

# SDRMemory

(Version 4.5.2 -- Revised June 26, 2013)

## Introduction

**SDRMemory** is a memory management utility for use with **PowerSDR™**. It provides enhanced memory management features. It also allows scanning of stored memories.

**SDRMemory** communicates via CAT commands with **PowerSDR** to provide enhanced memory functionality. It does not replace the memory system in **PowerSDR**, but provides features and ease-of-use that do not yet exist in **PowerSDR**.

Each radio you have installed has its own separate set of memories. Memories are assigned to categories and are sorted by frequency for easier access. The program also includes the capability to transfer memories between different radios.

**SDRMemory** requires **PowerSDR v2.2.2** or later for proper operation. Since **SDRMemory** uses the "radio chooser" feature introduced with **PowerSDR v2.0.22**, it will not work with versions of **PowerSDR** prior to **v2.0.22**. Also, certain features in **SDRMemory** will not work properly due to bugs in **PowerSDR** versions before **v2.2.2**.

If you wish to use **DDUtil** to connect **SDRMemory** to **PowerSDR**, you must have **DDUtil v2.0.2.29** or later.

## Installation & Setup

Run the installation package file, **SDRMemorySetup.exe**. This will install **SDRMemory.exe** and all required supporting files on your computer. The installer will suggest a default location for the program file. You may change the location or leave it at the default, it does not matter. However, the **SDRMemory.rtf** file MUST be located in the same directory as the **SDRMemory.exe** file. The **SDRMemorySetup.xml** file and all memory data files will be placed in your **%APPDATA%** folder.

**NOTE: PowerSDR must be running before you start SDRMemory. On startup, SDRMemory.exe checks to see if can communicate with PowerSDR. If it cannot, then a warning message is displayed and you are given the choice of closing the program or trying again after you have started PowerSDR.**

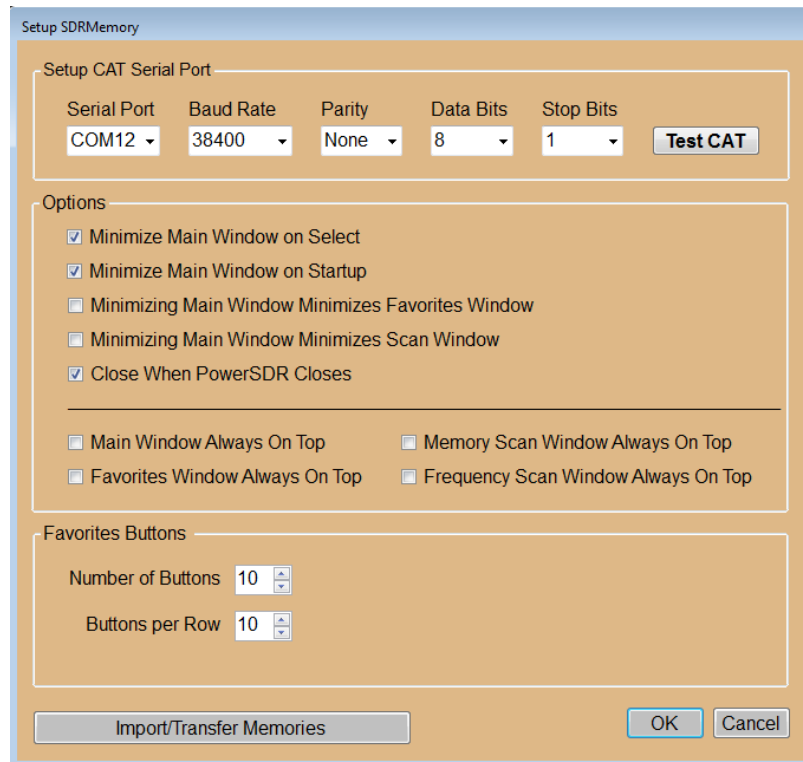
When **PowerSDR** is running in **Demo** mode, all CAT capability is disabled. Therefore, you cannot use **SDRMemory** if **PowerSDR** is running in **Demo** mode.

**SDRMemory** uses CAT commands to communicate with **PowerSDR**. I recommend using a program like Steve Nance's **DDUtil** (v2.0.2.29 or later) to allow **SDRMemory** and your logging software to be able to both communicate with **PowerSDR** at the same time.

