WaveSurfer LabNotebook

TEN MINUTE TUTORIAL

January 20, 2012

Summary

LabNotebook is an all-in-one solution for annotating and sharing information that is built into the oscilloscope. It records traces, setups, screen images and user annotation into a database and generates a report from selected elements. Traces and setups from the database can be recalled into the oscilloscope for further analysis.

LabNotebook

Now users can efficiently create complete and detailed waveform reports directly in the oscilloscope. An all-in-one solution for annotating and sharing information, LabNotebook simplifies results recording and report generation by eliminating the multi-step processes that often involve several pieces of equipment.

LabNotebook enables users to focus on results rather than the process, as they can now:

- Save all displayed waveforms
- Save the relevant oscilloscope setups with the saved waveform
- Add freehand notes with a stylus or as text
- Convert the complete report to pdf, rtf, or html
- Print or email reports
- Email scope setups and waveforms to others for use or analysis

Freehand notes can be written on the screen with a stylus right on the waveform and then saved in the report file.

Create Notes with the Screen Capture

With LabNotebook users can annotate waveforms as they capture them. Once the notes are finished, they can be readily saved as a report and e-mailed directly from the oscilloscope.

Flashback Function

Users can employ the Flashback Function to recall the state of the scope, including saved waveforms and setup. Additional measurements are easily made using the keyword filter to find the correct notebook entry for recall.

There's Even More...

To make LabNotebook an outstanding solution, more functionality has been added including:

- A default report layout
- Configuration of your own report layout
- Placing your company logo or your department name in the report

- Storing notebook entries for recall at any time
- Also storing panel setups and parameter measurements
- Database backup to external media
- Storing reports and data separately for shared scopes

Equipment Required

WaveSurfer 104MXs-B oscilloscope
Passive Probe

Displays shown in the tutorial are based on the following initial setup on a WaveSurfer 104 MXs-B oscilloscope:

1. Connect a passive probe from channel 1 to the CAL test point on the front panel. The CAL output is a 1 kHz square wave with an amplitude of 1 V

2. Recall the default setup: File pull down > Recall Setup> Recall Default.

3. Turn off channel 2.

4. Auto Setup the scope: Press Auto Setup twice

5. Using the C1 dialog box, set the channel 1 vertical scale to 200 mV/division and the vertical offset so that the bottom of the trace is one and one half divisions above the bottom of the display grid.

6. Set the trigger level to 500 mv .

This completes the initial setup. The scope display should be similar to Figure 1.

