



SA-Leica TPS Theodolite Driver Installation Manual

New River Kinematics, Inc.

SpatialAnalyzer™ – Leica TPS Theodolite Driver Installation Manual

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Introduction

This manual describes the process to load the New River Kinematics developed firmware drivers for Leica TPS series Theodolites. The firmware drivers are used to enable SpatialAnalyzer's Theodolite manager to use the advanced features of the instruments in surveys.

General Requirements

The general requirements for loading the NRK Theodolite Driver onto Leica Theodolites are a Windows operating system, open COM1 or COM2 port on the computer, and a serial cable between the instrument and computer.

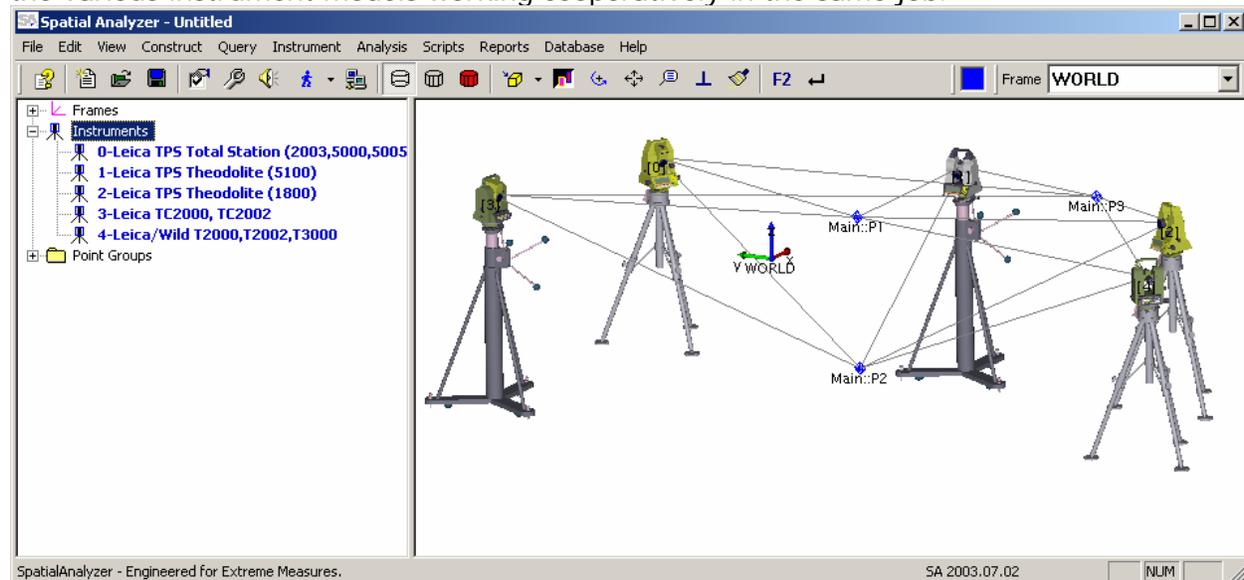
Retrieve the [Theodolite Drivers](http://www.kinematics.com) file from the <http://www.kinematics.com> website. Go to SpatialAnalyzer file download page. The Theodolite Drivers are in a zip file that you should save to your computer's hard drive. The file is called [NRK Leica Scope Drivers.zip]. Unzip the file onto the computer that will communicate with the instruments.

Theodolite Manager

SpatialAnalyzer's Theodolite Manager provides a solution for interfacing all modern digital theodolites to SpatialAnalyzer. Theodolite Manager communicates through standard RS-232 serial ports to a wide variety of both conventional theodolites and total stations.

Theodolite Types

SpatialAnalyzer supports all of the Leica Theodolite instruments. The figure below shows the various instrument models working cooperatively in the same job.



For configuration purposes there are different NRK_TS applications to run the different theodolite models. The differences are based on the instrument capabilities which define their basic measurement type, communication and display options. For example some older instrument types have differences in the amount of information the displays are able to show.

The three basic types are TPS, TM, and T1800. The table below shows the instruments and their respective NRK_TS application.



	Instrument	NRK_TS Application
1.	TPS-2003, TPS-5000, TPS-5005, and all of the TDA instruments	TPSTS.gba
2.	TM5100	TM5100M.GBA (Theodolite Manager) TMA5100U.GBA (UTIM)
3.	T1800	T1800.gba

Interface Cabling

The serial cable between the instrument and computer must be connected. Leica's Workbench TPS application requires that you use COM1 or COM2 on the computer to configure an instrument.