## Program Operation

Make certain that **PowerSDR** is running before you start **SDRMemory**. If **PowerSDR** is not running, then a message box will be displayed instructing you to start **PowerSDR** before proceeding.

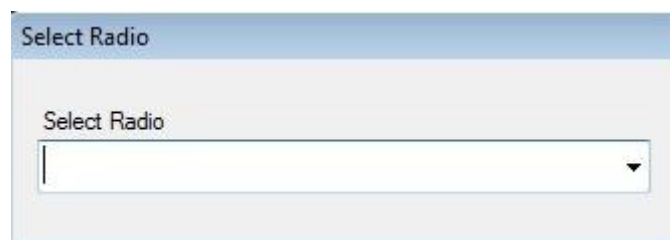
The first time that you run **SDRMemory**, it will display the Setup form shown in **Figure 1** so that you can set up the serial port used to communicate with **PowerSDR**.



The screenshot shows the 'Setup SDRMemory' dialog box. It is divided into three main sections: 'Setup CAT Serial Port', 'Options', and 'Favorites Buttons'.  
1. 'Setup CAT Serial Port': Contains five dropdown menus: 'Serial Port' (set to COM12), 'Baud Rate' (set to 38400), 'Parity' (set to None), 'Data Bits' (set to 8), and 'Stop Bits' (set to 1). A 'Test CAT' button is located to the right of these dropdowns.  
2. 'Options': Contains several checkboxes. The first five are checked: 'Minimize Main Window on Select', 'Minimize Main Window on Startup', 'Minimizing Main Window Minimizes Favorites Window', 'Minimizing Main Window Minimizes Scan Window', and 'Close When PowerSDR Closes'. The last four are unchecked: 'Main Window Always On Top', 'Memory Scan Window Always On Top', 'Favorites Window Always On Top', and 'Frequency Scan Window Always On Top'.  
3. 'Favorites Buttons': Contains two spinners: 'Number of Buttons' (set to 10) and 'Buttons per Row' (set to 10).  
At the bottom of the dialog, there are three buttons: 'Import/Transfer Memories', 'OK', and 'Cancel'.

**Figure 1 -- Setup Form**

However, if you have more than one **FlexRadio Systems** radio, **SDRMemory** will first display the window shown in **Figure 2** and ask you to select a radio from the list of radios installed on your computer.



The screenshot shows the 'Select Radio' dialog box. It has a title bar that says 'Select Radio'. Below the title bar, there is a label 'Select Radio' and a large, empty dropdown menu with a downward-pointing arrow on the right side.

**Figure 2 -- Select Radio Form**

You can bypass this screen by specifying the desired radio as a pair of command-line parameters. One parameter is the type of radio. Any of the following values is acceptable:

For an SDR-1000: S1K, SDR1K, SDR1000, or SDR-1000

For a FLEX-1500: F1.5K, FLEX1500, or FLEX-1500

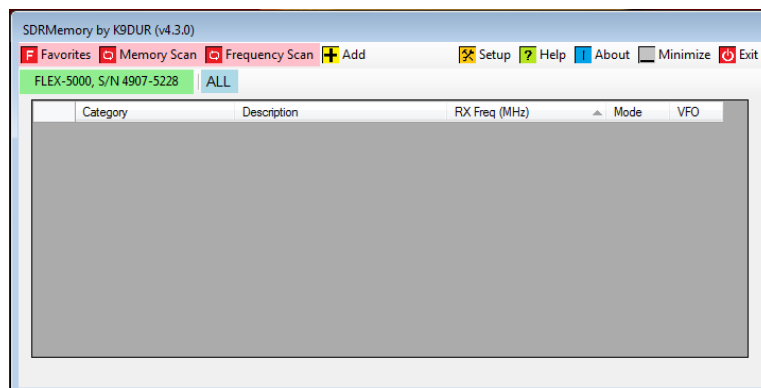
For a FLEX-3000: F3K, FLEX3000, or FLEX-3000

For a FLEX-5000: F5K, FLEX5000, FLEX-5000,  
F5KA, FLEX5000A, FLEX-5000A,  
F5KC, FLEX5000C, or FLEX-5000C

The other parameter is the radio serial number in the format 0000-0000.

