

# WAVEWIN

## MARK AND SAVE HELP



SOFTWARE STRUCTURE FOR UNLIMITED FUNCTIONALITY  
P.O. Box 40245  
PHILADELPHIA, PA 19106-0245  
1-800-818-3463 · 215-922-6880  
[www.softstuf.com](http://www.softstuf.com)  
[www.wavewin.net](http://www.wavewin.net)

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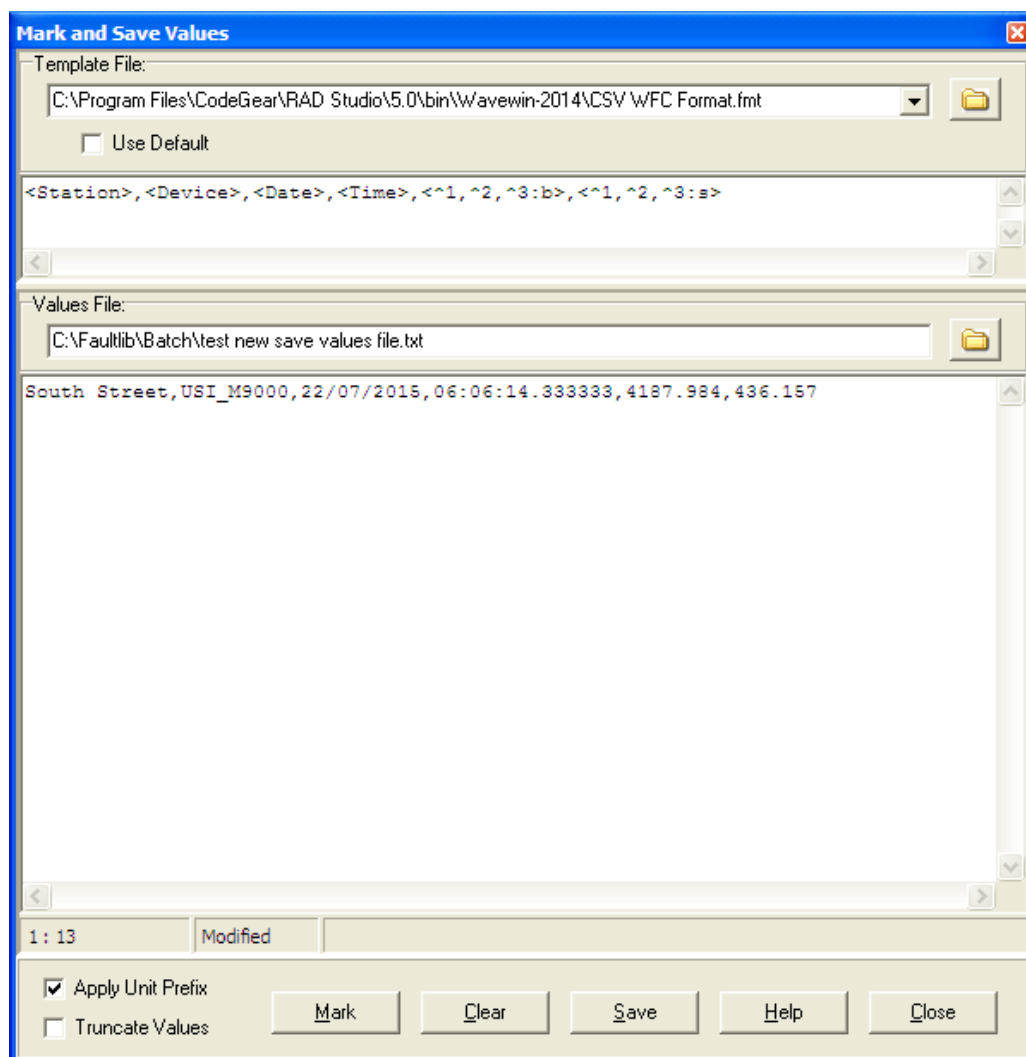
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# Overview

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The Mark and Save feature saves selected analog column data to a user defined ASCII file using the selected template file. To open the Mark and Save window select the Mark & Save Window menu option under the Values menu. The window is divided into two sections. The top section displays the contents of the selected template file in a notepad editor and contains a drop down list to select the template file. The list is initially populated with all the files that have a \*.FMT extension and are located in the Wavewin directory. A browse button is available to add template files to the list that are not located in the Wavewin directory. To save a new template file, edit the contents of the existing template file, change the name of the file using the list box's edit box then click the Save button.

