USRobotics
A Division of UNICOM Global

USRobotics® Courier® Modemulator™

Graphical User Interface
User Guide

For the following products:
Modemulator & 3G M2M Cellular Gateway
USR3520, USR803520

Modemulator Upgrade Kit
USR3516-EMU

Rev 1.1 04/2016

Overview

The Modemulator Graphical User Interface (GUI) is a software application that runs on a computer having a Windows operating system to make configuring and updating Modemulators much faster and easier than using the Modemulator's native command-line interface (CLI).

✓ Locally or remotely view and edit the complete set of Modemulator parameters, passwords, and banners on a single screen.

✓ Save Modemulator configurations to files, and use recalled files to easily create duplicate Modemulator configurations.

✓ Import or export the Modemulator Dialing Directory as a CSV file.

✓ Easily flash new firmware into local or remote Modemulators.

✓ Use a terminal emulation mode to communicate with a Modemulator's CLI.

Summary of Modemulator GUI Benefits

Modemulator Native Command-Line Interface	Modemulator GUI Software
Using a command-line interface to enter Hayes AT commands is an archaic skill that is known by few.	A **point & click graphical interface** is the preferred interface paradigm.
Configure duplicate Modemulators by entering each parameter individually into the CLI. Administrators must remember or document each parameter setting.	**Easily configure** duplicate Modemulators from one or more **prebuilt image files**.
The Modemulator's native firmware update process requires a capable terminal application and the knowledge of the terminal's file upload process.	**Easily update** the Modemulator's firmware.
Enter various commands to view configuration parameters, banners, and passwords. Enter individual commands to modify each parameter, banner, or password.	A **single-screen management dashboard** of all configuration parameters, banners, and passwords for convenient viewing and editing.
Users must provide a third-party terminal application that runs on the computer's operating system.	Integrated **Terminal mode** relieves Modemulator Users from providing a separate third-party terminal emulator application.
Availability of macro keys is terminal-dependent.	**Macro keys** are provided for recording & playback of routine tasks.

Symbols Used in this Guide

This symbol invites the User to read more technical details.

This symbol identifies information that is helpful to the User.

This symbol warns the User to stop, read, and understand critical information.

GUI Installation

System requirements:

- Windows XP, 7, 8.1, or 10;
- screen resolution 1024x768 or higher;
- and an RS-232 serial port or USB port with a USB-to-serial cable.

Download **3516-emu-GUI.zip** from the USRobotics website www.usr.com/support/3516-emu and save it to a folder of your choice. For example, your desktop folder (C:\Users\{your username}\Desktop).

Extract the contents of the zip file. For example, right-click the zip file, then select "extract all". This process may be different in your version of Windows. Check your Windows help files for details on unzipping a zip file.

The extracted folder will contain the GUI application (**3516-emu-GUI.exe**), a **latest.cfg** file, and two ActiveX control modules (**MSComm32.ocx** and **ComDlg32.ocx**). You may move this folder into any convenient directory you choose.

Launch the GUI application (double-click or select & press **Enter**). You may need to log-in to Windows as an Administrator before you launch.

Sub-directories will be automatically created the first time the application is run.
Example of GUI directory structure:

|	
C:\3516-emu-GUI	(location of the 3516-emu-GUI.exe application and the latest.cfg file)
C:\3516-emu-GUI\HEX\	(location of *.hex Modemulator firmware update files)
C:\3516-emu-GUI\DAT\	(location of *.dat saved parameter configuration files)
C:\3516-emu-GUI\CSV\	(location of *.csv saved phone directory files)
C:\3516-emu-GUI\LOGS\	(location of *.txt saved optional activity log files)

Note: Do not move these sub-directories, they must remain in the main GUI folder.