The two parameters can be placed on the command line in any order, but both must be present separated by a space.

After you have selected a radio and set up the serial port, the main screen, shown in **Figure 3**, will be displayed.



**Figure 3 -- Main Screen (no Memories)**

Next you need to enter some memories. Please see the section titled "Adding New Memories" for instructions on how to add memories.

Figure 4 shows a sample screen after a few memories have been entered.

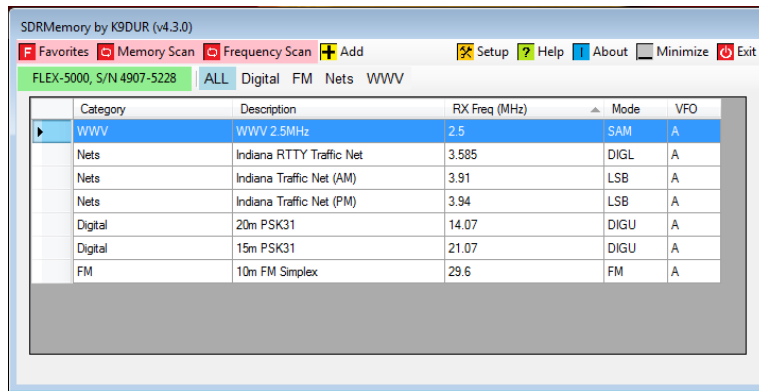


Figure 4 -- Main Screen (with Memories)

To select a memory, simply left-click anywhere on the row that contains the desired memory.

The memories are displayed in increasing frequency order.

Each memory is assigned to a category. Use the buttons on the second row of the toolbar to display only the memories assigned to a single category. **NOTE:** Only the first ten characters of the category name are displayed on the toolbar buttons. However, if you hover over a button with the mouse, the full category name will pop up.

### Setting Up the CAT Serial Port & Changing Display Options

To Clicking on the “Setup” button on the toolbar will display the form shown in Figure 5.

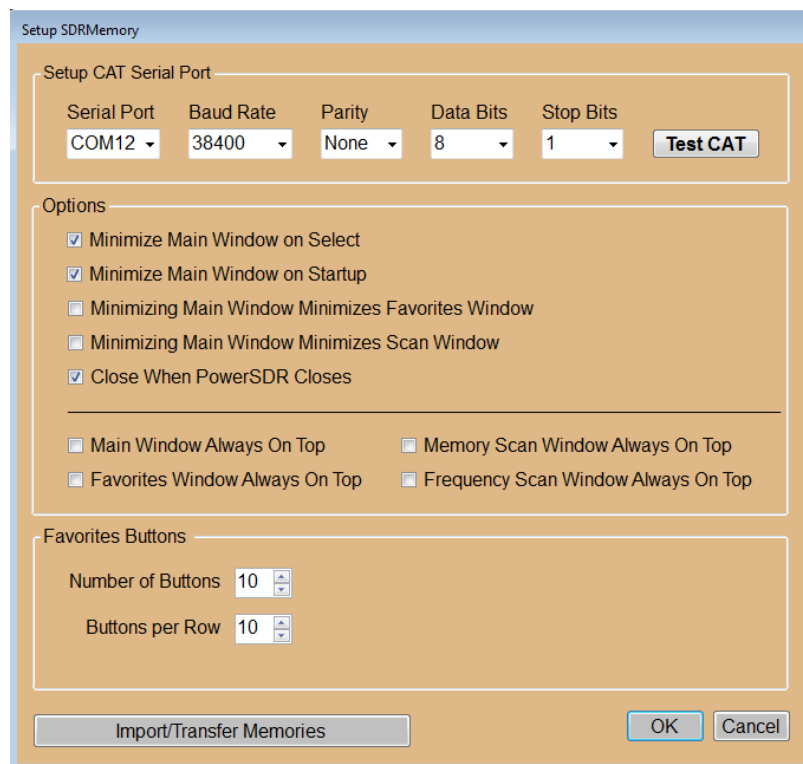


Figure 5 – Setup Form

## Setup CAT Serial Port

Select the serial port you wish to use to communicate with **PowerSDR**. If you are using a virtual serial port, the other settings are not used & may be set to any valid value.

