

LabVIEW™ Order Analysis Toolset Release Notes

Version 2.0

These release notes introduce you to the LabVIEW Order Analysis Toolset and contain information about system requirements, installation, new features, version 1.0 VIs removed from version 2.0, and known issues.

Contents

System Requirements.....	1
Installation.....	2
New Features.....	2
Resample Order Tracking Palette	2
Online Data Processing.....	3
Phase Measurement	3
Order Tracking without a Tachometer Signal	3
Data Presentation Palette	4
Replacement of Version 1.0 VIs	4
Known Issues with LabVIEW Order Analysis Toolset 2.0	5

System Requirements

Your system needs the following minimum requirements to run LabVIEW Order Analysis Toolset 2.0:

- Windows 2000/NT/XP/Me/98
- 64 MB of free hard disk space
- 64 MB of RAM
- LabVIEW 6.1 or later Full Development System or Professional Development System



Note Refer to the *LabVIEW Release Notes* for the required system configuration for LabVIEW.

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Note Order analysis is a memory-intensive task, especially when you display spectral maps. Increasing the amount of RAM in your system can significantly increase system performance.

Installation

This section provides instructions for installing the LabVIEW Order Analysis Toolset.



Note Some virus detection programs interfere with the installer. Disable any automatic virus detection programs before you install. After installation, check your hard disk for viruses and enable any virus detection programs you disabled.

(Windows 2000/NT/XP) Complete the following steps to install the LabVIEW Order Analysis Toolset.

1. Log on as an administrator or as a user with administrator privileges.
2. Insert the LabVIEW Order Analysis Toolset 2.0 installation CD into the CD-ROM drive and follow the instructions that appear on the screen. If the startup screen does not appear, select **Start»Run**, navigate to the `Setup` folder on the LabVIEW Order Analysis Toolset 2.0 installation CD, and double-click `OAT.exe`.

(Windows Me/98) Insert the LabVIEW Order Analysis Toolset 2.0 installation CD and follow the instructions that appear on the screen. If the startup screen does not appear, select **Start»Run**, navigate to the `Setup` folder on the LabVIEW Order Analysis Toolset 2.0 installation CD, and double-click `OAT.exe`.

New Features

This section briefly describes the new features in LabVIEW Order Analysis Toolset 2.0. Refer to the *Order Analysis Toolset Help* for information about individual VIs.

Resample Order Tracking Palette

Use the VIs on the **Resample Order Tracking** palette to resample time samples to angle samples for order analysis.

Online Data Processing

Use the VIs on the **Tacho Signal Processing** palette and the **Resample Order Tracking** palette to continuously process data. If you feed data to the VIs block by block, the Tacho Signal Processing and Resample Order Tracking VIs continuously return results, which makes the VIs suitable for online data processing. Most of the Tacho Signal Processing and Resample Order Tracking VIs store internal states as shift registers and have reentrant execution as one of the VI properties. Refer to the *LabVIEW Help* for information about reentrant VIs and VI properties.

The Tacho Signal Processing and Resample Order Tracking VIs designed for online data processing have a control named **reset?**. To process a large data sequence that has been split into smaller blocks, set **reset?** to TRUE for the first block of data and to FALSE for continuous processing of all remaining data blocks.



Note To use the Tacho Signal Processing and Resample Order Tracking VIs for online data processing of multiple channels, place one VI for each channel on the block diagram. Do not place the Tacho Signal Processing and Resample Order Tracking VIs in loop structures for online data processing of multiple channels. The VIs maintain internal state information for a single channel only. Calling the VIs to process another channel without using **reset?** to initialize the internal states to zero results in inaccurate data because the internal state information is passed from one channel to another.

Phase Measurement

The order tracking VIs on the **Gabor Order Tracking** palette and the **Resample Order Tracking** palette now return the phase of each individual order, as well as the magnitude. To calculate phase, use a keyphasor that generates one pulse per revolution as a tachometer in the system under analysis. The LabVIEW Order Analysis Toolset VIs return phase as phase lag. Refer to the *Order Analysis Toolset Help* for information about phase lag.

Order Tracking without a Tachometer Signal

To perform order analysis, you need to know the rotating speed of the shaft. In LabVIEW Order Analysis Toolset 2.0, you can generate a rotational-speed profile without a tachometer. Use the OAT Tachless Speed Profile Generator VI, located on the **Gabor Order Tracking** palette, to interactively define and refine the generated rotational-speed profile on top of the time-frequency spectral map of the vibration signal. Refer to the *Order Analysis Toolset Help* for more information about the OAT Tachless Speed Profile Generator VI.

Data Presentation Palette

LabVIEW Order Analysis Toolset 2.0 contains the following new VIs on the **Data Presentation** palette:

- OAT Auto Labeled Polar Plot
- OAT Manually Labeled Polar Plot
- OAT Unfiltered Orbit Plot
- OAT Filtered Orbit Plot
- OAT Order Grids for Frequency-RPM Plot
- OAT Continuous Waterfall Plot

Use the NI Example Finder, available by selecting **Help»Find Examples**, to find examples using the LabVIEW Order Analysis Toolset Data Presentation VIs. In the NI Example Finder, select **Toolsets and Modules»Order Analysis Toolset»Presenting Data** to access the LabVIEW Order Analysis Toolset data presentation examples.

Replacement of Version 1.0 VIs

Table 1 lists VIs from LabVIEW Order Analysis Toolset 1.0 that remain in the toolset libraries (.lib files) of version 2.0 for backward compatibility. However, the version 1.0 VIs listed in Table 1 do not appear on version 2.0 palettes. Table 1 also lists the version 2.0 VIs that replace the obsolete version 1.0 VIs.

You still can run the version 1.0 VIs listed in Table 1 in LabVIEW Order Analysis Toolset 2.0. However, National Instruments recommends you use the new version 2.0 VIs in place of the version 1.0 VIs. The obsolete VIs from version 1.0 will not be included in future versions of the LabVIEW Order Analysis Toolset.

Table 1. Obsolete VIs from Version 1.0 and Their Version 2.0 Replacements

Version 1.0 Obsolete VI	Version 2.0 Replacement VI
Digital Tach Timing	Digital Tach Timing Ex
Angular Speed	Angular Speed Ex
Order Spectrum (Analog Tach)	OAT Easy Resample Order Spectrum
Order Spectrum (Digital Tach)	
Order Tracking (Analog Tach)	OAT Easy Gabor Order Tracking
Order Tracking (Digital Tach)	

Table 1. Obsolete VIs from Version 1.0 and Their Version 2.0 Replacements (Continued)

Version 1.0 Obsolete VI	Version 2.0 Replacement VI
Significant Order Tracking (Analog Tach)	OAT Easy Significant Gabor Order Tracking
Significant Order Tracking (Digital Tach)	
Spectral Map (Analog Tach)	OAT Easy Gabor Spectral Map
Spectral Map (Digital Tach)	
Compute Magnitudes	Compute Order Magnitude and Phase

Known Issues with LabVIEW Order Analysis Toolset 2.0

Refer to the `lvoat_readme.html` file on the LabVIEW Order Analysis Toolset 2.0 installation CD for information about known issues with LabVIEW Order Analysis Toolset 2.0.