The GUI will display the Configuration Dashboard, populated with default Modemulator parameters.
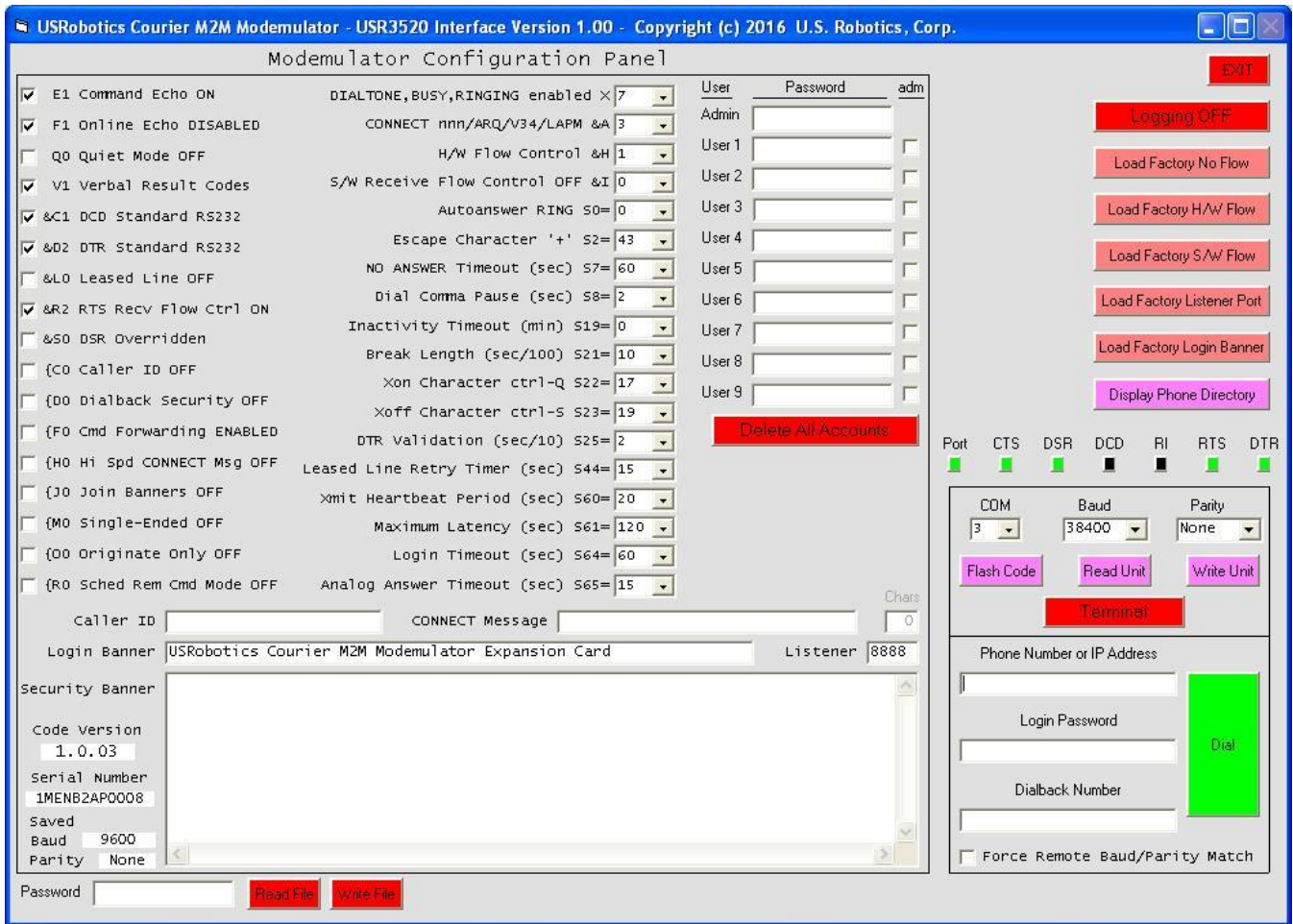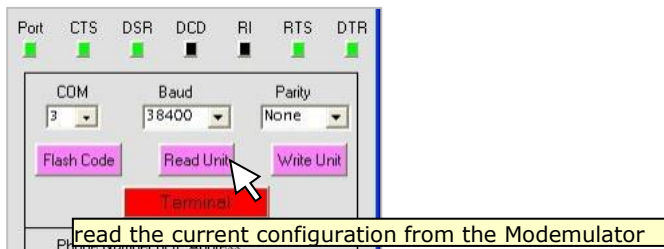

To close the GUI application, click the **Exit** button in the top right corner.
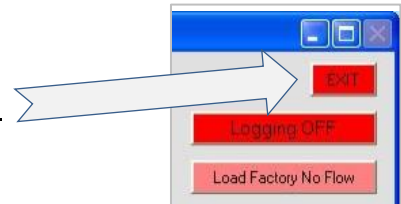
> 🛑 Do not use the Alt+F4 keyboard shortcut to close the GUI application!
> Do not use the ⊠ icon in the top right corner to close the GUI application!

Tool Tips

Helpful tool tips appear when the cursor hovers over buttons and text fields.

🔍 Depending on your Windows operating system, you may see an error message the first time you launch the GUI application. If so, close the message and try launching the GUI application again. If you still see an error message, try moving the MSComm32.ocx and ComDlg32.ocx files into the Windows System32 or System64 folder, then launch again.

If Windows complains about ComDlg32.ocx (or MSComm32.ocx) not being properly registered, an Internet search for the problem yields several possible remedies, such as the following:

METHOD 1

1. Copy ComDlg32.ocx to Windows\System32 (or SysWow64) folder

2. From **Start**, Type **Run** then press **Enter** then under Run, type:

    regsvr32 %Systemroot%\System32\comdlg32.ocx

METHOD 2

Re-register comdlg32.ocx file from an elevated command prompt

a. Click **Start**; in the start search box, type **cmd**.

b. Right click on cmd.exe and choose to "Run as administrator".

c. Type the following command and press **Enter** (to un-register):

    regsvr32 /u ComDlg32.ocx

d. Type the following command and press **Enter** (to re-register):

    regsvr32 /i ComDlg32.ocx

e. Close the command prompt and then try to run the program.

f. If Windows still complains, copy ComDlg32.ocx to C:\Windows\System32\

Use the same methods to register MSComm32.ocx if necessary.

Log All GUI Activities

To aid in troubleshooting or in usage tracking, click the red **Logging** button to capture all GUI activities to a log file. The button will turn green and indicate that logging is ON. Every new logging session will create a new log file. Every time the GUI launches, it automatically recalls the state of the **Logging** button from the latest session.

However, if a user has written a configuration file named "default", those saved settings will override the latest settings.

Click the green **Logging** button to discontinue the logging session and close the current log file. The button will turn red and indicate that logging is OFF.
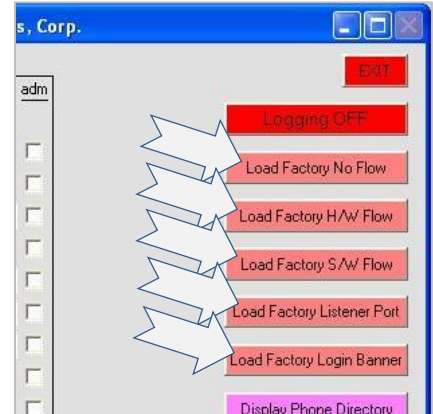
Load Factory Presets

The GUI has several factory presets that can each be recalled into the GUI Configuration Dashboard with one click.

