

Tutorial

Using ROTATE	8
Starting ROTATE and Displaying Channels	10
Displaying Data and Processing a Signal	12
Exporting a Channel and Managing Files	15

ROTATE Guided Tour

This chapter provides a brief overview of the ROTATE program. It then leads you through a short tutorial to introduce you to the basic functions of ROTATE. After you have completed this chapter, you will be able to perform the steps to import and begin to analyze data in ROTATE.

This tutorial uses the demonstration data that is automatically installed with ROTATE.

Using ROTATE

Starting the Software

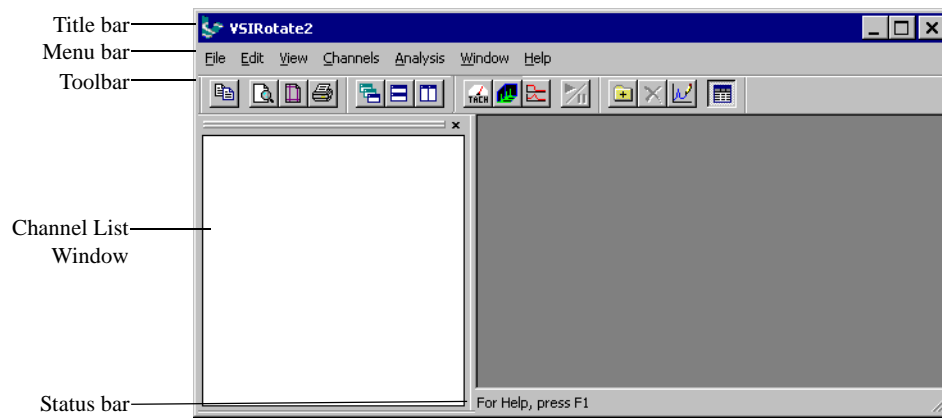
To start ROTATE, click Start, point to Programs, then to ROTATE2, then click ROTATE2.

The ROTATE program window appears.

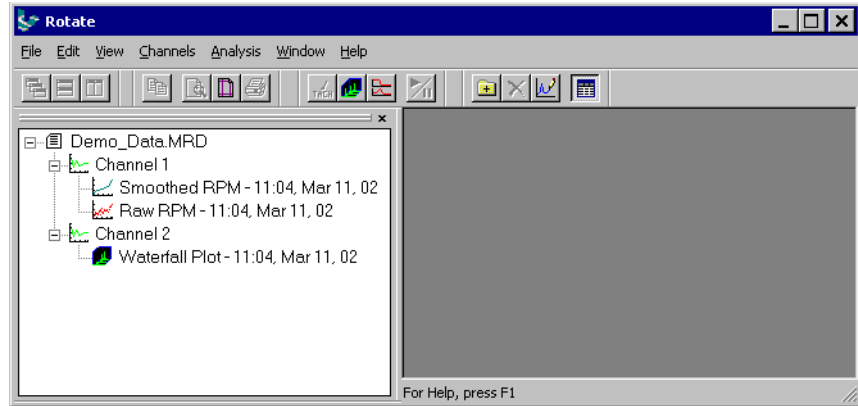
To stop ROTATE, simply choose Exit from the File menu.

The ROTATE User Interface

ROTATE follows the standard Windows® user interface standards, and consists of the usual windows, menus, and toolbars. A picture of the ROTATE window appears below.



- The title bar displays the program name.
- The menu bar appears directly below the title bar. It contains the menus of commands for the program.
- The toolbar appears directly below the menu bar. It contains the tool buttons that are shortcuts to the most often used functions of the program. A short ToolTip describing the button function appears when you move the mouse pointer over a button. You can click and drag a toolbar to any position within the program window, and “dock” it to any side of the window. You can also show or hide any toolbar with the commands on the View menu.
- The status bar shows a brief description of the current command or button under the mouse pointer.
- Many parts of the program have right-click menus. For example, you can right-click on a plot window to display a menu of functions for that plot.
- The Channel List window shows the channels (tachometer and data) that you have imported into, or created in, ROTATE. To toggle the display of the Channel List window, right-click anywhere in the ROTATE program window (except on the menu bar).