The bottom section displays the contents of the values file in a notepad editor and the location and name of the file. To save the analog data to a new file change the name of the file using the edit box or use the Browse button to create a new file, then click the Save button



The Apply Unit Prefix will multiply all analog values by 1000 if the values are in kilo. The truncate Values will save only integer values.

The Use Default checkbox will write the visible analog columns to the Values notepad with a header for each column.

Before saving values to an ASCII file the template files must be created. Refer to the next section on how to create a Template file.

## Template Files

To create a new template file clear the contents of the existing template file in the notepad editor, change the name of the template file using the list box's edit box then click the Save button. To clear the contents of the Template notepad editor mark the contents of the editor then press the delete key.

To save any changes made to the active template file click the Save button.

The template files use < > characters to define the available window commands and < > and [ ] characters define the analog commands. Review the Template Commands section below for the supported Window and Analog commands.

To add a header to the Values file, define the first line in the template file with <Header>= followed by the header information. For example, the following two lines define the header and data of the Values file:

```
<Header>= Station, Device, Date, Time, RMS, Angle  
<Station>, <Device>, <Date>, <Time>, <^1:R>, <^1:P>
```

Any text not in the < > and [ ] characters get written to the Values file as they appear in the template file.

Below is an example of a template file.

```
% Initial Postfault Quantities
```

```
save rect( <1> ) as P_Ia  
save rect( <2> ) as P_Ib  
save rect( <3> ) as P_Ic  
save rect( <4> ) as P_In  
save rect( <5> ) as P_kVa  
save rect( <6> ) as P_kVb  
save rect( <7> ) as P_kVc
```

Results of the values saved using the above template when only the RMS and Phase columns are visible in the data plotting analog table.

```
% Initial Postfault Quantities
```

```
save rect( 1096.346,172.477 ) as P_Ia  
save rect( 577.000,24.181 ) as P_Ib  
save rect( 3168.159,38.157 ) as P_Ic  
save rect( 3024.967,50.501 ) as P_In  
save rect( 219759.479,328.716 ) as P_kVa  
save rect( 209623.595,209.628 ) as P_kVb  
save rect( 174040.116,78.700 ) as P_kVc
```

## TEMPLATE COMMANDS

### Window Commands

<Station>	Writes the full Station name.
<Station:12>	Writes the first 12 characters of the Station name.
<Device>	Writes the full Device name.
<Device:6>	Writes the first 6 characters of the Device name.
<Date:F>	Writes the Date at the data bar in the following format mm/dd/yyyy.
<Time:F>	Writes the Time at the data bar in the following format hh:mm:ss.zzzzzz.
<Date:U>	Writes the Date at the data bar in the following format yyymmdd.
<Time:U>	Writes the Time at the data bar in the following format hhmmsszzz.
<Cycles>	Writes the number of Cycles between the data bar and the reference bar.
<DeltaX>	Writes the time difference between the data bar and the reference bar.
<Line>	Writes the active Line name.
<Remote>	If a Line is selected then it writes the Remote Feeder Name as defined in the Line Group as REMOTENAME=.
<Rdme>	If a Line is selected then it writes the Remote Station Name as defined in the Line Group as REMOTEDME=.
<Filename>	Writes the Filename displayed in the data plotting window.
<Triggers>	Writes the number of triggers for the script commands.
<Cktnum>	If a Line is selected then it writes the Circuit Name as defined in the Line Group as CKTNUM=.
<Tobus>	If a Line is selected then it writes the To Bus Name as defined in the Line Group as TOBUS=.
<Frombus>	If a Line is selected then it writes the From Bus Name as defined in the Line Group as FROMBUS=.