The three factory preset buttons **Load Factory No Flow**, **Load Factory H/W Flow**, and **Load Factory S/W Flow** correspond to the Modemulator &F0, &F1, and &F2 commands, respectively.
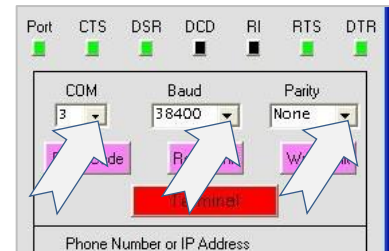
The **Load Factory Listener Port** button loads the value 8888 into the Configuration Dashboard **Listener** text box.

The **Load Factory Login Banner** button loads the string *USRobotics Courier M2M Modemulator Expansion Card* into the Configuration Dashboard **Login Banner** text box.

Manage a Local Modemulator

1. Connect the Modemulator's Terminal port to the serial port of your computer with a standard 9-pin serial cable or to a USB port of your computer with a USB-to-DB9 serial cable.

2. Launch the GUI application.

3. Use the **COM** pull-down box to select the COM port of your computer's serial port, and use the **Baud** and **Parity** pull-down boxes to select the serial baud rate and parity you want to use for communicating with the Modemulator.

Every time the GUI launches, it will automatically recall these GUI settings from the latest session:

    COM, Baud, and **Parity**

    Logging On or Off

    F4 Macro String

    F5 Macro String

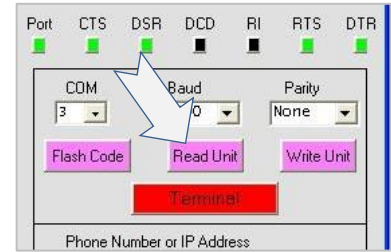   **F6** Macro String

    F7 Macro String

    F8 Macro String

However, if a user has written a configuration file named "default", those saved settings will override the latest settings.

Read the Current Configuration from the Modemulator

Click the **Read Unit** button to read the Modemulator's parameters into the GUI Configuration Dashboard and read the Modemulator's Dialing Directory into the GUI's Phone Directory.

To abort the Read Unit operation, click the **Read Unit** button again.

Write the Current GUI Configuration into the Modemulator

> The Modemulator is a serial interface device. The GUI will display current Modemulator settings only after the **Read Unit** button has been clicked. Any configuration changes in the GUI will be written to the Modemulator only after the **Write Unit** button has been clicked.

After loading the GUI configuration with a Read Unit or Read File operation, modify any parameter in the GUI Configuration Dashboard or any entry in the GUI Phone Directory, and then click the **Write Unit** button to send the new configuration to the Modemulator.
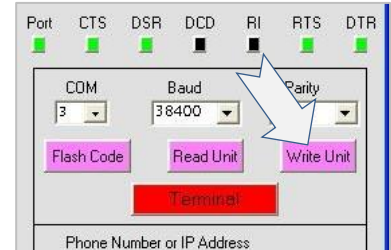
To clear all Modemulator passwords before initiating the Write Unit operation, click the **Delete All Accounts** button to delete all ten passwords from the GUI Configuration Dashboard.

Any change made to the GUI's Phone Directory (i.e. adding, deleting, editing, or sorting) will result in the Modemulator's Dialing Directory being erased and reprogrammed during the Write Unit operation.