- The online help describes each command, dialog box, and plot. To display the online help, do one of the following:
 - Highlight a command on a menu and press F1. This displays an explanation of the command.
 - Open a dialog box and press F1. This displays an explanation of the controls in the dialog box.
 - Make a plot window active by clicking on the plot and press F1. This displays a description of the functions available for that plot.

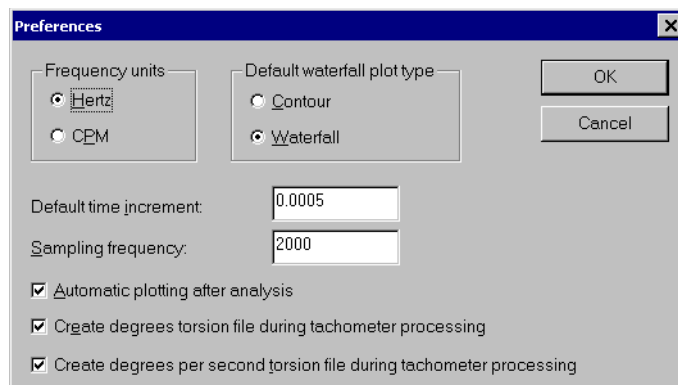
Setting Your Preferences

The preferences settings control the default ROTATE appearance and functions. These include the following defaults.

- Frequency units in plots
- Waterfall plot type (waterfall or contour)
- Default time increment and sampling frequency
- Automatic plot display after analysis
- Creation of Torsional analysis files when processing a tachometer signal
- The directory for the files created by the ROTATE analysis functions

To set your preferences, follow these steps.

1. Start ROTATE. See “Starting the Software” on page 8.
2. From the Edit menu choose Preferences.



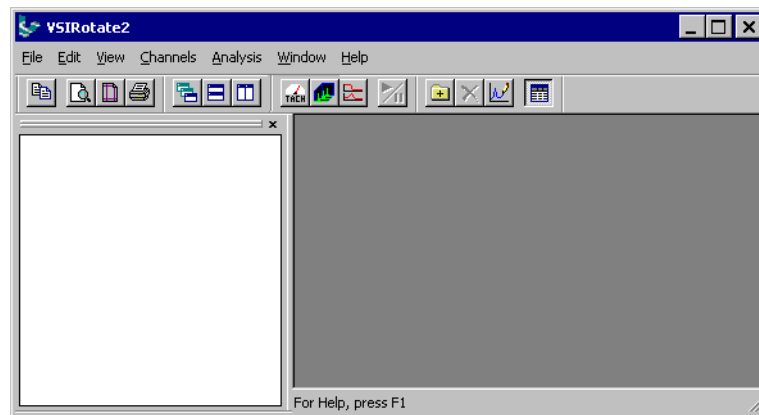
3. In the Preferences dialog box, select or enter the desired defaults. Press F1 for a description of the options.
4. Choose OK when finished.

Starting ROTATE and Displaying Channels

The first section of the Tutorial leads you through starting ROTATE, as well as opening a data file and displaying data channels in the file.

Start ROTATE

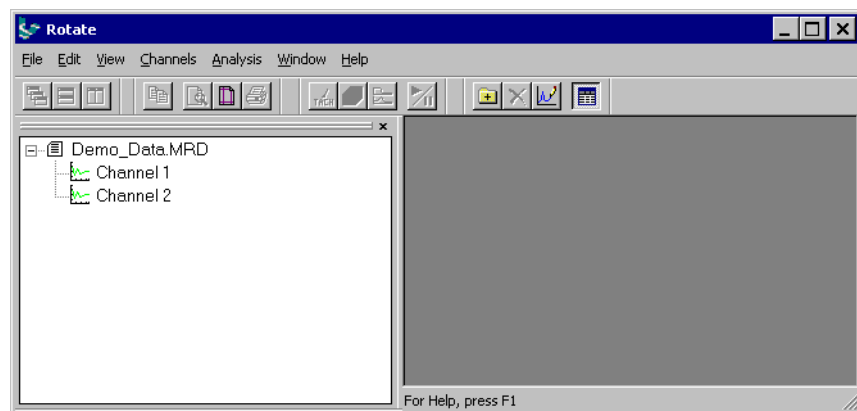
1. To start ROTATE, click Start, point to Programs, then to ROTATE, then click ROTATE. The ROTATE program window appears.




