

Virtual Integrated Design

Getting started with RS232 Hex Com Tool v6.0



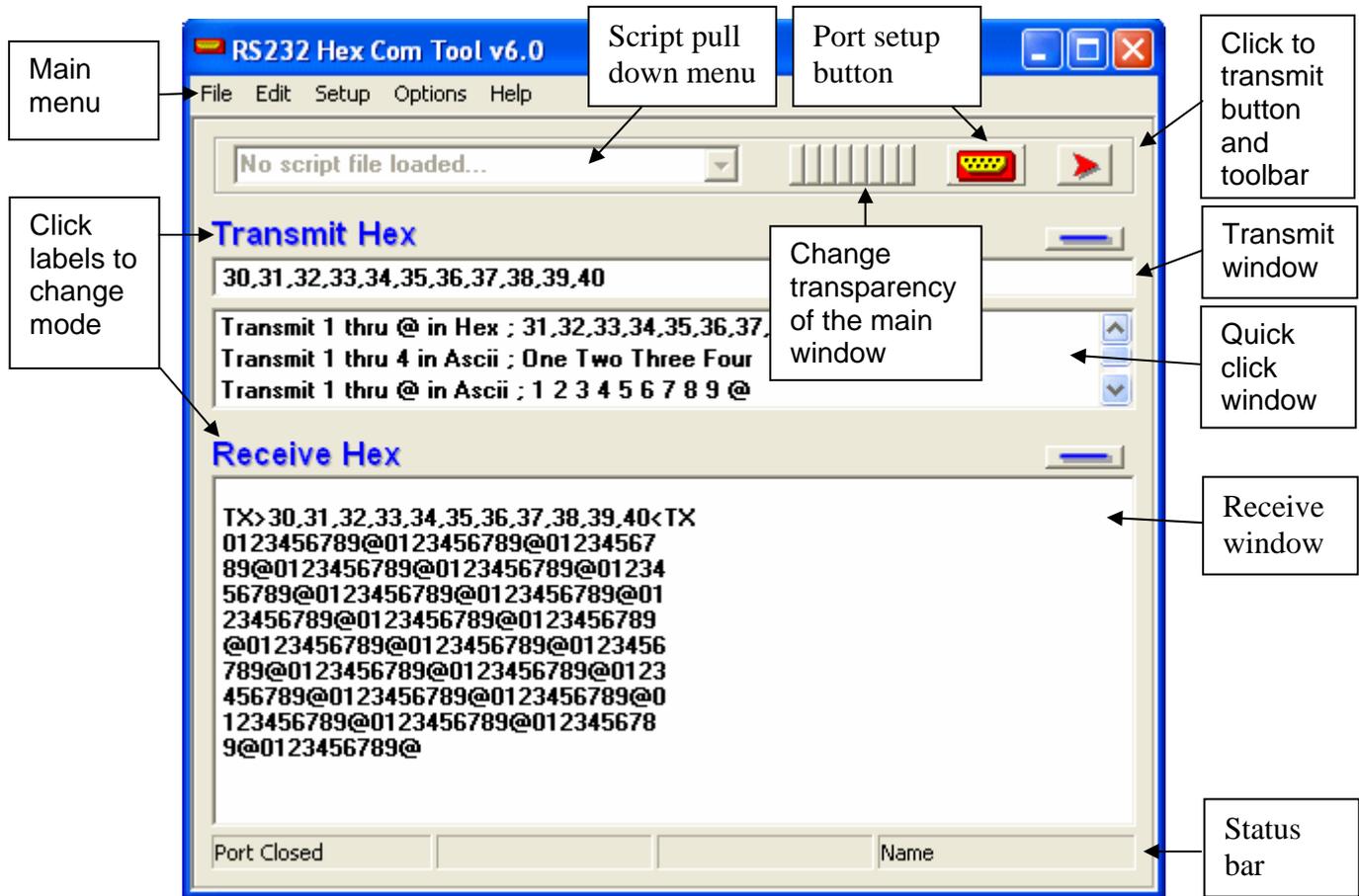
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Contents:

1. The Main Window.
2. The Port Setup Window.
3. The Advanced Window.
4. Communicating with a Device.

1 – The Main Window:

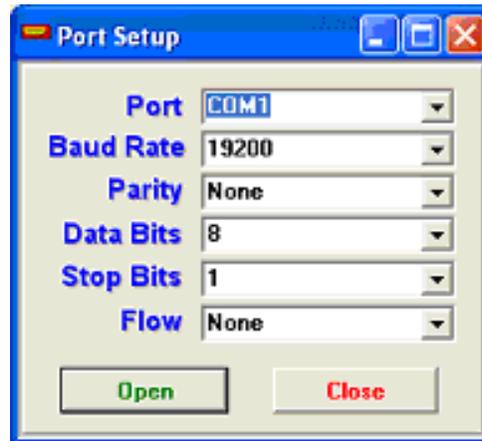
- The main window of RS232 hex Com Tool can look differently depending on the size of the window and the data loaded but generally looks like the window below.



