OpenBridge User's Guide

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Table of Contents

Before You Begin

Requirements

The recommended operating system for all TDT systems is Windows 7®.

Organization of the Manual

This manual is organized in the following sections:

➢ Overview
Briefly describes the OpenBridge application.

➢ Workspace Basics
Describes the visual interface and how to select and view data.

➢ Exporting Data in NEX, DDT, and EDF+ Formats
Details techniques for exporting to NEX, DDT, and EDF+ data formats.

➢ Using the Bridge with Offline Sorter
Details techniques for exporting and importing PLX data to and from Plexon's Offline Sorter.

➢ The Toolbar and Menus
A quick reference for the toolbars and menu items.

Overview

OpenBridge serves as both a general export utility and a "bridge" between an OpenEx data tank and Plexon's Offline Sorter. OpenBridge exports to NEX v100, DDT v103, EDF+ EDF and PLX v103 file formats.

General export features:

➢ Allows user selection of events, sorts, and channels for export.

Although EDF+ supports exporting snippets, the OpenBridge EDF+ export function does not support exporting snippets. It does support exporting stream data in the EDF+ format.

The bridge functionality is available for Plexon's Offline Sorter. It allows for a smooth export and return of sorted data back into the OpenEx data tank.

Bridge features:

➢ Manages high channel count data sets as multiple files to accommodate Offline Sorter file limitations.

➢ Automatically launches Offline Sorter on export of PLX or DDT formats.

➢ Preserves channel numbering across applications.

➢ Automatically detects changes to PLX files.

➢ Automatically imports new sorts into the tank.

➢ Cleans up files after all sorts have been merged into the tank.

See Using the Bridge with Offline Sorter, page 11, for more information.

Workspace Basics

About the OpenBridge Workspace

OpenBridge provides a versatile workspace where users manage the export process. The customizable workspace includes collapsible panels that can be docked or floated and provides auto hide push pin tools. Context sensitive menus, when available, can be accessed by right-clicking the related area.
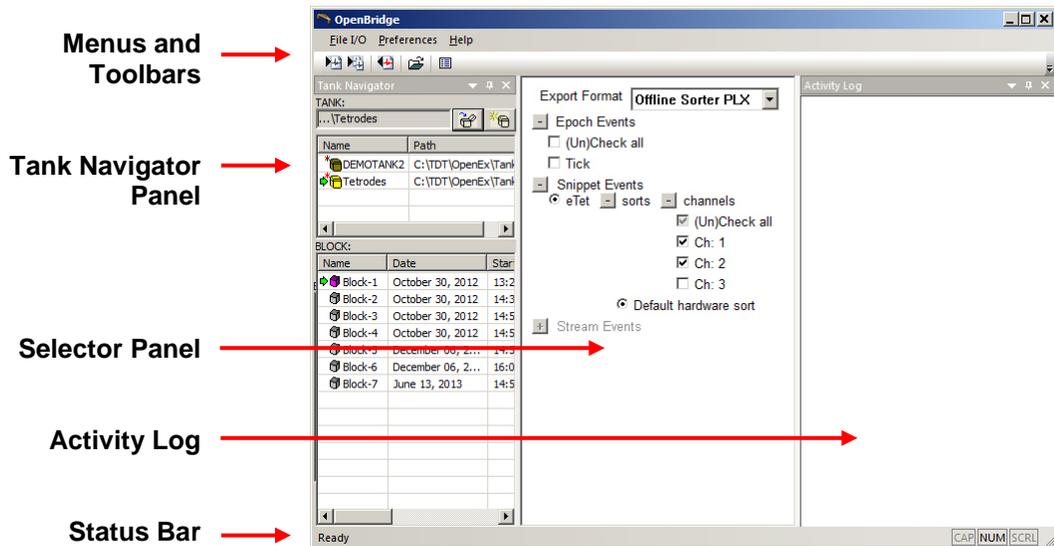
Menus and Toolbars
Menus and toolbars provide access to all commands and tools. Frequently-used commands are available via toolbar buttons. Hover over a toolbar button to display a description of its function in the Status Bar. See The Toolbar and Menus, page 16, for a complete list of commands and tools.

Tank Navigator Panel
A collapsible panel for selecting the tank and block. Registered data tanks are displayed for quick selection.