View the Channel List

When ROTATE starts, it displays the Channel List window on the left side of the application.

Hint: Don't worry if the Channels List window is empty, or contains different files than the ones shown in the picture. Adding files to the Channel List window is described below.



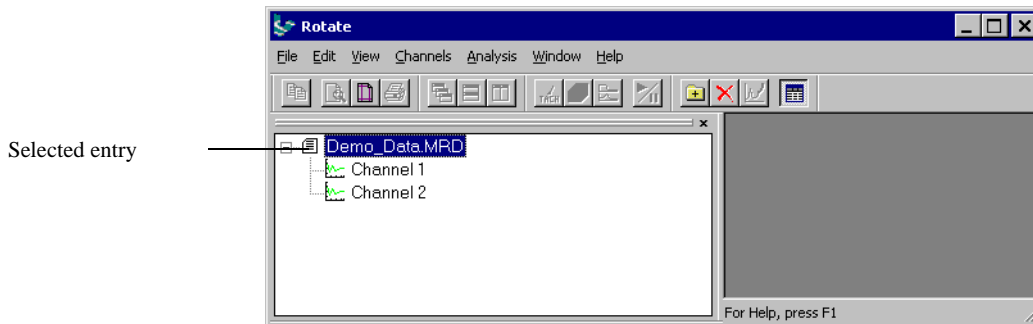
2. You can hide the Channel List window by clicking anywhere on the ROTATE window by pressing Esc, or by clicking on the small "x" in the upper right corner of the Channel List window.
3. You can restore the Channel List window by doing one of the following:
 - Right-click on the ROTATE window.

- Press Ctrl+L.
- Click the Channel List button .
- From the Channels menu choose Channel List Window.

Remove entries from the Channel List

Removing entries from the Channel List window does not delete any data, and you can add the data files back in at any time.

4. Select the demo data file in the Channel List by clicking the topmost entry in the channel list.



5. Press Del.

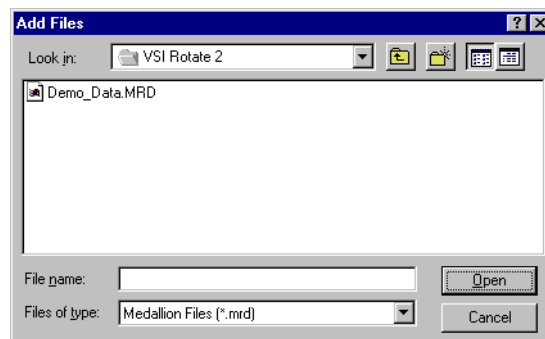
Note that you can only remove entries which represent data files. You cannot remove a channel from within a data file.

Hint: You can also right-click a channel and choose Remove. Note that this removes all selected entries, not just the one you right-clicked. You can also select more than one entry in the list by holding down the Ctrl key and clicking additional entries. If you hold down the Shift key, you can select a range of entries

Add a Data File


Adding a data file displays all the channels of data from that file. ROTATE can display the channels from a number of different file formats.

6. Right-click on the Channel List and choose Add File
7. Select the correct Files of type. If you don't know the file type, select All Files (*.*). For this example, select Medallion File (*.mrd).



8. Select the Demo_Data.MRD file and choose Open. The data file along with its channels will appear in the Channel List.

Hint: You can also do one of the following to add a file:

- Click the Add File button .
- From the Channels menu choose Add File.


Displaying Data and Processing a Signal

The second section of the Tutorial leads you through displaying a time waveform plot. It then describes the steps to process a tachometer signal to get the instantaneous machine speed in RPM (revolutions per minute).