Clicking on the “Test CAT” button will allow you to test the communications with **PowerSDR** as described in the section titled “Testing CAT Commands” later in this document.

## Setup Display Options

These 5 check boxes allow you to set the following display options:

- **Minimize Main Window on Select** -- If this box is checked, the main window will minimize itself when you select a memory.
- **Minimize Main Window on Startup** -- If this box is checked, the main window will be minimized when the program starts. This option allows you to start the program with only the favorites window showing.
- **Minimizing Main Window Minimizes Favorites Window** -- If this box is checked, the favorites window will be minimized if you minimize the main window.
- **Minimizing Main Window Minimizes Scan Window** -- If this box is checked, the memory scan window or the frequency scan window will be minimized if you minimize the main window.
- **Close When PowerSDR Closes** -- If this box is checked, then **SDRMemory** will close automatically when you close **PowerSDR**.
- **Main Window Always on Top** – If this box is checked, the main program will always be displayed on top of any other open windows.
- **Favorites Window Always on Top** – If this box is checked, the favorites window will always be displayed on top of any other open windows.
- **Memory Scan Window Always on Top** – If this box is checked, the memory scan window will always be displayed on top of any other open windows.
- **Frequency Scan Window Always on Top** – If this box is checked, the frequency scan window will always be displayed on top of any other open windows.

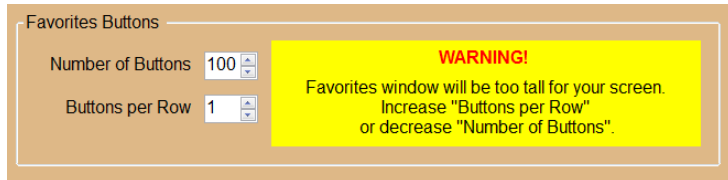
## Favorites Display Options

The controls in this box allow you to select the arrangement of the buttons in the Favorites window.

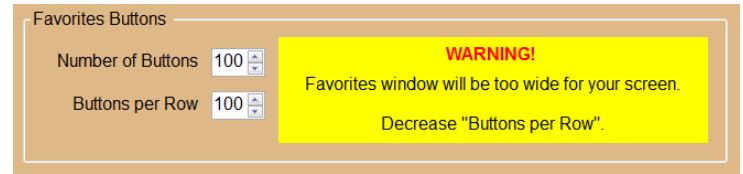
The upper up/down scroll box sets the total number of favorites buttons to be displayed. The number of buttons can be set to any value between 1 and 100.

The lower up/down scroll box sets the maximum number of buttons in each row. This value can also be set to any value between 1 and 100.

It is possible to set these two values to a combination where the favorites window would be too wide or too tall to fit on your screen. When such a combination is selected, a warning message is displayed as shown in **Figure 6** or **Figure 7**.



**Figure 6 -- Setup Form w/Warning Message**



**Figure 7 -- Setup Form w/Warning Message**

These are only warning messages. You can still save the selected combination, but, of course, the resulting favorites window will not fit on your screen.

## Import/Transfer Memories

Clicking on this button will allow you to import memories you may have stored in **PowerSDR**, or transfer memories from one radio to another. This is described in detail in the section titled "Importing/Transferring Memories" later in this document.

Clicking on the "Okay" button will save your setup changes and return the program to normal operation.

Clicking on the "Cancel" button will discard any setup changes you have made and return the program to normal operation.

## Adding New Memories

To add a new memory, either right-click on the header row of the main screen, or click on the "Add" button on the toolbar.

This will display the form shown in **Figure 8**.

SDRMemory -- Add New Memory

Category  
<not selected>

Description

Receive

Frequency (MHz) VFO Squelch Status & Level Scan Lockout

14.070010 A Off 39

Mode

LSB USB DSB

CWL CWU FM

AM SAM SPEC

DIGL DIGU DRM

Filter

3.0k 2.5k 2.0k

1.5k 1.0k 800

600 300 150

75 FLDig DM780

Transmit

TX Profile

DM780

Save Changes Cancel

**Figure 8 -- Add New Memory Form**

When the form first opens the category will match the currently selected category and the Description will be blank. The remainder of the data will match the current settings for VFO A in **PowerSDR**.