### Analog Commands

<>	Write the analog data at the data bar,
[]	Write the analog data at the reference bar,
Number	Writes the visible analog column data at the date bar separated by commas for specified Channel number.
^Number	Writes the visible analog column data separated by commas for the Channel in position 1.
:R	Writes the RMS value.
:T	Writes the Channel Title.
:U	Writes the Channel Unit.
:P	Writes the Phase value.
:I	Writes the Instantaneous value.
:F	Writes the DFT magnitude for the specified Harmonic. For example, ^6:F0 writes the DFT Magnitude of the DC Offset for channel 6 and ^6:F2 writes the DFT Magnitude of the 2 <sup>nd</sup> Harmonic for channel 6.
:D	Writes the Duration of the Fault.
:%	Write the Percentage of Nominal from the Prefault bar to the Fault bar.
:%v	Measures voltage sag immunity.
:Number	Specifies the width of the analog data values. Will only be applied if the defined width is greater than the length of the data values. Spaces are padded to the beginning of the written values. This is use to right justify values.

:S	The skew of the 3 analog channels using the angles. The S command is used with 3 analog channels <1,2,3:S>. This command adds the 3 angles at the cursor. One of the channels must be marked as a reference channel.
:B	The Unbalanced Value for 3 Channels. The B command is used with 3 analog channels <1,2,3:B>. This command finds the highest and lowest DFT magnitude of the 3 channels. The result is the highest – lowest.
:N	The Negative Sequence for 3 Channels. The N command is used with 3 analog channels <^1,^2,^3:N>. This command computes the negative sequence for the 3 current or voltage channels is position 1, 2 and 3 on the screen. The magnitude for the negative sequence result is displayed.
:M	The M command is used for an entire channel. It calculates the maximum value of the channel minus the minimum value of the channel divided by 2 ((max-min)/2), <^1:M>. Since the command is not sample based both types of brackets can be used (<>,[]).
:SG100 :BL50 :NG5000 :ML700	The letter G or L followed by a number after the :S, :B, :M or :N defines a trigger. The letter G stands for greater than and L is less than. If the result is true than Alarm is displayed else Normal is displayed.

#### Example Analog Commands

<1>	Writes the visible analog column data at the date bar separated by commas for Channel 1.
<^1>	Writes the visible analog column data separated by commas for the Channel in position 1.
<1:R>	Writes the RMS value at the data bar for Channel 1.
<2:T>	Writes the Channel Title for Channel 2.
<^3:U>	Writes the Channel Unit for the Channel in position 3.
<4:P>	Writes the Phase value for channel 4.
<^5:I>	Writes the Instantaneous value for the Channel in position 5.
<6:F5>	Writes the DFT magnitude of the 5 <sup>th</sup> Harmonic for Channel 6.
[^1]	Writes the visible analog column data at the reference bar separated by commas for Channel 1.
<^1:MG1000>	Write Alarm if the ((max-min) / 2) is greater than 1000 else it writes Normal.
<^1,^2,^3:S>	Writes the sum of the angles at the cursor bar. One of the 3 channels must be marked as a reference channel.
[^1,^2,^3:B]	Writes the difference between the highest and lowest DFT magnitude at the reference bar.
[^1,^2,^3:N]	Writes the magnitude of the negative sequence at the reference bar for the channels in position 1, 2 and 3.
[^1,^2,^3:NG50]	Writes Alarm if the magnitude of the negative sequence is greater than 50 or it writes Normal if the magnitude of the negative sequence is less than or equal to 50 at for the channels in position 1, 2 and 3 at the reference bar.