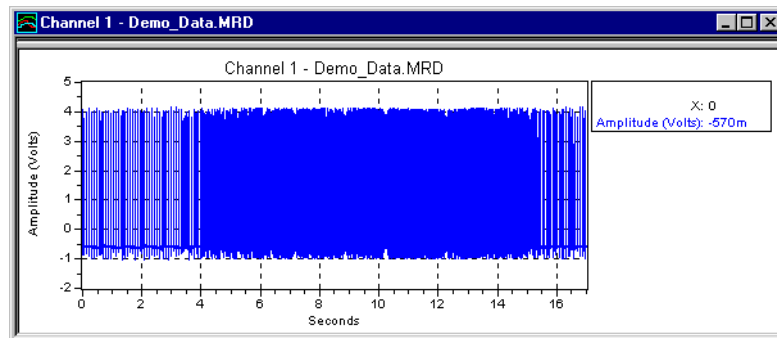
The Demo_Data.MRD file contains two channels.

- Channel 1 is a time waveform of a pulse tachometer signal varying between 0 and 4 Volts.
- Channel 2 is a time waveform from a vibration sensor.

Plot a Time Waveform

1. Make sure that Channel 1 is the only selected channel in the Channel List window. If you do not see the channels, click on the + marker to the left of the data file entry to display its channels. Then right-click Channel 1 and choose Plot. You can also do one of the following:
 - Select the channel and click the Plot button .
 - Double-click the channel.
 - Select the channel and choose Plot from the Channels menu.

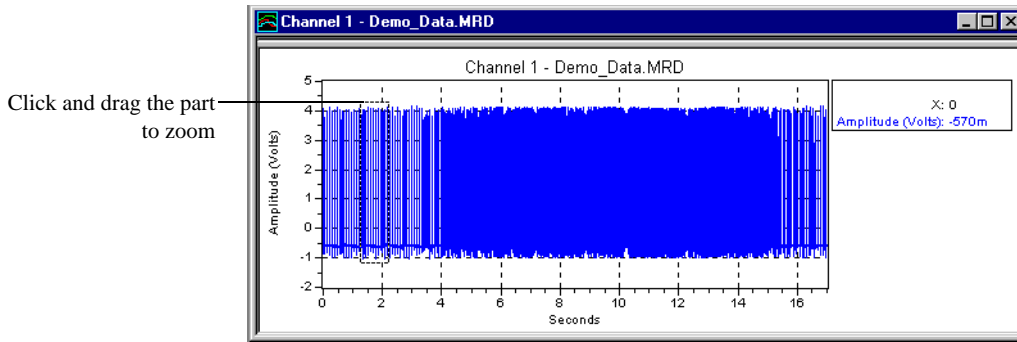
ROTATE displays a plot of the time waveform.



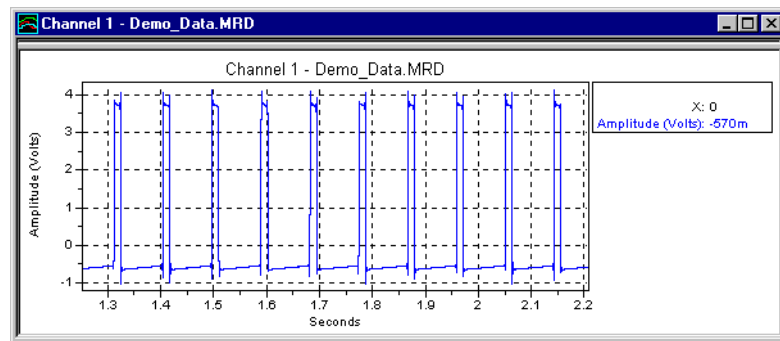
Zoom in on the Time Waveform

2. Right-click the plot and choose Zoom.

- Click and drag the mouse over a part of the plot to enlarge that part of the plot.




The plot redraws the zoomed part when you release the mouse button. Note the signal amplitude is from -0.5 to 4 Volts.