You may either use the current category, select an existing category from the list, or type in a new category. Then type in a description for the memory, for example: Maritime Mobile Service Net, or any other wording that will allow you to recognize the memory.

Finally, change the other settings as needed.

Clicking on "Save Changes" will save the new memory and close the form. Clicking on "Cancel" will close the form without saving the new memory.

## Editing/Deleting Existing Memories

To edit or delete an existing memory, right-click anywhere on the row containing the memory you wish to edit or delete. If the mode of the selected memory is "FM", then the form shown in **Figure 9** will be displayed. Otherwise the form shown in **Figure 10** will be displayed.

The screenshot shows the 'SDRMemory -- Edit Memory' dialog box. The 'Category' dropdown is set to '10m FM' and the 'Description' field contains '10m FM Simplex'. Under the 'Receive' section, the 'Frequency (MHz)' is 29.600000, 'VFO' is 'A', 'Squelch Status & Level' is 'On' with a level of 25, and 'Scan Lockout' is checked. The 'Mode' section has buttons for LSB, USB, DSB, CWL, CWU, FM (highlighted), AM, SAM, SPEC, DIGL, DIGU, and DRM. The 'Filter' section has a 3x3 grid of buttons. Under the 'Transmit' section, the 'TX Profile' is 'Default', 'Repeater Offset (MHz)' is 'Simplex' with a +/- button, 'CTCSS' is '<none>', and 'Deviation' is '5.0 kHz'. At the bottom are 'Save Changes', 'Delete', and 'Cancel' buttons.

Figure 9 -- Edit/Delete Memory Form (FM)

The screenshot shows the 'SDRMemory -- Edit Memory' dialog box. The 'Category' dropdown is set to 'WWV' and the 'Description' field contains 'WWV'. Under the 'Receive' section, the 'Frequency (MHz)' is 15.000000, 'VFO' is 'A', 'Squelch Status & Level' is 'Off' with a level of 0, and 'Scan Lockout' is checked. The 'Mode' section has buttons for LSB, USB, DSB, CWL, CWU, FM, AM, SAM (highlighted), SPEC, DIGL, DIGU, and DRM. The 'Filter' section has a 3x3 grid of buttons with values: 16k, 12k, 10k (highlighted), 8.0k, 6.6k, 5.2k, 4.0k, 3.1k, 2.9k, 2.4k, Var 1, and Var 2. Under the 'Transmit' section, the 'TX Profile' is 'Default'. At the bottom are 'Save Changes', 'Delete', and 'Cancel' buttons.

Figure 10 -- Edit/Delete Memory Form (non-FM)

**NOTE:** When changing the mode to or from FM, the Squelch Level will be reset to "0". Select the mode before setting the Squelch Level.

Make any desired changes & click on "Save Changes" to save them and close the form.

Click on "Delete" to delete the memory being edited & close the form.

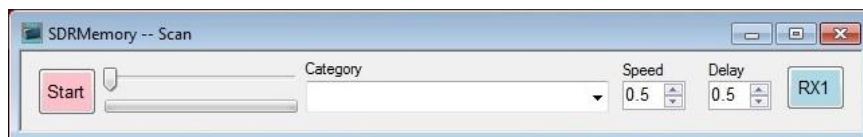
Click on "Cancel" to close the form without saving any changes.



## Scanning Memories

**SDRMemory** allows you to scan memories that you have saved. All memories can be scanned or scanning can be limited to only a selected category.

Clicking on the "Memory Scan" button on the toolbar will display the window shown in **Figure 11**.



**Figure 11 – Memory Scan Window**

To scan memories, first select a category from the dropdown list, and then click on "Start". You will need to adjust the slider so that it is above the signal level displayed in the colored bar below the slider.

"Speed" adjusts the scan rate from 0.1 seconds/memory to 10.0 seconds/memory.