Communicate Directly with the Modemulator's Command-Line Interface

Click the **Terminal** button to switch to terminal mode and type native **AT** commands to the Modemulator. The terminal also offers pre-programmed function keys and user-programmable macro keys.
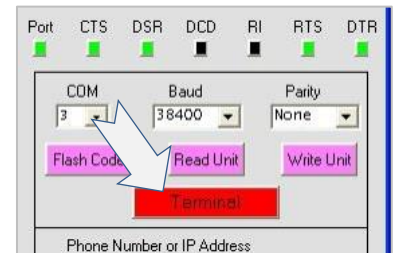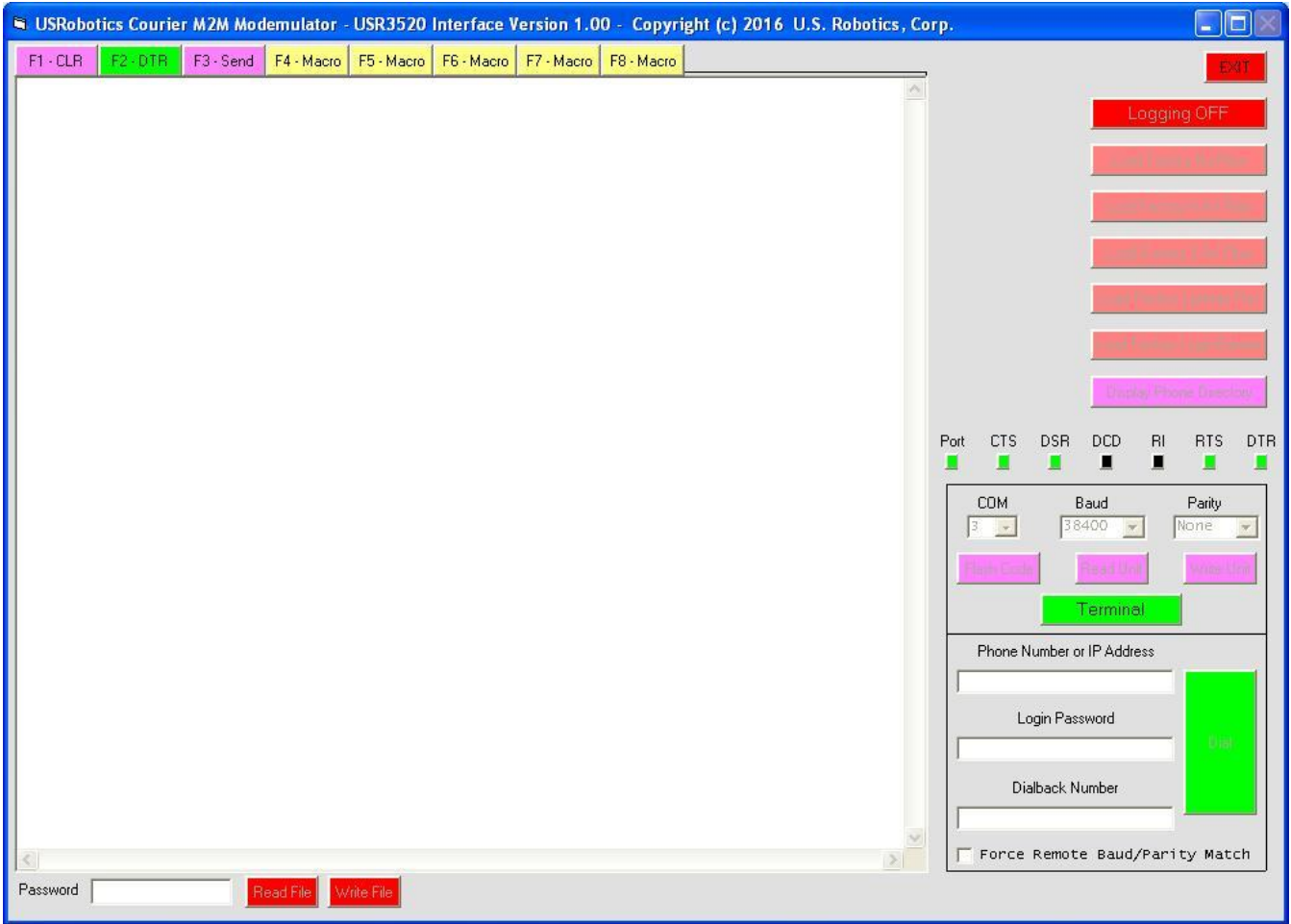
When the terminal mode is on, the **Terminal** button is green. Click the **Terminal** button again to return to the GUI Configuration Dashboard.

Function Keys

Click the **F1** button or press the **F1** key on the keyboard to clear the screen.
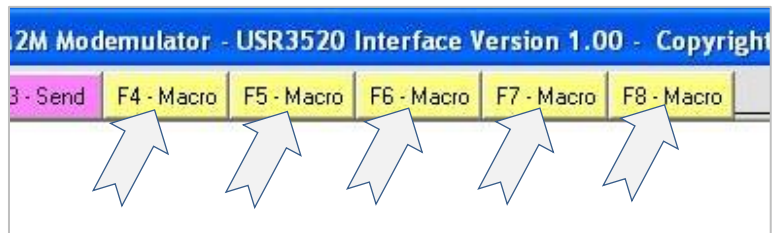
Click the **F2** button or press the **F2** key on the keyboard to toggle DTR OFF (red) or ON (green).

Click the **F3** button or press the **F3** key on the keyboard to send a raw file (no protocols).
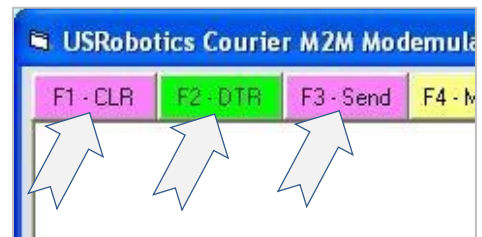
Macro Keys

Function keys **F4** through **F8** are user-programmable macro keys. The macro strings programmed into these keys are saved in configuration files, so recalling a configuration also recalls the macro strings.

Program a Macro String

Hold down **Shift** on the keyboard, and either click the GUI function button or press the keyboard function key that you want to program. A dialog box will open.

Type a macro string into the dialog box. (Use \r for <CR> or \n for <CRLF>)
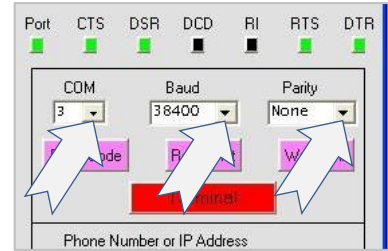
Click the GUI function button or press the keyboard function key again to end programming.

Playback a Macro String

Click the GUI buttons or press the keyboard function keys **F4** through **F8** to send the macro strings.

Manage a Remote Modemulator

1. Use a local Modemulator that has cellular service which allows connectivity to the remote Modemulator.

2. Connect the local Modemulator's Terminal port to the serial port of your computer with a standard 9-pin serial cable or to a USB port of your computer with a USB-to-DB9 serial cable.

3. Launch the GUI application.

4. Use the **COM** pull-down box to select the COM port of your computer's serial port, and use the **Baud** and **Parity** pull-down boxes to select the serial baud rate and parity you want to use for communicating with the local Modemulator.


Every time the GUI launches, it will automatically recall these GUI settings from the latest session:
> **COM, Baud,** and **Parity**
> **Logging** On or Off
> **F4** Macro String
> **F5** Macro String
> **F6** Macro String
> **F7** Macro String
> **F8** Macro String

However, if a user has written a configuration file named "default", those saved settings will override the latest settings.