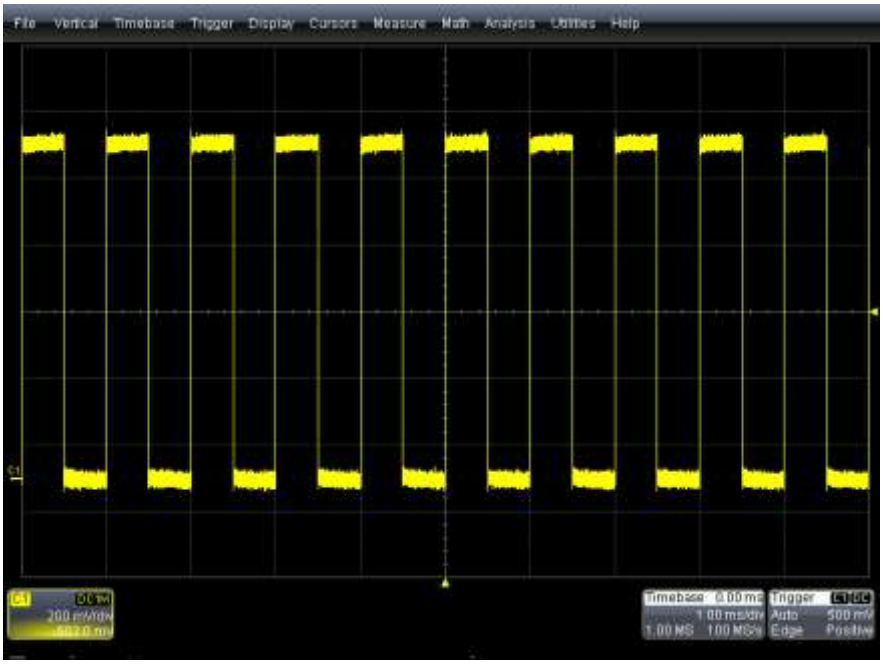

Figure 1: *The initial setup of the WaveSurfer 104MXs oscilloscope*

Creating a LabNotebook Entry and Report

You can create a LabNotebook entry by using the File pull down menu and selecting Create Notebook Entry as shown in Figure 2. Follow along with this process to create your own LabNotebook report.

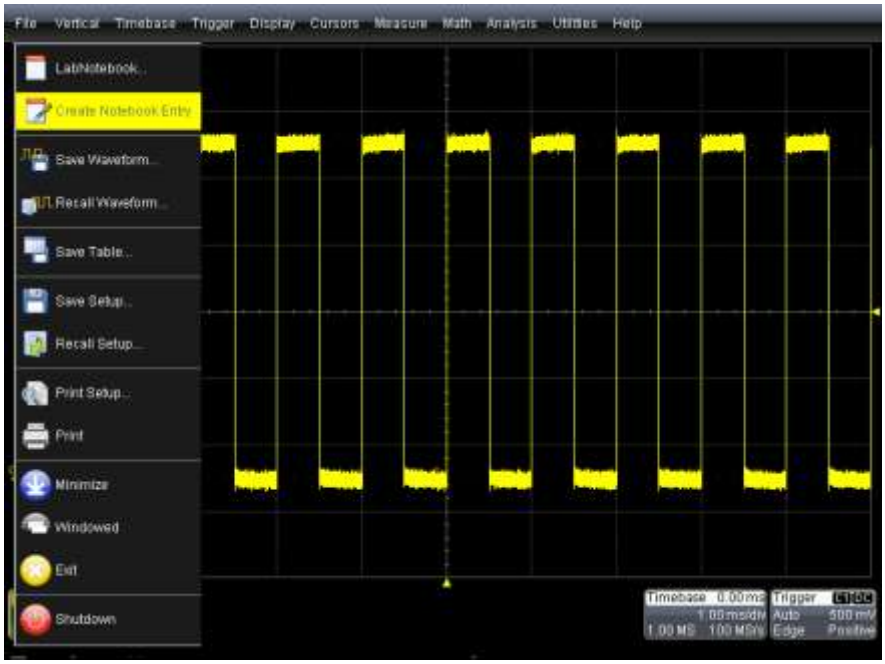

Figure 2: *Creating a LabNotebook entry using the File pull down menu*

After selecting Create Notebook Entry the scope will prompt for a report title and description using the pop up box shown in Figure 3.

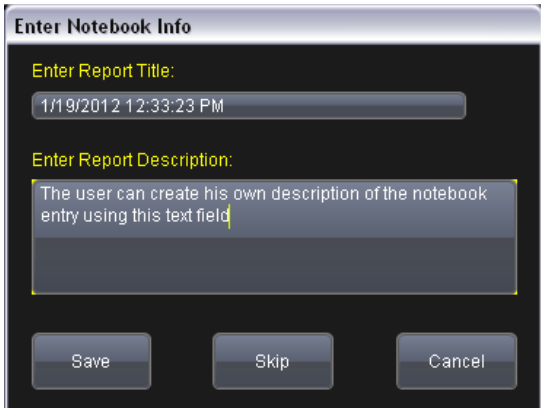

Figure 3: *The report title and description pop up box*

The user can enter a report title or accept the default date/time title.

The Report description field allows the user to enter text describing the content of the LabNotebook entry.