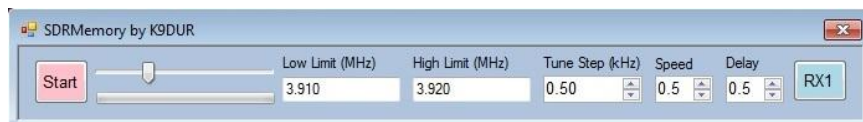
"Delay" adjusts the length of time that scanning is paused after a signal is no longer detected. The range is 0.1 to 10.0 seconds.

If you have a FLEX-5000 with RX2 installed, clicking on the button at the far right will switch the scanning between RX1 & RX2. That way, you can continue normal operations with RX1 while scanning with RX2.

**NOTE:** The scanning system built into **SDRMemory** is a signal-level activated system. FM receivers, including **PowerSDR** in FM mode, normally use a noise-level activated squelch system. For FM reception the noise-level system gives better performance than a signal-level system; however, a noise-level system cannot work on any mode except for FM. Also, the open/closed state of the squelch is not available through CAT commands and it is not presently feasible to add this capability. This is why a signal-level activated system was chosen for the scanning function of **SDRMemory**.

## Scanning Frequencies

**SDRMemory** allows you to scan a range of frequencies. Clicking on the "Frequency Scan" button on the toolbar will display the window shown in **Figure 12**.



**Figure 12 – Frequency Scan Window**

To scan a range of frequencies, enter the lowest frequency to be scanned, enter the highest frequency to be scanned, select the tune step, and then click on "Start". You will need to adjust the slider so that it is above the signal level displayed in the colored bar below the slider.

"Tune Step" adjusts the size of the frequency change between scans. The frequency change can be set to any value between 0.01 kHz and 10 kHz.

"Speed" adjusts the scan rate from 0.01 seconds/frequency to 10.0 seconds/ frequency.

"Delay" adjusts the length of time that scanning is paused after a signal is no longer detected. The range is 0.1 to 10.0 seconds.

If you have a FLEX-5000 with RX2 installed, clicking on the button at the far right will switch the scanning between RX1 & RX2. That way, you can continue normal operations with RX1 while scanning with RX2.

### Favorite Memory Channels

**SDRMemory** allows you select up to 20 memories as "favorites" which can be accessed by clicking on a single button. Clicking on the "Favorites" button on the task bar toggles this function on or off. When on, the form shown in Figure 13 is displayed.

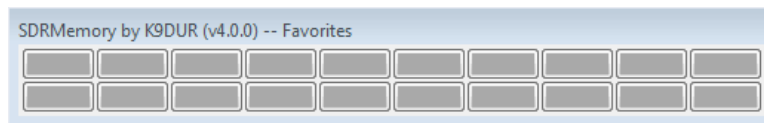


Figure 13 -- Favorites Window

To assign a memory channel to a button, right-click on the button. This will display the window shown in Figure 14.

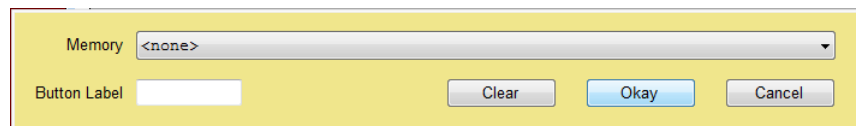


Figure 14 -- Setup Favorites Window

Select the desired memory from the drop-down list and enter a label for the button. The label can be a maximum of 5 characters long.

Click on "Okay" to save your changes & close the window.

Click on "Cancel" to discard your changes & close the window.

Click on "Clear" to unassign the button from any memory.