Selector Panel
This panel is used for selecting export format and data. It shows all available epoch, snippet and stream events for the selected block with check boxes for quick selection of events and channels. Only event types that are allowed for the current export format are available.

Activity Log
Activity records are displayed, including export/import status and names of exported files.

Note: If a panel is not in view, right-click the menu bar area then select the desired panel on the shortcut menu.

Selecting a Data Set in the Tank Navigator Panel

The tank structure is hierarchical; each tank might include multiple blocks, each block might contain several events and each event might include several channels. OpenBridge exports data as channels. Before the channels can be selected for export, the tank, block, and event(s) must be selected.

The Tank Navigator panel displays tanks and blocks to allow the user to select the desired data set. It can be docked or floated depending on the user's needs.
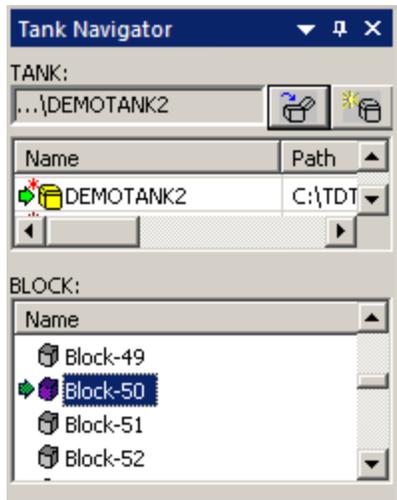
Selecting a Tank

Users can select a tank in the TANK list area of the Tank Navigator. By default, only registered tanks are displayed. More options, including registering or unregistering tanks, are available from the TANK list shortcut menu.

To open an existing tank that is not displayed in the tank list:

1. Click the **Open Existing Tank** icon to open the Browse for Tank dialog and navigate to the desired tank.

2. Click **OK** to select the tank and close the dialog.

To register or unregister a tank:

➢ Right-click the desired tank in the **TANK** list and select the appropriate option from the shortcut menu.

Unregistering a tank does not delete the tank files, however, only registered tanks will be listed in the TANK list at startup.

Selecting a Block

All blocks in the currently selected tank are shown in the BLOCK list area of the Tank Navigator. Choose one of the blocks for export. This will update the available events in the Selector Panel. The shortcut menu in the BLOCK list controls what information is displayed, making it easier to locate the desired block when the selected Tank contains many blocks.

To display the shortcut menu, right-click the BLOCK list:

Refresh	Refresh the BLOCK list.
Details	Toggle details view on and off. This shows the block recording date, start time, stop time and duration of each block. This option is On by default.
Sort	Sort the block list by name instead of start time.
Information	Display the Block Notes window, which contains information on all events contained within the selected block.

When a block is selected, available Epoch Events, Snippet Events and Stream Events (depending on what export format is selected) are enabled in the Selector Panel.

Setting the Export Preferences

The export settings are accessed using the Preferences dialog box.

To open the Preferences dialog box:

➢ Click **Preferences** on the menu bar.

The settings in the Preferences dialog are arranged on tabs, a General tab for options common to more than one export format and individual tabs specific to each export format.
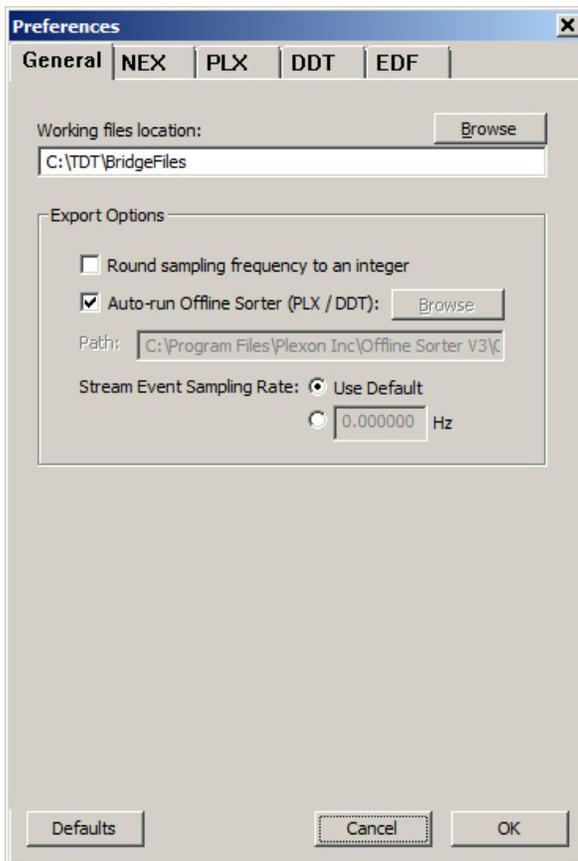
All pages include the Defaults, Cancel and OK buttons for basic dialog operations.