If it is necessary to edit the title or text this can be accomplished even after the pop up box is closed.

After filling in these items pressing Save will store this information in the report database.

After saving the title and description the scope will open the current screen image from the scope in a graphical editor. This is called the 'Scribble Mode' editor. In Scribble Mode the user can annotate the screen image with free hand notes, circles, arrows, and text. There is a choice of colors for any of these additions. An example of an annotated screen image is shown in Figure 4.

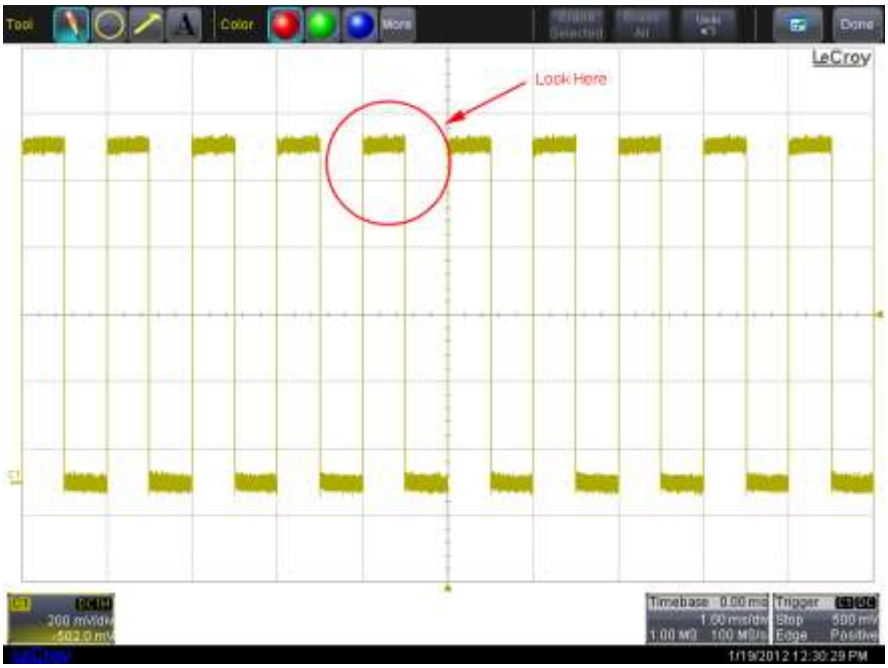

Figure 4: *An example of screen image annotation using 'Scribble Mode'*

Clicking on the Done tab will save the annotated screen image and exit Scribble Mode returning to the scope display.

If you want to view the entry or create a report from it then use the File pull down menu and select LabNotebook. This will cause the LabNotebook dialog box to be displayed as seen in Figure 5.