**Figure 15** shows the favorites window after a few buttons have been assigned to memories.

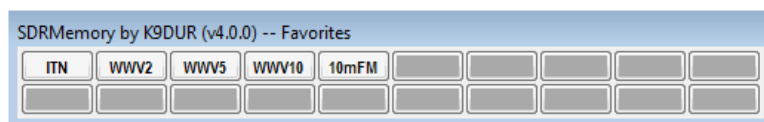
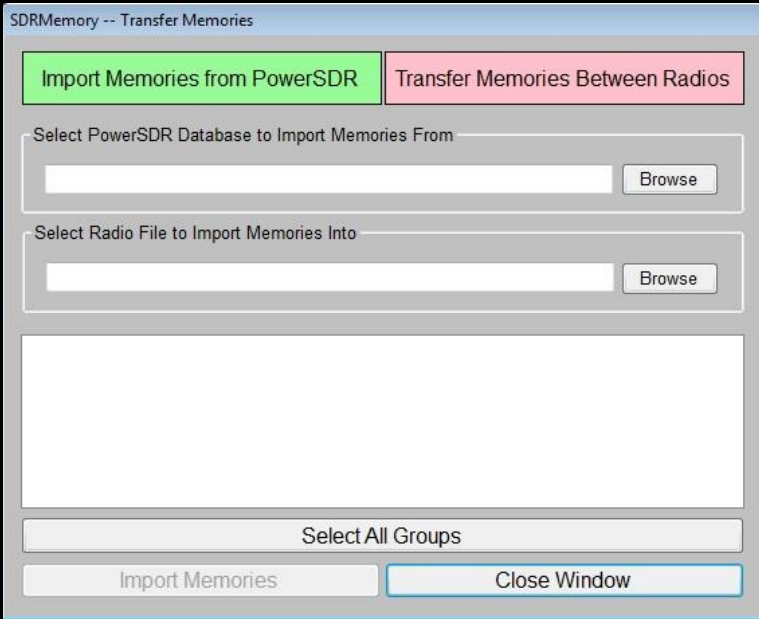


Figure 15 -- Favorites Window w/Memories

## Importing/Transferring Memories

**SDRMemory** allows you to import memories you may have stored in **PowerSDR**. Also, if you have more than one radio installed, you can transfer memories from one radio to another.

You can import or transfer memories by clicking on the "Import/Export" button on the toolbar. This will cause the form shown in **Figure 16** to be displayed.



**Figure 16 -- Import/Transfer Memories Form**

Click on "Import Memories from PowerSDR" to import memories you have saved using **PowerSDR**, or click on "Transfer Memories Between Radios" to move memories from one radio to another.

Type in the name of the data file you wish to import/transfer memories from or click on the **Browse** button to navigate to the file. Once you have selected the file to transfer from, a list of all memory categories will be displayed. In **PowerSDR**, categories are called "Groups".

Then type in the name of the data file you wish to transfer memories to or click on the **Browse** button to navigate to the file.

Click on a category or group in the list to select it. By holding down the **Ctrl** key while clicking on categories/groups you can select multiple categories or groups. Clicking on **Select All Categories** or **Select All Groups** will select all of the categories or groups in the file.

When you have the desired category or categories selected, click on **Import Memories** or **Transfer Memories** to copy the memories from the source file to the destination.

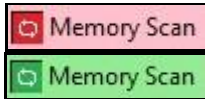
When copying memories, the program looks for an existing memory in the destination file with the same Category or Group, the same Description, & the same Frequency. If one is found, the memory is not copied. Therefore, this function merges the memories in the source file into the destination file. It does not perform a replace operation.

## Toolbar

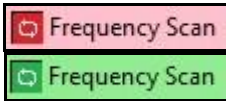
The first row of the toolbar contains the following buttons & controls (left-to-right):



Clicking on this button will turn the favorites function on or off.



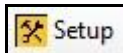
Clicking on this button will turn the memory scan function on or off. If the frequency scan is currently on, it will be turned off.



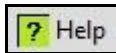
Clicking on this button will turn the frequency scan function on or off. If the memory scan is currently on, it will be turned off.



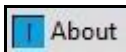
This button allows you to add a new memory.



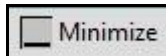
Clicking on this button will open the setup form.



Clicking on this button will open a window to display this document.



Clicking on this button will open a window that displays basic information about the program.

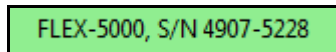


Clicking on this button will minimize the main window.

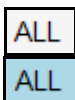


Clicking on this button will close the program.

The second row of the toolbar contains the following buttons & controls (left-to-right):



This box displays the radio connection status..



Clicking on this button will cause all memories to be displayed.



As memories are added, additional buttons will be displayed, one button for each category. The button text will be the first 10 characters of the category name. Clicking on a button will cause only the memories in the selected category to be displayed.