Defaults button	Click to reset all preferences to the default settings.
Cancel button	Click to close the dialog without applying changes.
OK button	Click to apply changes and close dialog.

General Tab

Working files location	Set the location where files will be stored during Bridge export/import operations.
Browse button	Open the Browse for Folder dialog for easy selection of the working files location.
Round sampling frequency to an integer	Some formats use integer sampling rates by default (e.g. PLX) and others allow floating point sampling rates (e.g. DDT). Check this box to force all export files to use an integer sampling rate. This is useful if you need to align two different data formats later on in your data processing.
Auto-run Offline Sorter (PLX/DDT)	Select to launch exported PLX or DDT file in Offline Sorter immediately after export has completed.
Path	Set the path to the Offline Sorter application. This path will vary depending on the operating system and the version of Offline Sorter.
Browse button	Open a dialog for easy selection of the path to the Offline Sorter application.
Stream Event Sampling Rate	Select to use the default or specify a sampling rate in the text field.

NEX, DDT, EDF Tabs

Data Scaling Multiplier	This scalar is applied during export. A typical value of 1000000 is used when converting floating point uV signals into integer formats.

PLX Tab

Export and import options for the PLX data format. See page 11, for more information.

Selecting the Export Format

OpenBridge exports to NEX v100, PLX v103, DDT v103 and EDF+ EDF file formats. The scaling multiplier and other settings for each format are set in the Preferences dialog (see above).

Note: See *Selecting Events*, below, for information on the data types supported by each export format

Use the Export Format drop-down list in the Selector Panel to choose the desired file type.

Selecting Events

The selections in the Selector Panel are used to specify data for export. Only event types in the currently selected block that are supported by the selected export format are available. Plus signs to the left of each event type are used to expand events lists. When the selections are not available they appear light gray. The supported event types for each format are as follows:

NEX   Epoch, Snippet, Stream

PLX   Epoch, Snippet

DDT   Stream

EDF   Stream

To select an Epoch event:

➢ Expand the **Epoch Events** list, if it is available.

➢ Click the checkbox to the left of the event in the list.

To select a Snippet event:

➢ Expand the **Snippet Events** list, if it is available.

➢ Click the radio button for the event.

➢ Expand the **sorts** list and click the radio button to the left of the desired sort.

➢ Expand the **channels** list and use the checkbox(es) to the left of the desired channel(s).

The checkbox next to "(Un)Check all" can be used to select all channels or clear all channel selections.

To select a Stream event:

➢ Expand the **Stream Events** list, if it is available.

➢ Click the checkbox for the event(s).

➢ Expand the **channels** list and click the checkbox(es) to the left of the desired channel(s).

The checkbox next to "(Un)Check all" can be used to select all channels or clear all channel selections.

Exporting Data in NEX, DDT, and EDF Formats

Before exporting, set export format and preferences and select data as described above. Ensure that the desired events, sorts and channel numbers are chosen in the Selector Panel.

Note: See *Selecting Events*, above, for information on the data types supported by each export format.

To export selected channels to a single file:

➢ Click the **Export selected channels** button on the toolbar.

or

Click **Export Channels** in the File I/O menu.

The exported file name format is

TankName_BlockName_SnippetEventName_StreamEventName_Number.xxx

where xxx is the format type and Number increments on each subsequent export.

Exporting Data using Batch Processing

Batch processing eliminates the need to configure or apply the export to each block, however, it takes additional processing time. You will need to allow for this extra time in your workflow.

Batching works by applying an export configuration file (*.obconf) to the blocks in a tank.

To create the configuration file:

- Ensure that the desired export format and events, sorts and channel numbers are chosen in the Selector Panel, then click **Export** on the **Configurations** menu.

  Specify location and file name, then save.