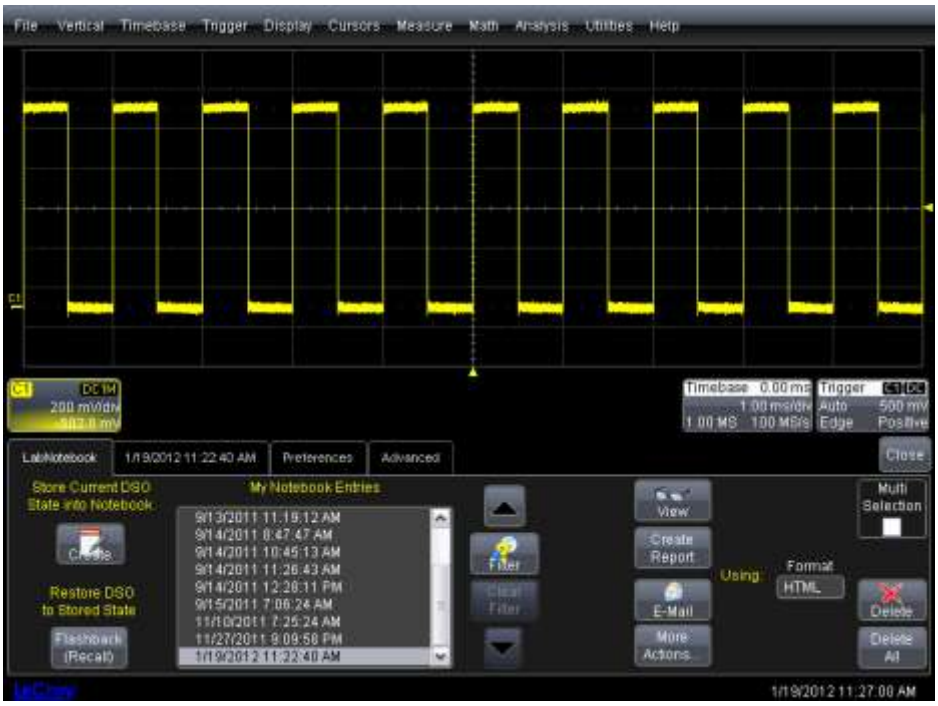

Figure 5: *The LabNotebook Dialog box*

The 'My Notebook Entries scroll box lists all the entries in the LabNotebook database. You can scroll up and down the list to select a desired entry.

The Filter button allows the user to set sorting criteria based on the date of the entry you are looking for or a key word within the title or descriptive text.

The Create Report button will create a report based on the selected entry in the format selected in the Format box. Reports can be saved in HTML, PDF, and RTF formats.

More actions will open the Tab labeled with the selected entry, 11/19/2012… in this case. This tab allows the user to edit the title or descriptive text, edit the Scribble Mode screen image, save the traces and setup files to a folder, or to print the report.

The E-Mail button will send a copy of the report to a user selected recipient (set up on the LabNotebook Preference tab using the Configure E-Mail button). Note that this feature requires internet access and E-mail service).

The Multi Selection check box allows for multiple entries to be combined into a report.

The Delete and Delete All buttons are used to remove a selected entry or all entries from the scroll list, respectively.

Select the entry you just made and press View. This will allow you to view the entry as shown in Figure 6.

Figure 6: *The LabNotebook dialog box showing the selected entry in the background*

This is how the report will appear in any of the selected formats. The logo in the upper right hand corner is user selectable. We'll look at that process when we cover the Advanced Tab.

Use the scroll bars on the right to see the other parts of the entry. In addition to the title, text, and annotated screen image shown in Figure 6 there is also a summary of the oscilloscope vertical, horizontal, and trigger settings. Use the scroll bar to investigate these settings for your entry.

Press the Create Report button. You will be prompted for a destination folder for the report in the Create Report pop up box. The default folder for all LabNotebook operations is D:\ XPORT. You can enter the desired report File Name. The default is report.htm, report.pdf, or report.rtf depending on the selected report format. Enter a file name and press OK to save the report.

After saving the report, locate it in the folder you saved it to and open it.

Using Flashback

Having saved a report we can investigate the use of Flashback. As the name implies this function restores the waveform and setup to the scope from a saved LabNotebook entry.

Restore the scope to the default setup: File pull down > Recall Setup> Recall Default.

Go to the LabNotebook tab. Select the entry that you stored previously.

Press the Flashback (Recall) button on the LabNotebook dialog box. The scope will recall the selected waveform back into channel 1 using the same settings as when the waveform was originally acquired as shown in Figure 7. Note that the oscilloscope's trigger mode is Stop.