5. Enter the phone number, or IP address, or IP:port of the remote Modemulator into the **Phone Number or IP Address** text box. Enter a valid login password if required by the remote Modemulator. Enter a valid dialback number if required by the remote Modemulator.
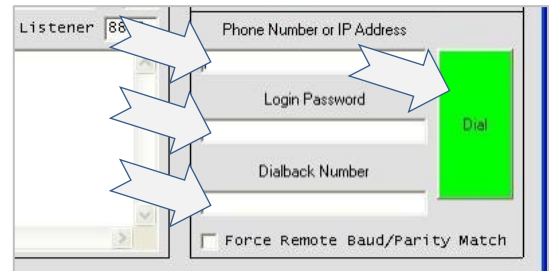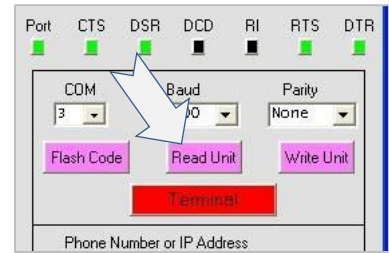
6. Click the **Dial** button. As the connection to the remote Modemulator completes, the **Dial** button will change to a

Hang-up button and the DCD indicator will turn green.

Read the Current Configuration from the Modemulator

Click the **Read Unit** button to read the remote Modemulator's parameters into the GUI Configuration Dashboard and read the remote Modemulator's Dialing Directory into the GUI's Phone Directory.

To abort the Read Unit operation, click the **Read Unit** button again.

Write the Current GUI Configuration into the Modemulator

The Modemulator is a serial interface device. The GUI will display current Modemulator settings only after the **Read Unit** button has been clicked. Any configuration changes in the GUI will be written to the Modemulator only after the **Write Unit** button has been clicked.

After loading the GUI configuration with a Read Unit or Read File operation, modify any parameter in the GUI Configuration Dashboard or any entry in the GUI Phone Directory, and then click the **Write Unit** button to send the new configuration to the remote Modemulator.
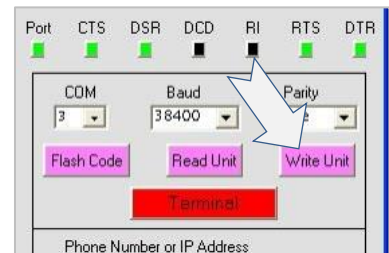
To clear all Modemulator passwords before initiating the Write Unit operation, click the **Delete All Accounts** button to delete all ten passwords from the GUI Configuration Dashboard.

Any change made to the GUI's Phone Directory (i.e. adding, deleting, editing, or sorting) will result in the Modemulator's Dialing Directory being erased and reprogrammed during the Write Unit operation.

7. Click the **Hang-up** button to disconnect from the remote Modemulator.

   If the remote Modemulator has firmware version 1.0.03 or greater, a **Force Remote Baud/Parity Match** checkbox will be available in the GUI Configuration Dashboard. Check this checkbox before clicking the **Hang-up** button to force the remote Modemulator's Terminal port to match the GUI **Baud** and **Parity** settings.
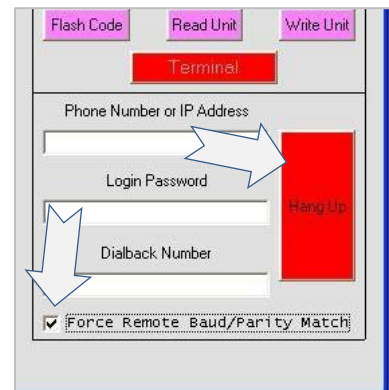
Save the Configuration to a File

The contents of the GUI Configuration Dashboard and GUI Phone Directory can be saved to .dat and .csv files, respectively. The .dat file contains the entire set of parameters displayed in the GUI Configuration Dashboard along with the COM port, baud and parity settings, macro keys, and logging status. The .csv file contains the GUI Phone Directory. Both files are written and will save the entire configuration.

1. Click the **Write File** button. (Click again to cancel)

2. Restrict usage of the .dat file by entering a password into the **Password** text box before saving the file. Or leave the **Password** text box empty to allow unrestricted usage of the file. The password is case-sensitive.

3. If prompted, click **Yes** to proceed.
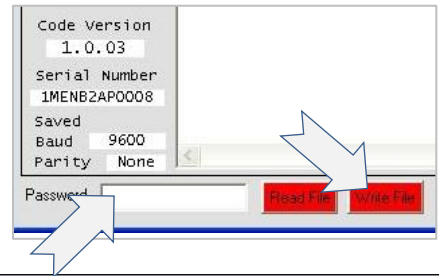
> Do not forget the password that you choose. The same password used to save the file is also used to open the file.

4. The Modemulator's passwords that are stored into the .dat file are encrypted, and the encryption key is based on a Personal Identification Number (PIN). The GUI will prompt once for the PIN when writing or reading a file, and will use that PIN as the encryption key until you close the GUI. Enter a 4-digit PIN by clicking numbers on the PIN pad or typing numbers on the keyboard, then click **Enter** on the PIN pad or press **Enter** on the keyboard.
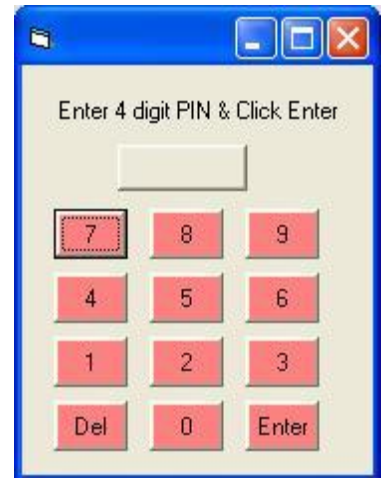
> Do not forget the PIN that you choose. The same PIN used to save the encrypted passwords is also used to decrypt the passwords when the file is read into the GUI.