  Your selections are saved in the exported configuration file (*.obconf).

To run a batch export over many blocks in the same tank.

- Modify a command line string as follows:

  C:\TDT\OpenEx\Bridge\OpenBridge.exe -tank C:\TDT\OpenEx\Tanks\DEMOTANK2 -configuration C:\TDT\test.obconf -blocks -logPath C:\TDT\BridgeFiles

  Where:

  C:\TDT\OpenEx\Bridge\OpenBridge.exe   is the path to the OpenBridge application

  C:\TDT\OpenEx\Tanks\DEMOTANK2   is the tank path

  C:\TDT\test.obconf   is the configuration file path

  C:\TDT\BridgeFiles   is the destination path

  Note: you will need to modify the exact prompt to include correct paths, file names, and block information.

  OpenBridge will use the configuration from the .obconf file to export all blocks in the tank.

  If you want to export a subset of the blocks in the tank, add the "-blocks" switch with a comma separated list of blocks. For example: use ‑blocks "Block-1,Block-2,Block-4" to export these three blocks only.

- Type or paste the command string into the command line or into the search box on the **Start** menu to launch.

  OpenBridge and run the command. When the command is run, the OpenBridge window will launch, perform the export, and then close..

Using the Bridge with Offline Sorter

The OpenBridge exports data to PLX format and can automate and simplify much of the export/import process. It can launch Offline Sorter, manage channel numbering and file handling, and then import data back into the TDT data tank. Work through the steps in this section to make full use of the automated PLX format features in OpenBridge.

When exporting to PLX file format, snippet and epoch data is exported from the tank and analyzed in Offline Sorter to create new sort codes. After the new PLX file is saved in Offline Sorter, OpenBridge can automatically detect when new sort code information is available and reintegrate this new sort code information back into the tank using a new sort name or *Sort ID*. Once the process is complete, data can be viewed or used for further analysis in OpenSorter, Matlab or OpenExplorer.

The diagram below illustrates the basic OpenBridge workflow. User preferences control and configure all automated processes.
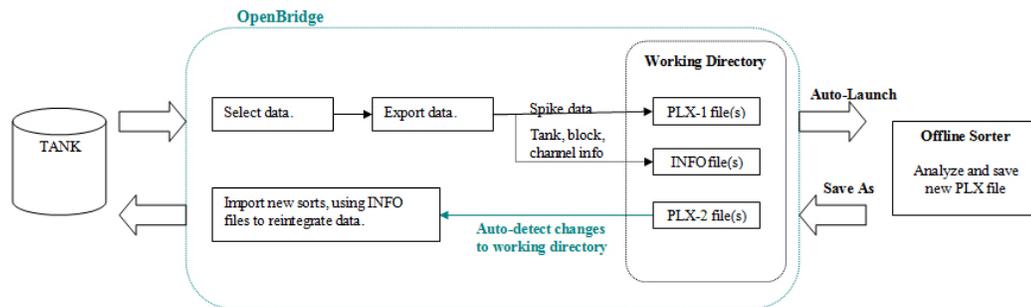
The OpenBridge PLX Workflow

Setting PLX Export Preferences

The PLX export settings are accessed using the PLX tab of the Preferences dialog.

To open the PLX Preferences dialog:

➢ Click **Preferences** on the menu bar.