#### Digital Commands

B1:T	Writes the Breaker 1 Digital Channel Trigger Information as defined in the Line Group as Breaker1=. The output text is the Digital Channel Title/Start Second:Milliseconds/Duration. If the Digital Channel started in Alarm state then NA is defined as the start date. If the Digital Channel started in Alarm state or ended in Alarm state then NA is written for the Duration.
B2:T	Writes the Breaker 2 Digital Channel Trigger Information as defined in the Line Group as Breaker2=. The output text is the Digital Channel Title/Start Second:Milliseconds/Duration. If the Digital Channel started in Alarm state then NA is defined as the start date. If the Digital Channel started in Alarm state or ended in Alarm state then NA is written for the Duration.
E1:T	Writes the Event 1 Digital Channel Trigger Information as defined in the Line Group

	as Event1=. The output text is the Digital Channel Title/Start Second:Milliseconds/Duration. If the Digital Channel started in Alarm state then NA is defined as the start date. If the Digital Channel started in Alarm state or ended in Alarm state then NA is written for the Duration.
B1:S	Writes A (Alarm) or N (No Alarm) indicating if the Breaker 1 Trigger status in the File.
E3:D	Writes the Event 3 Start Time
B1:E	Writes the total number of times the digital channel toggled.

When a caret ^ is specified before the channel number it indicates the channel position in the display. The < > characters saves the analog data at the data bar and the [ ] characters saves the analog data at the reference bar.

## Value Files

To create a new values file click the Clear button to clear the contents of the existing values file in the notepad editor, change the name of the file using the edit box or click the Browse button to create a new file, then click the Save button.

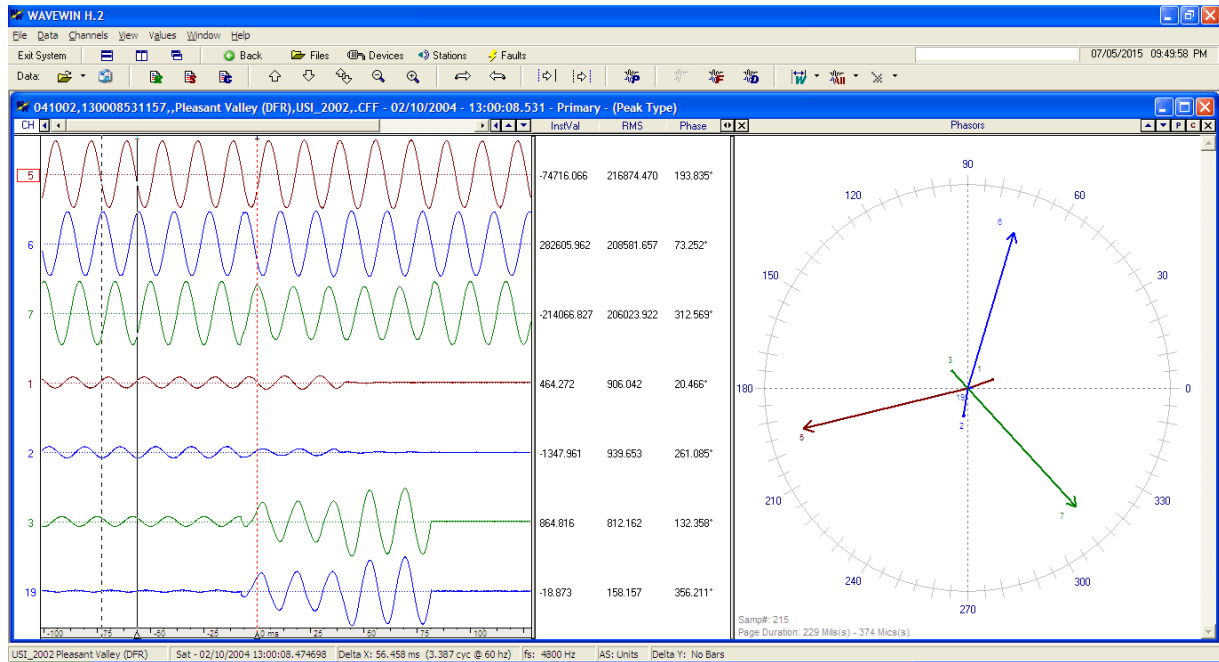
To write a template command to the values file, first position the data and/or the reference bar in the data plotting window then click the Mark button in the Mark and Save window or select the Mark Scan menu option under the Values menu in the data plotting window. You can also use the shortcut keys Ctrl-S to mark an analog scan in the data plotting window. Each command will be appended to the values notepad window. Click the Save button to save any changes to the template and values file.