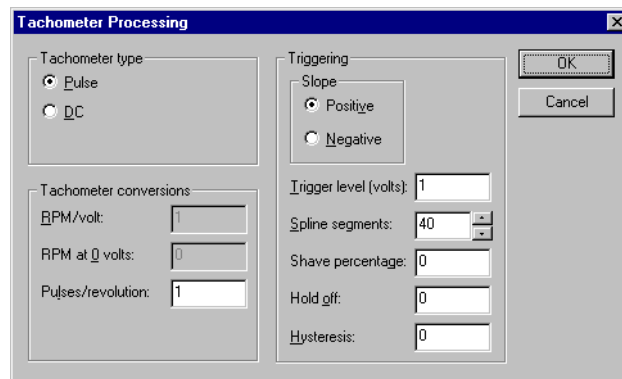


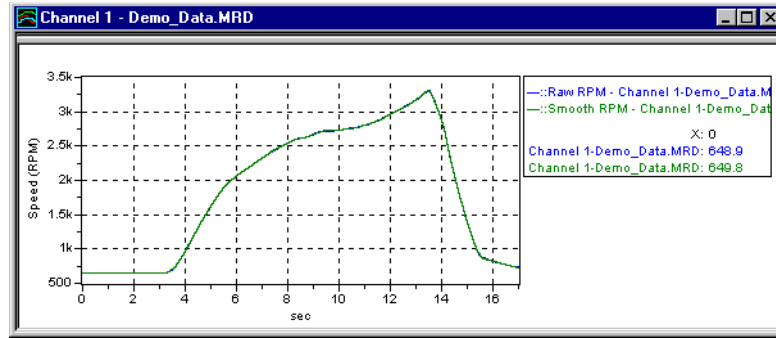
- Right-click the plot and choose Auto-scale to show the whole signal again.

Process a Tachometer Signal

Channel 1 should still be selected in the Channel List window. Channel 1 is a tachometer signal, so you can process it to get the instantaneous RPM. You do not have to display the Channel List window again.

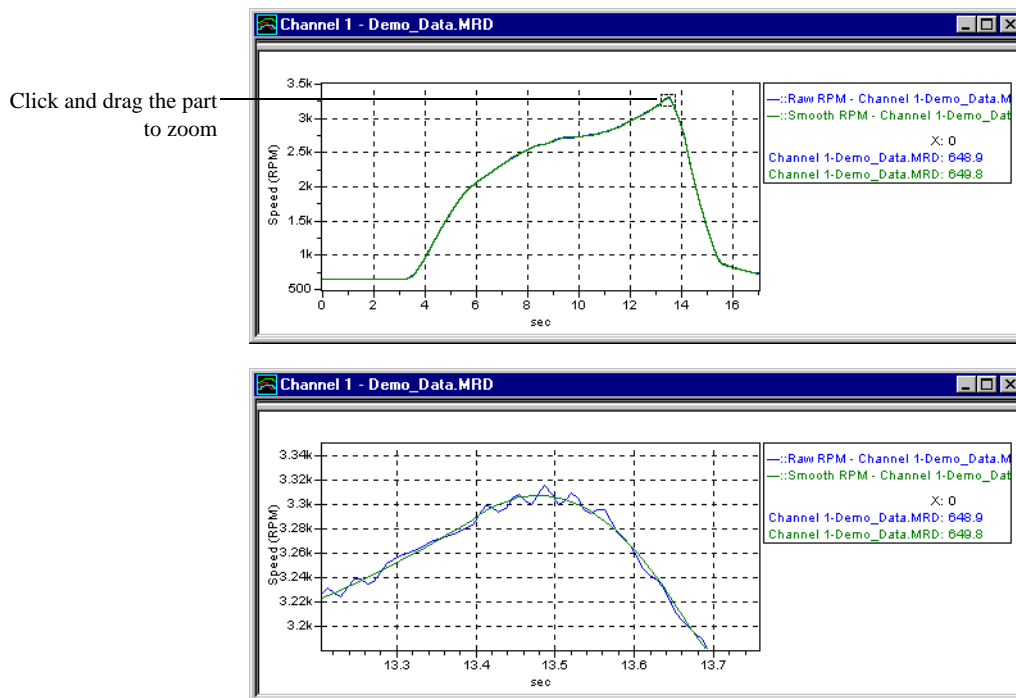
- Click the Tachometer Processing button . You can also choose the Tachometer Processing command from the Analysis menu.
- Make sure the Trigger Level is between 1 and 4 Volts. In general, the trigger level should be in the middle of the amplitude of the tachometer signal for a pulse tachometer. Choose OK to process the tachometer signal.