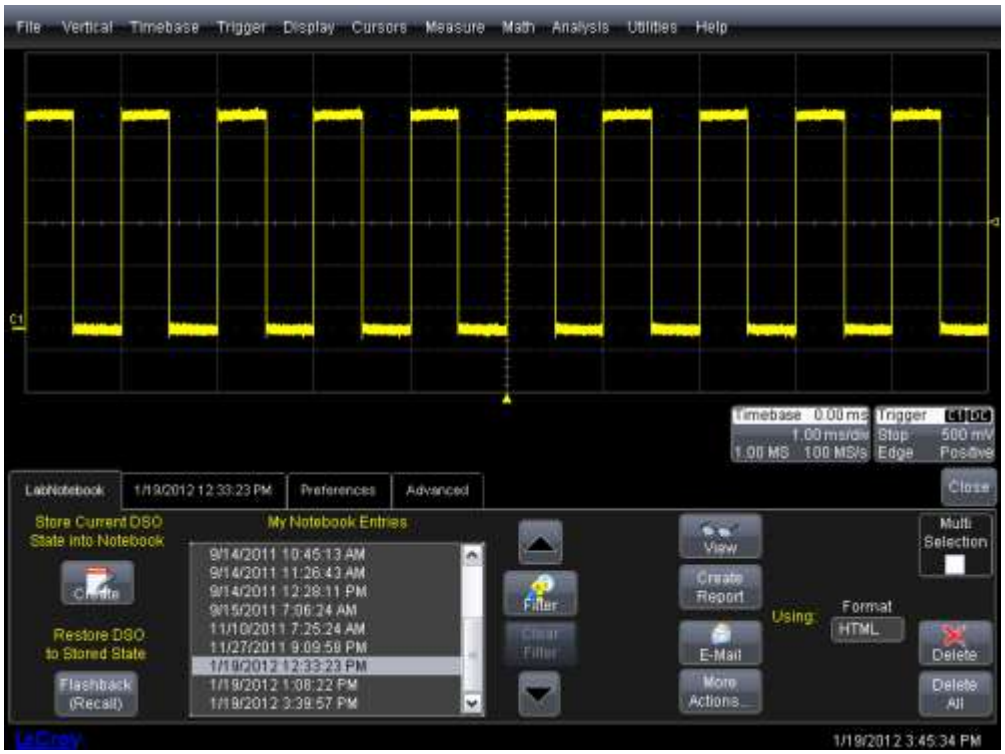

Figure 7: *Screen image after Flashback of the selected LabNotebook entry*

Do not change any acquisition setting (Time/division, Volts/Division, Trigger level, offset, trigger mode or delay) as this will clear the display.

This feature allows you to make additional measurements using parameters or cursors or perform additional analysis on the stored signal.

Turn on measurements (Measure> Measure Setup) and verify this capability.

The Advanced Feature Tab

Open the LabNotebook dialog box and select the Advanced Tab as shown in Figure 8.

Figure 8: *The Advanced tab of the LabNotebook dialog box*

All LabNotebook entries are saved to a database. The default database is MyLabNotebook.zip as shown in Figure 8. Like all LabNotebook files it is located in the D:\XPORT folder. The Storage field in the Advanced tab allows the user to change the database, import data from another database, start a new database, backup the current database, or compact the current database. Since the LabNotebook database can be quite large it is recommended to create a new database if you want to share it with another user.

The Report Directory field on the Advanced tab allows users to select the directory that the report is saved to. The Template field allows the user to select the report generation template. In addition to the default template shown there are a number of alternative files. Users can also create their own custom templates.

The currently selected logo is shown on the right hand side of the Advanced Tab Report field. The Logo entry allows the user to select a bit mapped file as a source of the logo.

References

Here are some additional references related to LabNotebook

LeCroy Application Brief (LAB_WM823A) “LabNotebook This Interactive Notebook Is the Ultimate in Documentation” http://cdn.lecroy.com/files/appnotes/lab_wm823a.pdf

LeCroy Application Brief (LAB_WM828) “Customizing LabNotebook”
http://cdn.lecroy.com/files/appnotes/lab_wm828.pdf

LeCroy Application Brief (LAB_WM829) “LabNotebook Flashback Mode”
http://cdn.lecroy.com/files/appnotes/lab_wm829.pdf

This completes the tutorial