5. A **Write Filename** dialog box will appear next to the **Write File** button. Enter a filename into the **Write Filename** dialog box and press **Enter** on the keyboard. The filename is not case-sensitive.

> .dat will be appended to the parameter data root filename
> .csv will be appended to the phone directory root filename

> Do not use Windows reserved words as filenames (e.g. COM1, PRN, AUX, NUL, etc.)

The filename "default" is a special case. If a configuration has been saved using the filename "default", then the parameters and GUI settings from the "default" file will be loaded at every program start-up instead of the GUI settings from the last session and the factory default parameters. However, the Modemulator passwords will not be recalled because a PIN cannot be entered during start-up.

Recall the Configuration from a File

A saved configuration can be recalled into the GUI Configuration Dashboard and the GUI Phone Directory.

1. Click the **Read File** button (Click again to cancel)

2. If the .dat file was saved with restricted access, a valid password is required to recall the configuration. Enter the configuration file access password into **Password** text box, or leave it empty if access is not restricted.

3. If prompted, click **YES** to proceed.

4. The Modemulator's passwords that are stored in the .dat file are encrypted, and the encryption key is based on a PIN. The GUI will prompt once for the PIN when writing or reading a file, and will use that PIN as the encryption key until you close the GUI. Enter a valid 4-digit PIN by clicking numbers on the PIN pad or typing numbers on the keyboard, then click **Enter** on the PIN pad or press **Enter** on the keyboard.

5. A list of configuration files will appear. Click the desired filename from the list. If the password is correct the configuration will immediately load into the GUI. If the incorrect PIN was entered, the passwords will load scrambled.
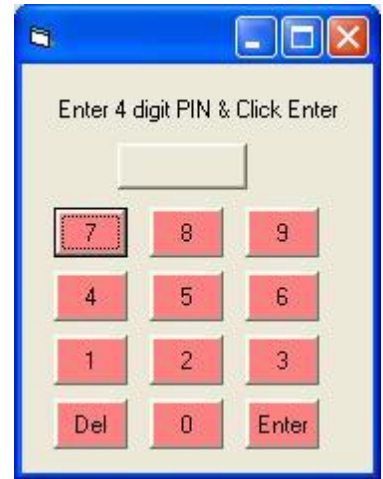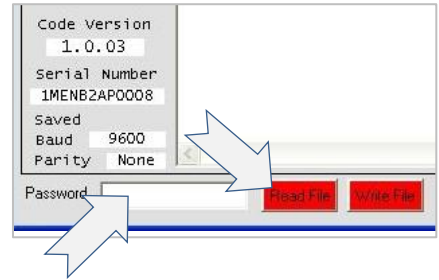
> The .dat file will populate the GUI Configuration Dashboard parameters
> The .csv file will populate the GUI Phone Directory

If a file named "default.dat" is selected from the file list, any passwords present in the file WILL be populated into the Configuration Dashboard because a PIN has been entered.

Working with the GUI Phone Directory

The GUI's Phone Directory will be written to a Modemulator's Dialing Directory during a Write Unit operation, along with the other Modemulator parameters. The GUI's Phone Directory can first be populated in several ways:

• Entries can be manually typed into the GUI's Phone Directory, one entry at a time.

- A Modemulator's Dialing Directory will be read into the GUI's Phone Directory during a Read Unit operation, along with the Modemulator's other parameters.

- The GUI's Phone Directory will be populated during a Read File operation, along with the other Modemulator parameters.

- The GUI's Phone Directory can be populated by a Read CSV File operation without reading the other Modemulator parameters into the Configuration Dashboard.