## CAT Command Test

**SDRMemory** includes a simple facility to test CAT commands.

Clicking on the "Test CAT" button on the "Setup" form will display the form shown in **Figure 17**.



**Figure 17 -- CAT Test**

Type a CAT command into the top window & click on "Send Command". The response from **PowerSDR** will be displayed in the large window & the number of characters in the response will be displayed in the bottom window.

## About the Author

**SDRMemory.exe** was written by Ray Andrews, K9DUR.

Ray holds an Amateur Extra class license and was first licensed in April 1960. He currently resides in West Terre Haute, IN, and is a retired electronic design engineer and software developer. He operates a small custom software consulting business just to keep him out of mischief between camping trips.

For more information, visit Ray's web pages:

<http://k9dur.info>

<http://www.rnaconsultingservices.com>

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## Revision History

- v4.5.2 -- Jun 26, 2013 -- Fixed bug causing main window position to not be restored properly on multiple-monitor systems.
  - v4.5.1 -- Jun 17, 2013 -- Fixed bug causing crash if PowerSDR not running & user clicks on "Cancel" to exit SDRMemory.
  - v4.5.0 -- Jun 17, 2013 -- Added option to automatically close program with PowerSDR is closed. Added check to see if PowerSDR is running on program startup.
  - v4.4.0 -- Jun 15, 2013 -- Added option to start program with main window minimized. Fixed bug preventing favorites window position from being remembered properly.
  - v4.3.0 -- May 30, 2013 -- Changed category selection method from dropdown combo box to toolbar buttons. Added category to favorites setup dialog combo box.
  - v4.2.0 -- Apr 16, 2013 -- Added command-line parameters to select radio. Fixed bug when a memory assigned to a favorite is deleted it was not removed from the favorites buttons.
  - v4.1.2 -- Mar 26, 2013 -- Fixed bug preventing favorites buttons 21-100 from being assigned to a memory.
  - v4.1.1 -- Mar 25, 2013 -- Fixed bug preventing memory scan speed from being saved properly.
  - v4.1.0 -- Mar 24, 2013 -- Made number of favorites buttons user-selectable up to a maximum of 100 buttons.
  - v4.0.1 -- Mar 19, 2013 -- Modified SelectFrequency function to improve response time of Favorites buttons.
  - v4.0.0 -- Mar 15, 2013 -- Added favorites facility. Moved import/transfer function to Setup form.
  - v3.0.4 -- Mar 5, 2013 -- Fixed bug preventing frequency scan settings from being saved properly. Increased range of FrequencyScanSpeed to 0.01 to 10.0 seconds.
  - v3.0.3 -- Mar 5, 2013 -- Changed default value of MainWindowBounds setup parameter.
  - v3.0.2 -- Mar 5, 2013 -- Fixed bug preventing memory scan from working properly.
  - v3.0.1 -- Mar 5, 2013 -- Fixed bug where setup data file was created with invalid default values for non-English systems. Fixed bug preventing the frequency scan delay value from working properly.
  - v3.0.0 -- Mar 4, 2013 -- Added frequency scan feature. Replaced menus with toolbar. Moved setup values from to .xml file.
  - v2.1.4 -- Jul 4, 2012 -- Changed to allow squelch to be set for any mode, not just FM.
  - v2.1.3 -- Jul 2, 2012 -- Fixed bug preventing TX Profile being set when memory channel manually selected.
  - v2.1.2 -- Jun 30, 2012 -- Re-enabled Transmit Profile selection. Changed TX Profile & CTCSS selections to only occur when scanning stops.
  - v2.1.1 -- Jun 30, 2012 -- Disabled Transmit Profile selection.
  - v2.1.0 -- Jun 28, 2012 -- Changed name to SDRMemory.
  - v2.0.1 -- Jan 13, 2012 -- Fixed bug causing scan settings to be overwritten with default values when scan form opened.
  - v2.0.0 -- Aug 24, 2011 -- Added scanning function. Added ability to import memories from PowerSDR.
  - v1.0.1 -- Aug 17, 2011 -- Fixed bug causing error message when left-clicking on memories grid header row. Fixed Main window title text after radio selection changed.
  - v1.0.0 -- Aug 16, 2011 -- Initial release.
-

# Software License Agreement

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