➢ Click the PLX tab.
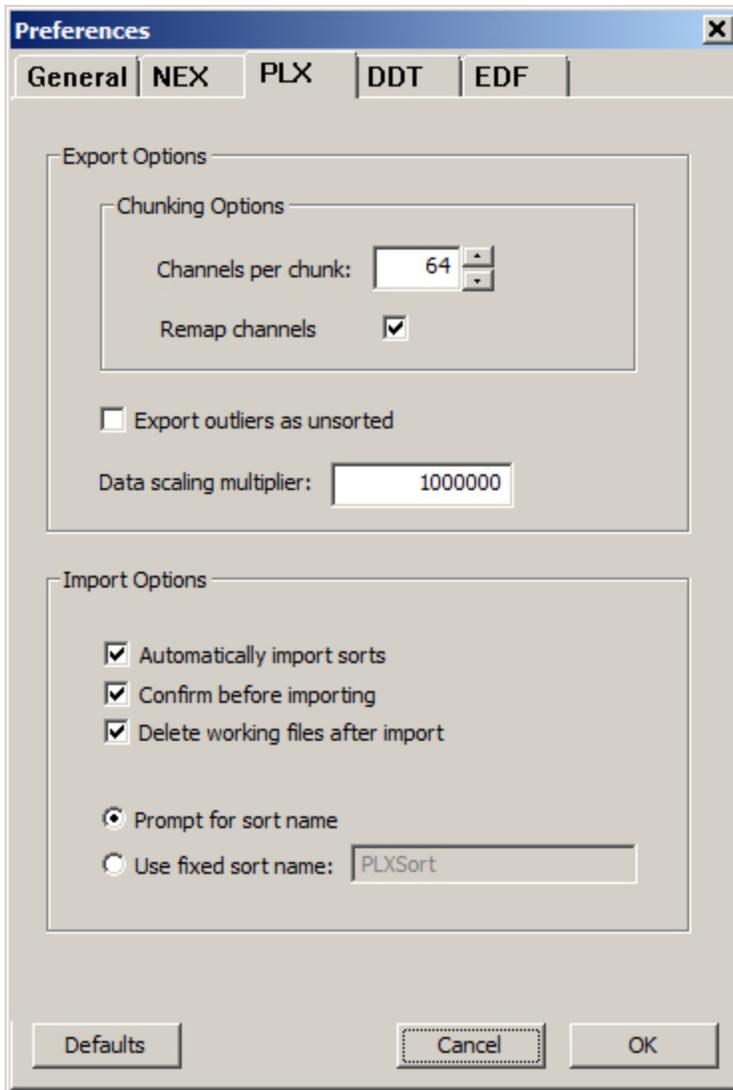
Export Options

Channels per chunk	Set the number of channels to include in each PLX file during export of high channel count data sets. If exported channel count is higher than this number, multiple files will be exported, each with up to this many channels in it.
Remap channels	Select to renumber channels in sequential order when exporting a subset of channels. Clear to maintain original channel numbering.
Export outliers as unsorted	Select to mark outliers (sort code 31 in OpenEx data tank) as "Invalid" when exported to PLX. This allows Offline Sorter to properly recognize these events as outliers.
Data Scaling Multiplier	Enter the desired scaling multiplier to be applied on export. This is typically set to 1000000 to convert floating point uV signals into integer format.

Import Options

Automatically import sorts	Select to allow auto-import of sorts when changes to PLX files in the working files folder are detected.
Confirm before importing	Select to prompt for import when changes to PLX files in the working files folder are detected.
Delete working files after import	Select to allow PLX files in the defined working files folder to be automatically deleted after new sort data are imported. This includes the PLX file with the new sort information.
Prompt for sort name	Select to prompt for sort name when sorts are imported.
Use fixed sort name	Select and define a sort name to be used automatically when sorts are imported.

Once all preferences have been set, ensure PLX is selected in the Export Format drop-down list.

Exporting Channels

Before exporting, set preferences and select data as described above. Ensure that the desired events, sorts and channel numbers are chosen in the Selector Panel

To export selected channels to a single file:

➤ Click the Export selected channels button on the toolbar.

   or

   Click Export Channels in the File I/O menu.

➤ If the *Auto-run Offline Sorter (PLX / DDT)* option is selected in the OpenBridge Preferences, Offline Sorter will be launched and the exported data set will be loaded automatically.

   Note: The Offline Sorter Hardware key must be connected to enable all features. If a warning message is displayed, insert the key before continuing. You will need to close and re-open Offline Sorter.

➤ If the *Auto-run Offline Sorter(PLX / DDT)* option is NOT selected in the OpenBridge Preferences, launch Offline Sorter and load the PLX file created during export.

   The PLX file is stored in the working folder (set in the Preference dialog) and named using the following convention:

   TankName_BlockName_SnippetEventName__Number.plx

   Number is incremented on each subsequent export.

Exporting Tetrode Recordings

The TetSort power macro, available in the SpikePac supplement, concatenates the four snippets of a tetrode into one long snippet and saves that to a single channel in the OpenEx data tank. When exporting to PLX, Plexon's Offline Sorter expects the data from each tetrode to be in four unique channels. OpenBridge automatically detects tetrode data in the OpenEx data tank and splits each tetrode snippet into individual channels on export.