- The main window is designed to offer a fast and easy interface to transmit and receive RS232 data. The notes around the window show the main features of the interface.
- Enter the data for transmitting in several ways. Type data into the transmit window, paste the data from the clipboard, select it from the script pull down window or load it into the quick click window. Quick click data can be entered into the window by pasting from the clipboard or loading a text file into the window (file menu or right click menu).
- Transmitting also has several methods. To transmit data in the transmit window hit the enter key, click the transmit button, or transmit as the keys are pressed (when “transmit on key” is selected in the Options>TX menu). To select and easily transmit data from the quick click window, simply double click the item in the window.
- View data in either ASCII or hex format in the receive window. In ASCII mode, non-ascii data can be shown as a selectable character or as a hex value in a variety of formats. An “Echo” function (if selected) shows data that is sent for transmission feedback.

2 – The Port Setup Window:

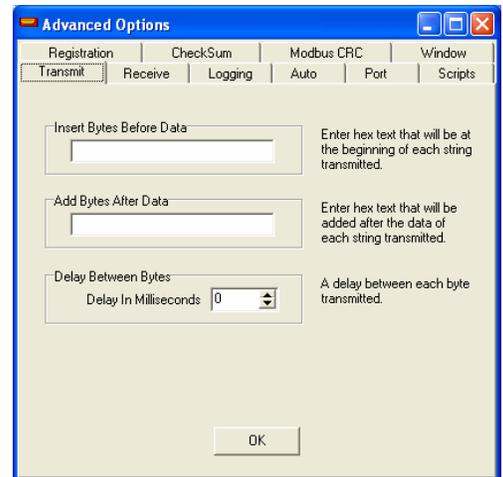
- The port setup window, as it's name implies, is how RS232 Hex Com Tool opens the chosen port. The window is shown below.



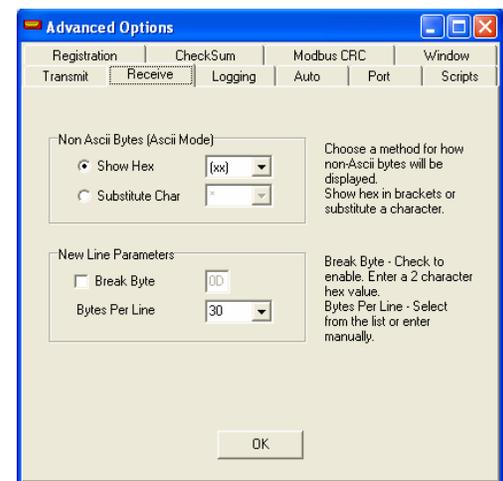
- The window is opened by clicking the port setup button  on the main window, clicking the Setup>Port Setup menu item or pressing the F1 key.
- The “Port” combo box is loaded initially with COM1 – COM60. If the “Auto Detect Hardware” check box is selected in the Advanced>Port section the combo box will be loaded with only the com ports that are installed and recognized by windows.
- The baud rate can either be selected from the available options or manually entered into the “Baud Rate” combo box. Baud rates from 1 to 1000000 can be entered and set providing the hardware is capable of the speed.
- Parity can be none, odd, even, mark or space.
- Data bits can be 7 or 8.
- Set Stop bits to 1 or 2.
- Lastly, Flow can be set to None, Xon/Xoff or Hardware. Hardware handshaking can not be used at the same time as the DTR and RTS control line set and clear functions on the Advanced>Port menu.

3 – The Advanced Window:

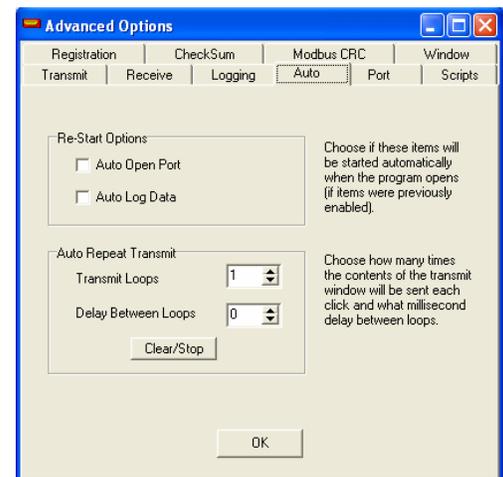
- The “Transmit” tab of the “Advanced” options menu can cause data to be inserted before the transmit text (string) or at the end of the string.
- There also is an option to transmit a delay, in milliseconds between transmitted bytes.