To navigate to the next Marked Scan in the data plotting window select the Next Marked Scan menu option under the Values menu or use the shortcut keys Ctrl-X to navigate to the next Marked Scan.

The analog commands listed in the Template file section specifies what values to write to the values file. If the analog channel commands defined in the active template file does not specify a specific data value then all the analog columns visible will be saved with each command separated by commas. For example if the analog channel command is <1> and the INST, RMS and PHASE columns are visible then it will write the INST,RMS,PHASE values for Channel 1.

If a specific analog channel is defined in the template file with no data value indicated and the channel is not visible then that template command is ignored.

When a template command is written to the values file a red upside down T is displayed above the analog scan in the data display window. To clear the red marks from the data display window select the "Clear Marked Values" menu option under the "Values" menu.



**Data Display Configuration**

Use this dialog to change the order of the Analog channel columns, the display positions in the Analog Combination view and to set general features of the display.

Display Settings | Append / Merge | Driver Data Type | Filters

Analog Table | Analog Combination View | Comtrade | Colors

Use the MoveUp and MoveDown Buttons to reorder the columns. Click on the check box next to displayed column to show or hide the column. Check=Show, Unchecked=Hide.

<input checked="" type="checkbox"/> Title	<div>Move Up</div> <div>Move Down</div>
<input checked="" type="checkbox"/> InstVal	
<input checked="" type="checkbox"/> RMS	
<input checked="" type="checkbox"/> Phase	
<input checked="" type="checkbox"/> Units	
<input checked="" type="checkbox"/> RefVal	
<input checked="" type="checkbox"/> Scale	
<input checked="" type="checkbox"/> InstPeak	
<input checked="" type="checkbox"/> MaxPeak	
<input checked="" type="checkbox"/> MinPeak	
<input checked="" type="checkbox"/> DFTPeak	
<input type="checkbox"/> Crest	
<input type="checkbox"/> Fast RMS	

The Fast DFT Phase value Calculated while processing the samples.

☐ Freeze the First Column in the Analog Channel Table

OK Cancel

To setup the waveform display for saving analog values review the following sections:

### **SELECT ANALOG CHANNELS**

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**Description:** To isolate certain analog channels mark the desired channels. Marked channels are displayed in red. To mark a channel move the channel cursor to the channel and press the spacebar or click on the channel's number or table values. After marking all of the desired channels press <enter>. Only the marked channels will be displayed.

**Activation:** *Menu:* Channels Menu, View Mark(s)

### **ARRANGE ANALOG CHANNELS**

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**Description:** To arrange the analog channels in a specific order mark the channels to be moved and press the "+" key to move them up or the "-" key to move them down. Also, use the mouse to drag the marked channels to the desired position.

**Activation:** *Menu:* Channel Menu, Shift Marks Up and Shift Marks Down

**Comments:** Analog channels can only be moved if they are marked. Use the spacebar or mouse to mark channels. Marked channels are displayed in red.

### **SELECT ANALOG COLUMNS**

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**Description:** All visible columns displayed in the table will be saved to the Values file if a specific data command is not specified. Move the data bar along the waveform to change the sample values displayed in the table.

To change the way the columns are displayed open the "Properties" dialog located in the "File" menu. Select the "Analog Table" tab. A list of all of the available analog columns is displayed. Use the "Move Up" and "Move Down" buttons to change the order of the columns and the check box next to each column header to hide or show the column (checked =show, unchecked=hide).

Resizing the Analog table can also isolate the columns to save. Use the Shift-left and Shift-right keys to navigate through the columns. Navigate to the first column to be saved then resize the window by dragging the table/phasor separator bar to show only the columns needed.

**Activation:** *Menu:* File Menu, Window Properties

### **CLEAR VALUES FILE**

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**Description:** To clear the marked analog scans in the data plotting window select the Clear Marked Values menu option under the Values menu.

**Activation:** *Menu:* Values Menu, Clear Marked Values

**Comments:** When a template command is written to the values file a red upside down T is displayed above the analog scan in the data display window.