View and Modify the GUI Phone Directory

1. Click the **Display Phone Directory** button on the GUI Configuration Dashboard. A separate Phone Directory window will open.
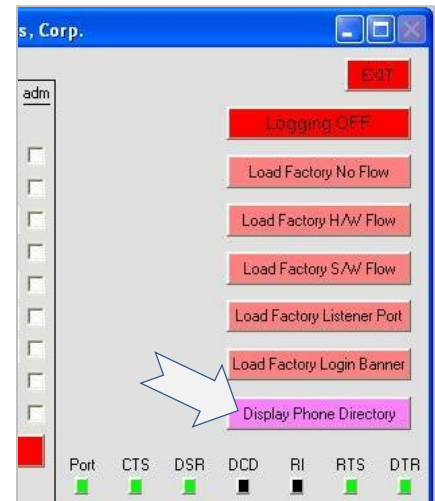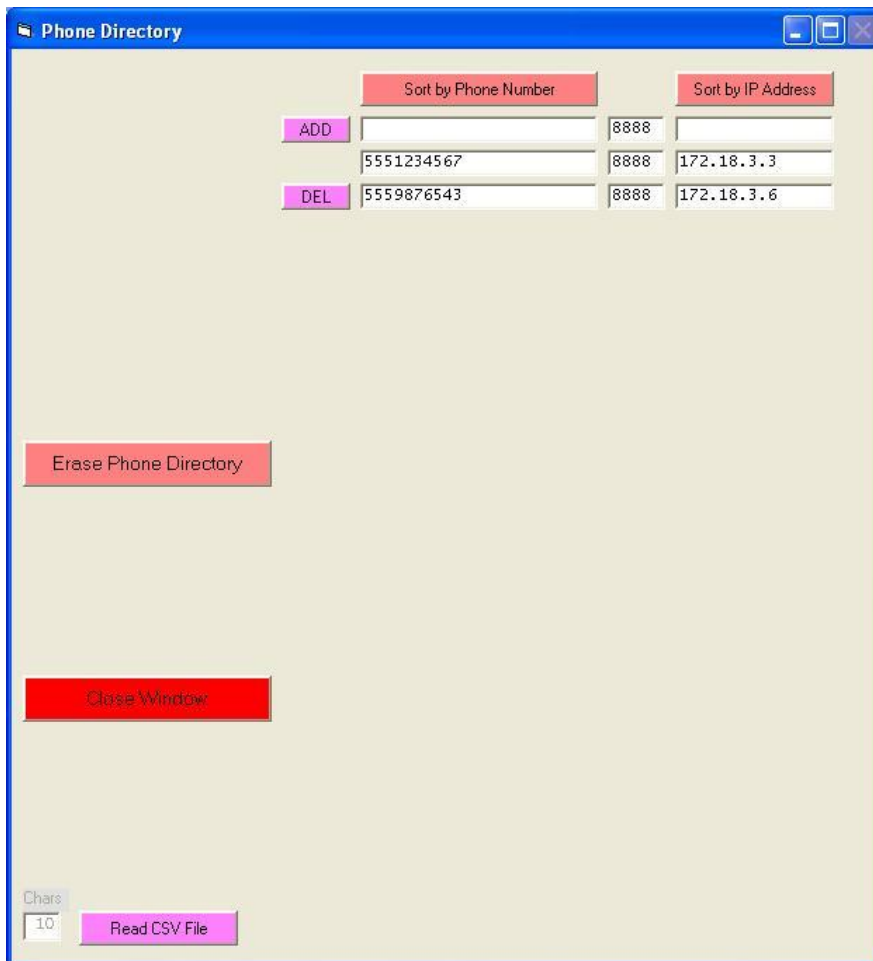
2. To create a new entry, enter a phone number, a port number, and an IP address into the text boxes, then click the **ADD** button.

3. To delete an entry, click on an entry and click the **DEL** button. To delete the contents of the entire directory, click the **Erase Phone Directory** button.

4. If desired, use the **Sort by Phone Number** or **Sort by IP Address** buttons to sort the directory into ascending or descending order.

5. Click the **Close Window** button in the Phone Directory window to return to the GUI Configuration Dashboard.

    You can then save the current Phone Directory along with the other Modemulator parameters to a file by using a Write File operation, or write them to a Modemulator by using a Write Unit operation.

Populate the GUI Phone Directory and Read the Other Modemulator Parameters Into the GUI

Read from a Modemulator

Follow the Read Unit procedure in Manage a Local Modemulator or Manage a Remote Modemulator.

Read from a Configuration File

Follow the Read File procedure in Recall the Configuration from a File.

You can then modify the Phone Directory as described in View and Modify the GUI Phone Directory, or write the Phone Directory along with the other Modemulator parameters to a Modemulator by using a Write Unit operation.

Populate the GUI Phone Directory WITHOUT Reading Other Modemulator Parameters Into the GUI

1. Click the **Display Phone Directory** button on the GUI Configuration Dashboard. A separate Phone Directory window will open.

2. Click the **Read CSV File** button. A list of CSV files will appear.

3. Select a CSV file. The CSV file will import into the GUI.

4. Modify the Phone Directory if required as described in View and Modify the GUI Phone Directory

5. Click the **Close Window** button in the Phone Directory window to return to the GUI Configuration Dashboard.
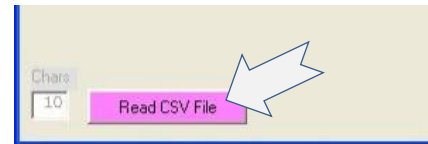
You can then write the Phone Directory along with the other Modemulator parameters to a Modemulator by using a Write Unit operation.

Create or Update a CSV File

A CSV file that contains the GUI's Phone Directory can be created or updated in two ways:

*   Automatically during the Write File operation. The file will be created in the CSV sub-directory.

*   Manually using a spreadsheet application like Excel, or any text editor.

Requirements for a manually-created CSV file are as follows:

*   There must be at least 3 columns.

*   The top row contains header descriptions.

- Column 1 contains phone numbers (up to 23 numeric digits).

- Phone numbers may contain beautifiers such as parentheses, dashes, spaces.

- Column 2 contains TCP port numbers 0-65535 (will default to 8888 if empty).

- All non-numeric digits in columns 1 and 2 will be ignored.

- Column 3 contains IPV4 addresses (4 segments, separated by dots). Each segment must be a number from 0 to 255. (example: 172.18.3.6)

- Extra spreadsheet columns are allowed, but will be ignored by the GUI.

- The file must be stored in the CSV sub-directory.
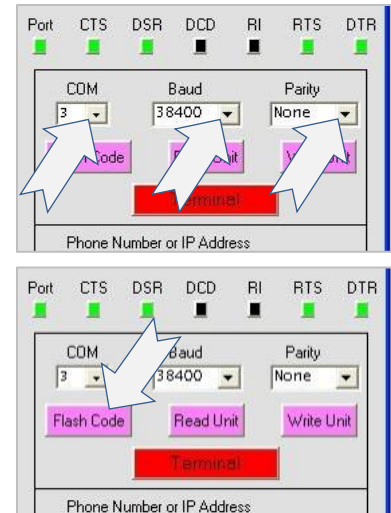
Flash New Firmware into a Modemulator

The GUI simplifies the process of flashing firmware into a Modemulator.

