gage Test	Establish direct communications between a serial device connected to the Front Panel DB9 Serial Port and ComTestSerial. This command can be used to verify communications with your serial device and to understand what data is being sent from your serial device. Refer to the Testing Your Serial Device ³⁵ section for more information.
Commands Help	This command will provide a listing of the computer commands available for use with the WedgeLink AT

Additional copies of ComTestSerial can also be downloaded from the [ComTestSerial page on the MicroRidge web](#).

8 Testing Your Serial Device

When trying to determine the correct baud rate and communications parameters or understanding the output of your serial device, it is very helpful if you are able to connect the serial device directly to a PC's serial port. If you have a DB9 serial port on your PC, you are all set to use ComTestSerial to send commands and receive data from your serial device.

If you only have USB ports on your PC and need to determine the correct baud rate and communications parameters or understand the output of your device, you can use the RS-232 Gage Test Mode built into WedgeLink AT. This will allow direct communications between your serial device and ComTestSerial. When the RS-232 Gage Test Mode is active in WedgeLink AT, communications only occur between the Front Panel Serial Port and the USB Serial Port.

Follow the procedures below to enable the RS-232 Gage Test Mode:

1. Connect the WedgeLink AT to your PC via the USB Serial Port.
2. Connect your serial device to the Front Panel DB9 Serial Port on the WedgeLink AT.
3. Run the ComTestSerial application. If you start ComTestSerial from the Setup Program after the WedgeLink AT has been found, ComTestSerial will be ready to communicate with your WedgeLink AT.
4. Click the button in ComTestSerial that is labeled RS-232 Gage Test.
5. The command, <\$232Test will be sent to WedgeLink AT and the WedgeLink AT will ask you for the baud rate and communication parameters you want to use to communicate with your serial device.
6. Follow the instructions displayed in ComTestSerial.
7. When you have completed the 2 required inputs, the last message you will receive is shown below:
Press the Read or Reset button to exit the RS-232 Test Mode
8. At this point what you enter into ComTestSerial will be sent to your serial device and ComTestSerial will display what is being sent from your serial device. If the baud rate and/or communication parameters you have selected do not match those set in your serial device, you will receive a lot of garbage.

When the RS-232 Gage Test Mode is active, the WedgeLink AT is acting like a Serial to USB Adapter cable. The baud rate and communication parameters that ComTestSerial is set to may be different than the 9600-N-8-1 settings used by WedgeLink AT. Do not be concerned about these differences, the WedgeLink AT handles any necessary baud rate and/or communication parameters conversion.

9 Accessories

Several accessories are available for use with WedgeLink AT. These items are available for purchase directly from the MicroRidge web site at the following store:

WedgeLink Store: www.microridge.com/store_wedgelinek.htm

Hand Switch



P/N: HNSW-MPLG

The hand switch connects to the read switch port on the front of the WedgeLink AT.

The cable length on the hand switch is 6'

Foot Switch



P/N: FTSW-MPLG

The foot switch is used for the same functions as the hand switch.

The cable length on the foot switch is 6'

10 Keyboard Wedges from MicroRidge

WedgeLink AT is a member of the WedgeLink keyboard wedge family manufactured by MicroRidge. Within the keyboard wedge family there are both software and hardware wedges for capturing RS-232 serial data and sending this data to a PC via simulated keyboard entry. The members of the RS-232 WedgeLink family are briefly described below. For more information about the WedgeLink family go to the [WedgeLink page on the MicroRidge web](#).

WedgeLink AT



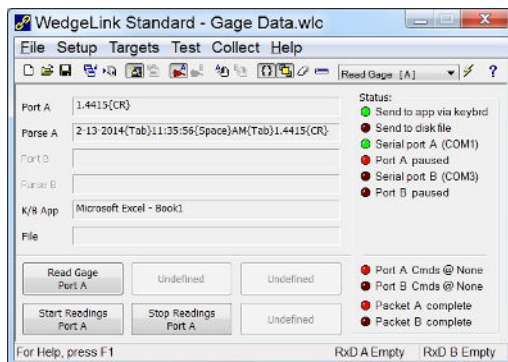
Hardware keyboard wedge for direct RS-232 input. This hardware wedge contains extensive parsing capabilities that can be configured by a Windows Setup Program. Baud rates from 600 to 57.6K are supported. Includes 6' USB cable for connecting the WedgeLink AT to your PC.

WedgeLink SP



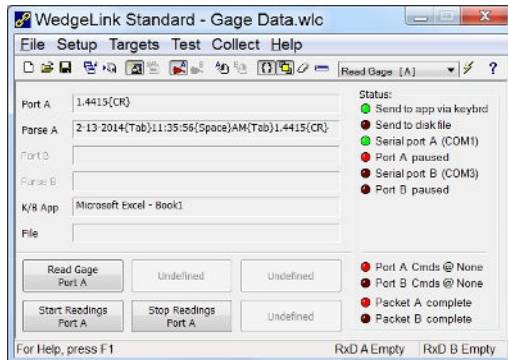
Hardware keyboard wedge for direct RS-232 input. The baud rate and communication parameters are permanently set and cannot be changed by the user. No parsing is available with this wedge. Available preset baud rates range from 4800 to 19.2K.

WedgeLink LE



Software keyboard wedge for users that do not need to perform any data parsing on the input packets. WedgeLink Lite does allow you to add a date/time stamp as a data prefix.

WedgeLink SE



Software keyboard wedge for users that need full data parsing capabilities.

11 Warranty Information

The standard MicroRidge warranty for products it manufactures and resells is described below:

- MicroRidge warrants that equipment manufactured by MicroRidge to be free from defects in material and workmanship, when properly maintained under normal use, for a period of twelve (12) months from date of purchase of the product (the “warranty period”). Some products sold and distributed by MicroRidge are warranted by the manufacturer of the products.
- Warranty for gage and RS-232 interface cables is 30 days from date of shipment.
- Products which do not conform to their description or which are defective in material or workmanship will, by MicroRidge decision, be replaced or repaired, or, at MicroRidge’s option, credit for the original purchase price may be allowed provided that customer notifies MicroRidge in writing of such defect within thirty (30) days of discovery and returns such products in accordance with the MicroRidge instructions. No products may be returned without MicroRidge prior written authorization.
- This warranty does not apply to any product which has been subjected to misuse, abuse, negligence or accident by the customer.
- MicroRidge makes no other warranty or representation of any kind with respect to the products, either express or implied, including without limitation, that of merchantability or fitness for a particular use. Failure to make any claim in writing, or within the thirty (30) day period set forth above, shall constitute an irrevocable acceptance of the products and an admission by the customer that the products fully comply with all terms, conditions and specifications of customer’s purchase order. MicroRidge shall not be liable for direct, indirect, incidental, special or consequential damages, under any circumstances, including, but not limited to, damage or loss resulting from inability to use the products, increased operating costs or loss of sales, or any other damages. To make a claim under this warranty, customer must notify MicroRidge in writing within the warranty period.
- Customer will pay all shipping charges (and duty and taxes) for equipment returned to MicroRidge for warranty service. MicroRidge will pay shipping charges for equipment returned to customer in North America. Customers outside the USA are responsible for duty and taxes on equipment returned to them.
- Software developed by MicroRidge is warranted to operate in accordance with the software documentation on the hardware specified in such documentation, for a period of six (6) months from date of shipment. During the warranty period, MicroRidge will at no charge correct any programming error in the software that interferes with normal operation of the software provided that MicroRidge is able to reproduce such error on MicroRidge computer.

12 Contact MicroRidge

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