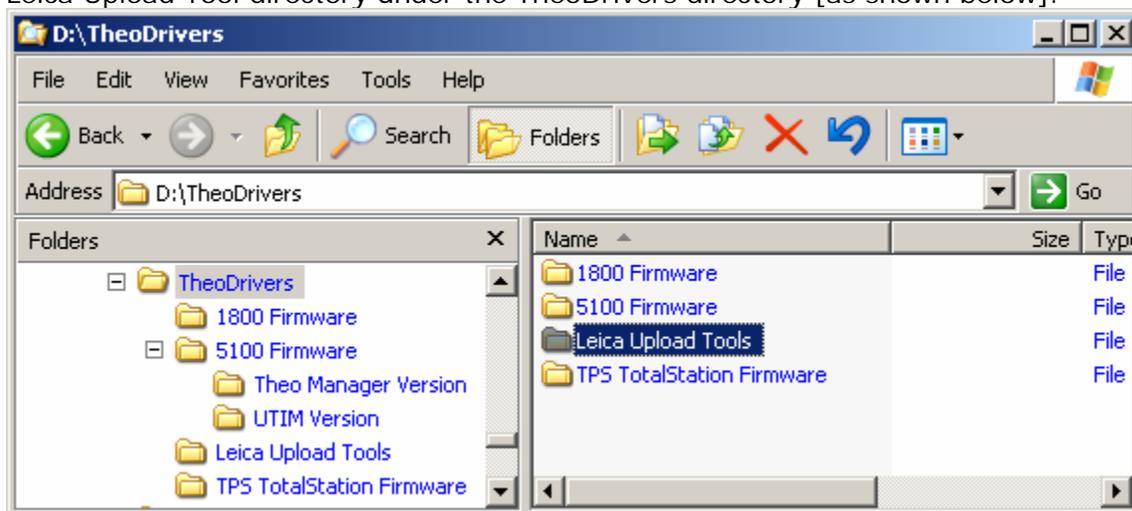
Configuring Theodolite Communication Mode for Upload

To upload the NRK_TS application to the instrument we first need to follow the process to configure the instrument to communicate with Leica's TPS Workbench application. Leica requires that the instrument be in a mode called 'On-line GeoComm'. To enter the On-line GeoComm mode:

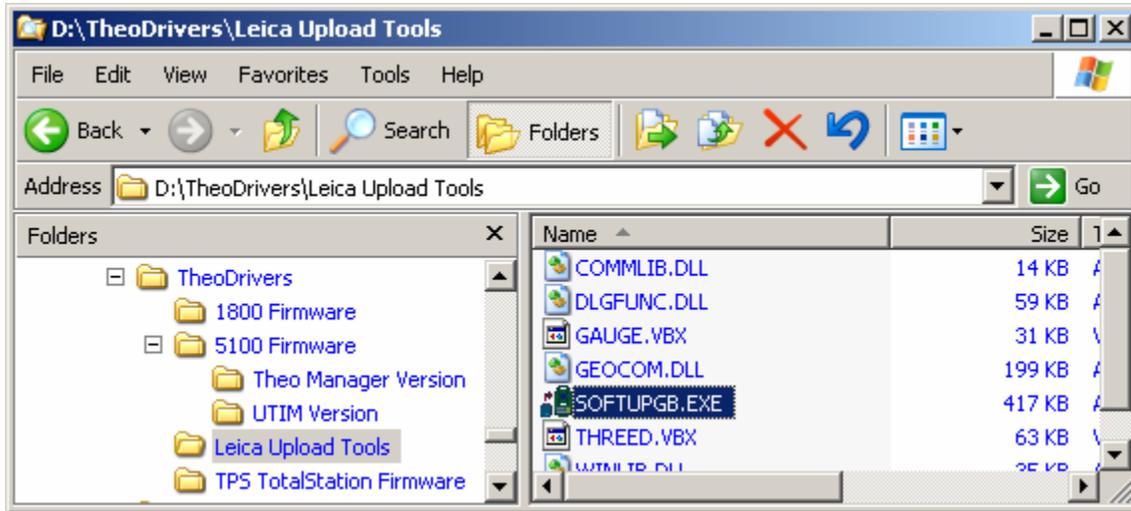
1. Rough level the instrument
2. Select the EXRTA option from the Theodolite menu choices
3. Select the 'On-Line Mode (GeoComm)' program
4. Hit the enter key on the instrument
5. Select the Yes option from the instrument's menu
6. The menu should then go blank and the instrument panel will indicate that it is in the 'On-line Mode (GeoComm)' state.