- The “Receive” tab allows adjustment of how the data is represented in the receive window.
- When in ASCII receive mode non-ascii data (such as carriage returns 0x0D) can be viewed as hex bytes in a variety of formats. Non-ascii data can also be viewed with substitute characters.
- “Break Byte” will start a new line in the receive window every time the specified byte is received.
- “Bytes Per Line” will start a new line each the number of bytes indicated have been received.

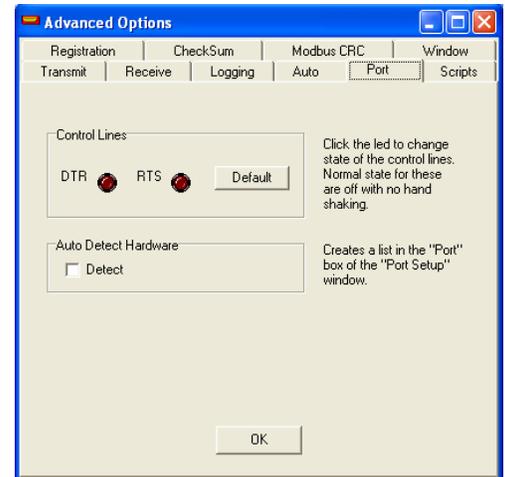


- The “Auto” tab sets selections to happen automatically in the program.
- “Auto Open Port” will open the port automatically if it was open when RS232 Hex Com Tool was shut down last. “Auto Log Data” will do the same for data logging.
- “Auto Repeat Transmit” will send the data in the transmit window the number of times indicated in the “Transmit Loops” box with the indicated delay between each string transmitted.

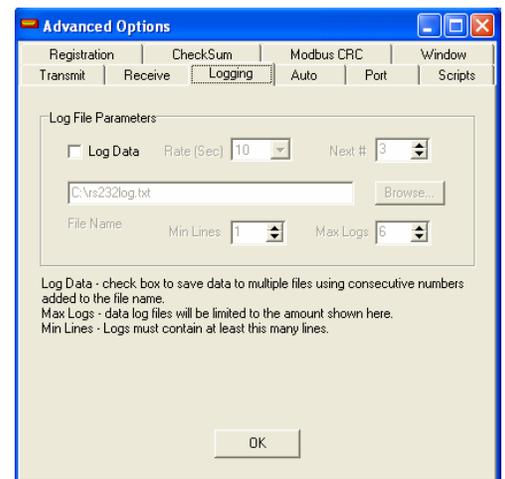


3 – The Advanced Window (continued):

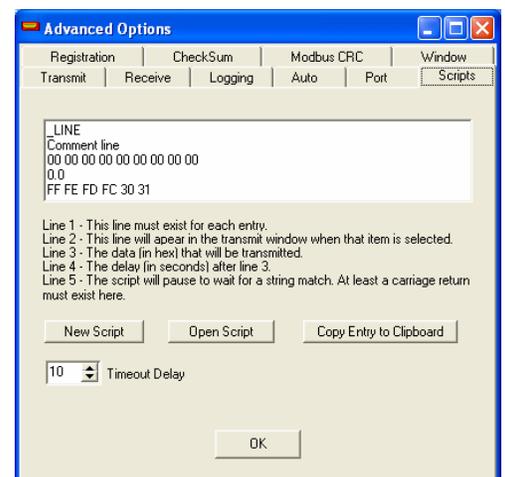
- The “Port” tab gives us the ability to change the state of the DTR and RTS data lines of the RS232 port. This is useful to power a small circuit from these lines.
- Changing the states of the DTR and RTS lines will only work when the port flow control is set to “None”.
- “Auto Detect Hardware” will detect the PC’s serial ports and only show those ports in the port setup “Port” combo box.



- The “Logging” tab shows the options for logging data (saving data to a file).
- The “Rate (Sec)” value is how often the data will be saved to a separate file using the filename and path specified. Each time a file is saved it will have the “Next #” value appended to the name and the receive window will be erased.
- The “Min lines” will specify how many lines need to be received before a new file is saved (this number supercedes the rate value). The “Max Logs” value determines how many logs will be saved before the “Log Data” check box is reset and no more log files are generated.

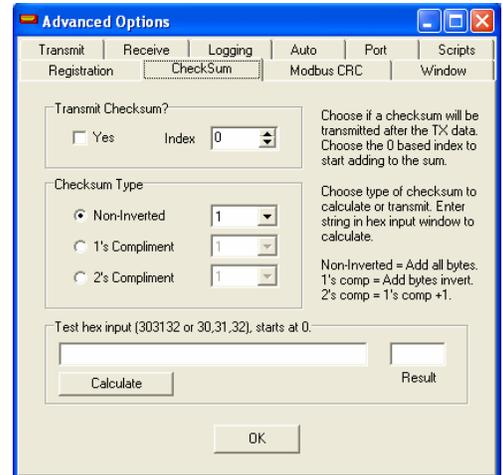


- The “Scripts” tab is a tool to help generate script file entries.
- Edit the script file entry in the window and click the “Copy Entry To Clipboard” button.
- The “Timeout Delay” (in seconds) is used when a script is “Run” from the main window. When data is present on line 5 of a script entry, RS232 Hex Com Tool will wait for the “Timeout Delay” value and if no data is received that matches the data in line 5, will timeout and exit the script. If the data is received the script will run to the next line.