Importing Channels

After you have completed sorting and analysis in Offline Sorter, save the file to the OpenBridge Working directory.

Depending on selections in the Preferences dialog, OpenBridge may:

➢ Auto-detect the new sort data.

➢ Automatically import new sort data.

➢ Prompt for confirmation before importing.
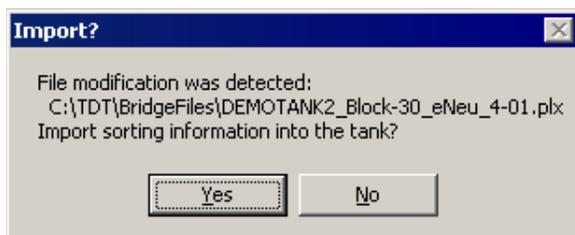
➢ Prompt for a sort name before importing.
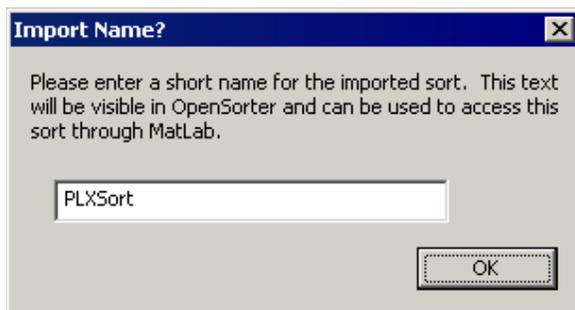
You can control these behaviors on the PLX and General tabs of the Preference dialog.

If OpenBridge is not set to auto-detect new sort information, you can import the information manually.

To import sorting information manually:

1. Click the **Import Sorted Files** button, to launch the *Import Sorting from PLX* dialog.
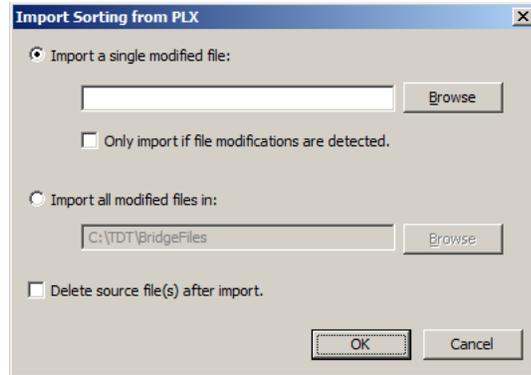
In this dialog you can choose to import sort information from a single file or all files in the working directory. You can also choose whether or not to delete source file(s) after import.

2. Click the desired radio button and browse for the new file.

3. Click **OK**.

4. If you are prompted to enter a sort name, type the new name and click **OK**.

The Toolbar and Menus

The OpenBridge Toolbar

The Standard Toolbar provides access to the most common OpenBridge commands.

	Export Selected Channels	Export selected channels to the working files location in the selected export format.
	Export Selected Channels in Chunks	Export selected channels in chunks to the working files location. This is only available when exporting to PLX format. Each chunk of channels is exported into a separate file. The number of channels in each chunk is set in the Preferences dialog PLX tab.
	Import Sorted Files	Launch *the Import Sorting from PLX* dialog, enabling users to select a single file or all modified PLX files for import.
	Open Export Directory	Open the working files location in Windows Explorer.
	Setup Preferences	Launch the Preferences dialog box.

OpenBridge File I/O Menu

Export Channels	Export selected channels to the working files location in the selected export format.
Export Chunks	Export selected channels in chunks to the working files location. This is only available when exporting to PLX format. Each chunk of channels is exported into a separate file. The number of channels in each chunk is set in the Preferences dialog PLX tab.
Import PLX Sorts	Launch the *Import Sorting from PLX* dialog, enabling users to select a single file or all modified PLX files for import.
Explore Export Directory	Open the working files location in Windows Explorer.
Exit	Exit the OpenBridge application.

OpenBridge Preferences Menu

Launch the Preferences dialog.

OpenBridge Configuration Menu

Import   Imports, previously exported configurations information from an *.obconf file. Helps ensure consistent settings are used from block to block.

Export   Exports all necessary export configuration settings, including export format and preference settings, channels/sorts as well as the setting for the desired sample rate for stream exports.

OpenBridge Help Menu

About OpenBridge   Display version number information.