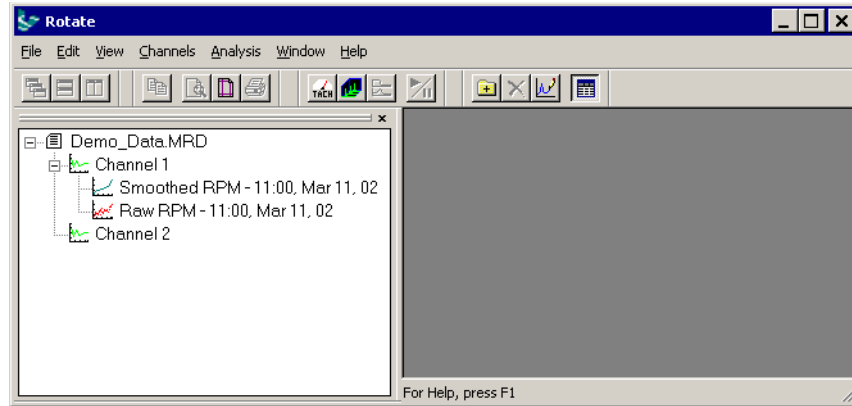
ROTATE displays a plot of the machine RPM. There are actually two curves on the plot. One line is the smoothed (spline-fit) RPM curve. The other line is the Raw RPM curve before ROTATE applied the spline-fit to smooth the RPM curve.

- Zoom in on the peak of the RPM curve to see the two curves. Right-click the plot, choose Zoom, then click and drag over the region you want to zoom.



The smooth curve is the spline-fit RPM curve, while the jagged curve is the raw RPM curve before smoothing.

- Click the Channel List button  or press Ctrl+L to display the Channel List window. Note that there are two new generated files in the Channel List, each with one channel. ROTATE created and saved these files in the Results directory (see “Manage Files” on page 16 to set the Results directory). Note that as the data in “Channel 1” was used to create these files, they will appear as child entries under the entry for “Channel 1”.
 - The smoothrpm0.spl file is the smooth (spline-fit) RPM data.
 - The rpm0.raw file is the Raw RPM data.



Other Types of Analyses

You can perform many other types of analyses in ROTATE to assist in diagnosing a variety of difficult problems.

- Refer to Chapter 3 “ROTATE Applications” for more information on the different types of analyses and their uses.
- Refer to Chapter 4 “ROTATE Plotting Features” for more information on using the plotting functions to manipulate plots.

Exporting a Channel and Managing Files

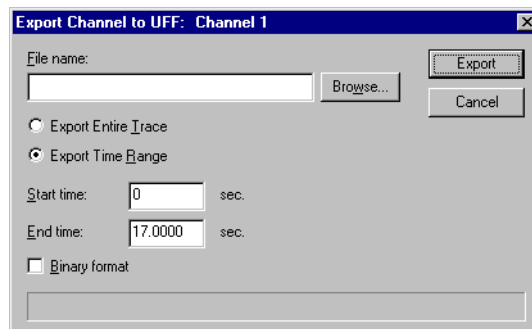
The third section of the Tutorial describes the process of exporting a channel to a Universal File Format (UFF) file. It also describes channel and file management. ROTATE can generate a large number of files during an analysis, and it is important to manage them so that you do not fill up the ROTATE directory with unnecessary files.

Export a Channel to a UFF File

Exporting a channel to a UFF file provides 2 useful functions:

- It creates a new ASCII or binary data file in a widely-accepted format.
- It allows you to export only a part of the file instead of the entire file. For example, the original file might contain 6 hours of data, but you can export just the 5 minutes of data that contain the desired event.

1. Right-click a channel and choose Export to File...



2. Enter the file name and choose Browse to select the directory. Choose Export.