> The Modemulator firmware (*.hex) files must be located in the \hex sub-directory of the GUI application folder.

To Flash Firmware into a Local Modemulator

1. Connect the Modemulator's Terminal port to the serial port of your computer with a standard 9-pin serial cable or to a USB port of your computer with a USB-to-DB9 serial cable.

2. Launch the GUI application.

3. Use the **COM** pull-down box to select the COM port of your computer's serial port, and use the **Baud** and **Parity** pull-down boxes to select the serial baud rate and parity you want to use for communicating with the Modemulator.

4. Click the **Flash Code** button on the GUI Configuration Dashboard.

5. At the "Are You Sure?" prompt, click **YES.** A list of .hex files will appear. (Click the **Flash Code** button again to cancel)

6. Click desired filename from the list. Flashing will begin immediately.

To Flash Firmware into a Remote Modemulator

1. Use a local Modemulator that has cellular service allowing connectivity to the remote Modemulator.

2. Connect the local Modemulator's Terminal port to the serial port of your computer with a standard 9-pin serial cable or to a USB port of your computer with a USB-to-DB9 serial cable.

3. Launch the GUI application.

4. Use the **COM** pull-down box to select the COM port of your computer's serial port, and use the **Baud** and **Parity** pull-down boxes to select the serial baud rate and parity you want to use for communicating with the local Modemulator.

5. Enter the phone number, or IP address, or IP:port of the remote Modemulator into the **Phone Number or IP Address** text box. Enter a login password if required by the remote Modemulator. Enter a dialback number if required by the remote Modemulator.

6. Click the **Dial** button. As the connection to the remote Modemulator completes, the **Dial** button will change to a **Hang-up** button and the DCD indicator will turn green.

7. Click the **Flash Code** button on the GUI Configuration Dashboard.

8. At the "Are You Sure?" prompt, click **YES.** A list of .hex files will appear. (Click the **Flash Code** button again to cancel)

9. Click desired filename from the list. Flashing will begin immediately.

10. After flashing finishes, the remote Modemulator will disconnect.
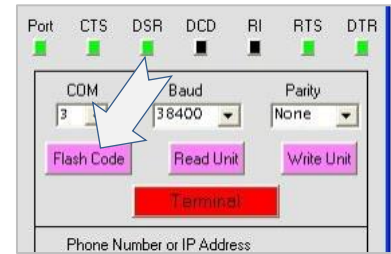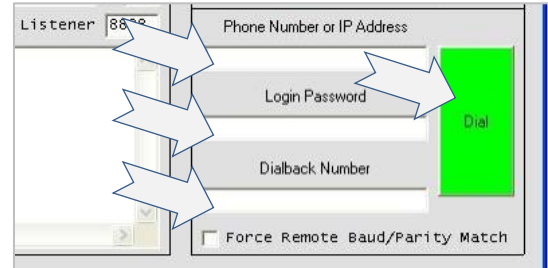
Legal Notice

The information in this publication is subject to change without notice and is provided "AS IS" WITHOUT WARRANTY OF ANY KIND. THE ENTIRE RISK ARISING OUT OF THE USE OF THIS INFORMATION REMAINS WITH RECIPIENT. IN NO EVENT SHALL U.S. ROBOTICS BE LIABLE FOR ANY DIRECT, CONSEQUENTIAL, INCIDENTAL, SPECIAL, PUNITIVE OR OTHER DAMAGES WHATSOEVER (INCLUDING WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION OR LOSS OF BUSINESS INFORMATION), EVEN IF U.S. ROBOTICS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This publication does not constitute an endorsement of the product or products that were tested. The configuration or configurations tested or described may or may not be the only available solution. This test is not a determination or product quality or correctness, nor does it ensure compliance with any federal state or local requirements.

The safety precautions listed in this user guide must be observed at all times. Failure to comply with these precautions may result in injury and property damage. **U.S. Robotics assumes no liability for the customer's failure to comply with these requirements**.

 WARNING!

YOU ARE EXPRESSLY PROHIBITED FROM USING THIS PRODUCT IN HIGH RISK APPLICATIONS AND SUCH USE SHALL BE AT YOUR SOLE RISK. AS USED IN THIS PARAGRAPH, "HIGH RISK APPLICATIONS" REFERS TO USAGE IN OR IN CONJUNCTION WITH EQUIPMENT FOR WHICH FAILURE OF THE USR PRODUCT MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, EMOTIONAL INJURY OR LOSS OF LIFE, INCLUDING BUT NOT LIMITED TO ATOMIC ENERGY CONTROL EQUIPMENT, AIRCRAFT OR SPACECRAFT EQUIPMENT, TRAFFIC CONTROL EQUIPMENT, TRANSPORTATION EQUIPMENT, COMBUSTIBLE CONTROL EQUIPMENT, MEDICAL OR DIAGNOSTIC EQUIPMENT, AND ALL TYPES OF MANUFACTURING AND SAFETY DEVICES.

For questions regarding your product or declaration, contact:

U.S. Robotics Corporation
1300 East Woodfield Road, Suite 506
Schaumburg, IL, 60173
U.S.A.
http://www.usr.com/