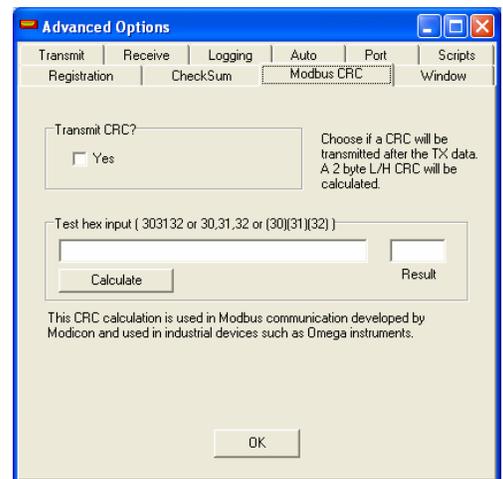


3 – The Advanced Window (continued):

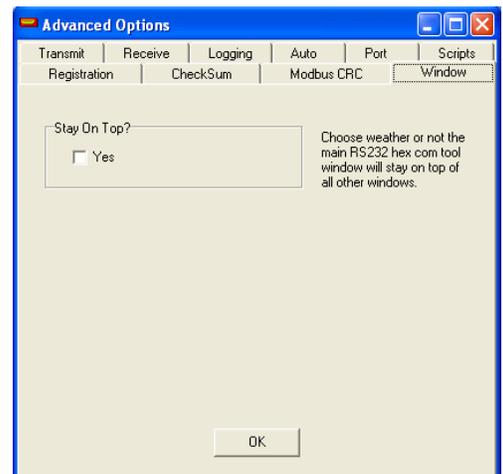
- The “Checksum” tab shows the options to select and test checksums.
- Select a non-inverted, 1’s complement or 2’s complement checksum and 1 or 2 bytes.
- Enter data in the test window and click the “Calculate” button to view the result.
- The options selected here will determine how a checksum will be added to the transmitted data. The index value determines the first byte of the string that will be used (zero based index).



- The “Modbus CRC” tab will allow us to add a 16-bit, 2 byte, low byte / high byte CRC value to the end of each transmitted string.
- The calculation can be checked the same as the checksum above.
- Omega, Inc. RS232 devices use this CRC calculation as well as many industrial RS232 devices.
- MODBUS is a trademark of Modicon, Inc., Industrial Automation Systems.



- The “Window” tab shows the “Stay On Top” function. If the check box is checked the RS232 main window will stay on top of all other windows.
- This function can be especially useful when using with other programs and the transparency of our window is set to a value so we can see the data in the window beneath.



4 – Communicating with a Device:

- To communicate with an RS232 device:
- Determine the port setup parameters and enter them in the “Port Setup” window (port, baud rate, parity, data bits, stop bits and flow control).
- Determine if ASCII data or hex data (binary) will be sent. Clicking on the transmit and receive labels will change the state. Normally both labels should match modes (both transmit or both receive) but there are occasions where they might need to be set opposite of each other.
- Determine how received data will be formatted. Should there be commas or spaces between the received bytes? If a consistent number of bytes will be received each time the line bytes parameter on the Advanced>Receive page can be set so there will be a new line each time that number of bytes are received. If each return string will be different but each return string will have a carriage return we can set the Advanced>Receive page “Break Byte” to 0D (the hex value for carriage return).
- If received ASCII data will have some non-ascii bytes such as 0x0D(carriage return), the non-ascii bytes can be shown with parenthesis, brackets or a substitute character. These parameters are also set on the Advanced>Receive page.
- The Advanced>Window page has a option to make the RS232 Hex Com Tool window always available, just check the “Stay On Top” check box on the page. Also, to be able to partially see through the window click 1 of the 8 small buttons on the main page until the desired transparency is achieved.¹
- Add a name to the window on the status bar by entering the name (i.e. 18F252) and double click the status bar. The name will be transferred to the farthest right status box.¹
- If there will be several strings sent, make a text file in notepad or other text editor. Enter each string on a separate line. Put comments at the beginning of each line separated from the data by semicolons. Save the file. Load the file into the quick click window in the “File” menu.¹
- To transmit any of the strings in the quick click window just double click the string.¹
- Save the setup to a device profile (*.pfl) in Setup>Export Pfl. The default name will be the window name entered earlier.¹
- Open the port and begin.

¹ These options are not required but will help make repetitive tasks with the same devices much easier.