Running Workbench TPS

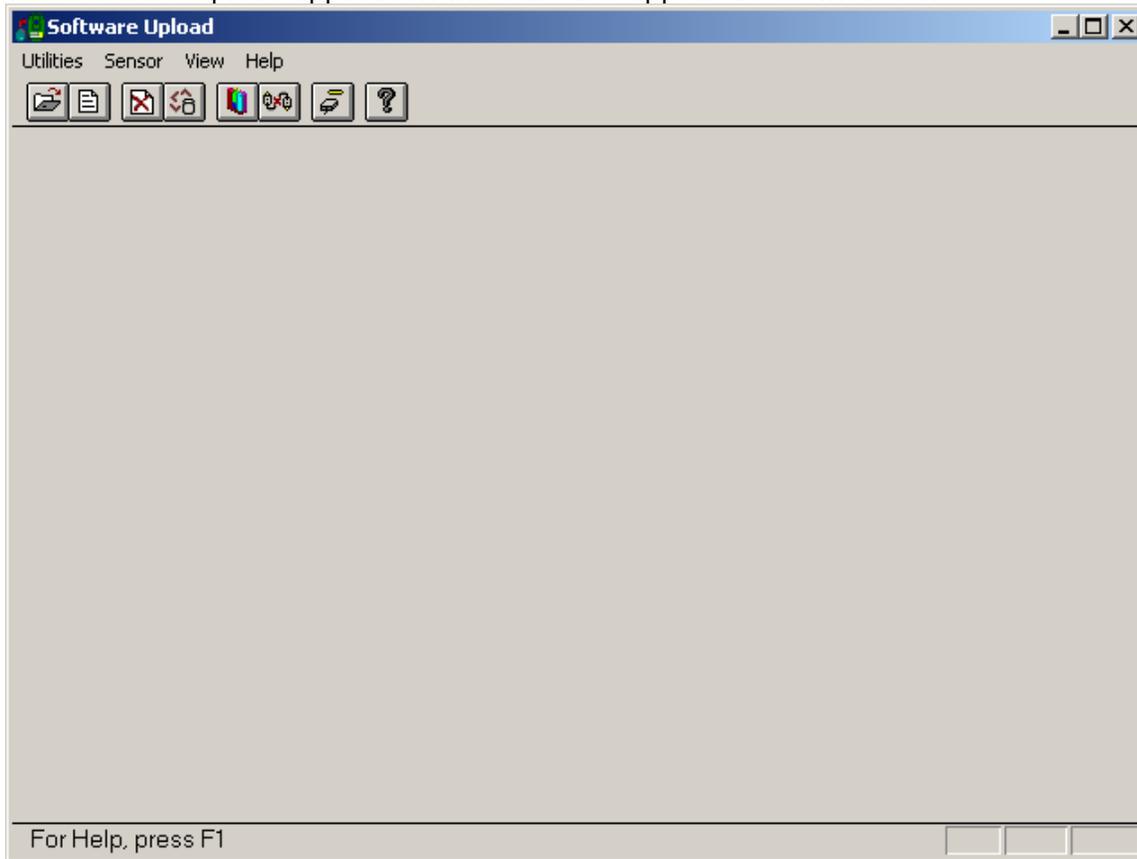
The next step to complete is to run the Leica Software Upload application. Navigate to the Leica Upload Tool directory under the TheoDrivers directory [as shown below].



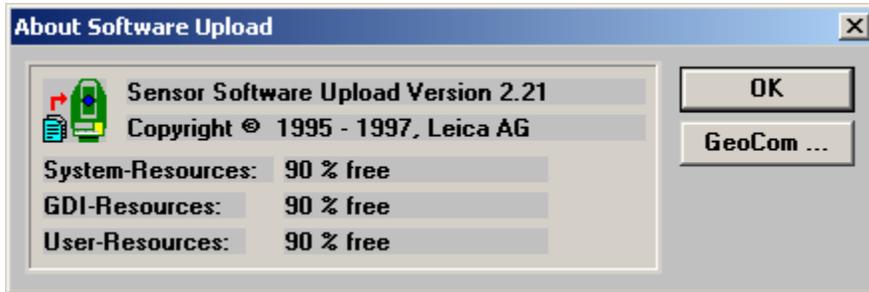
Select the SoftUpGB.exe application and start it by double clicking it.



The Software Upload application will start and appear as shown below.

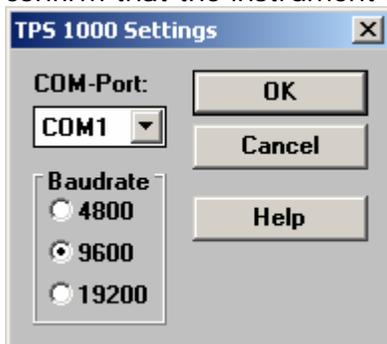


The about box for the application is shown below.

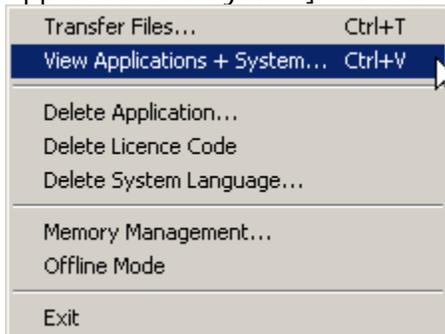


Serial Communication Settings

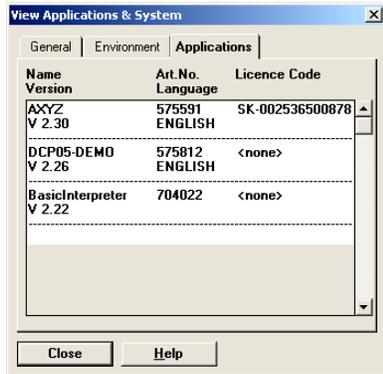
The communication setting for the instrument and computer running the Upload Tool have to be consistent. The dialog below shows the settings for COM1 and 9600 baud. Please confirm that the instrument and compute operate with consistent settings.



Check the application currently loaded on the instrument by selecting the [Utilities >> View Applications + System] menu choice (as shown below.)



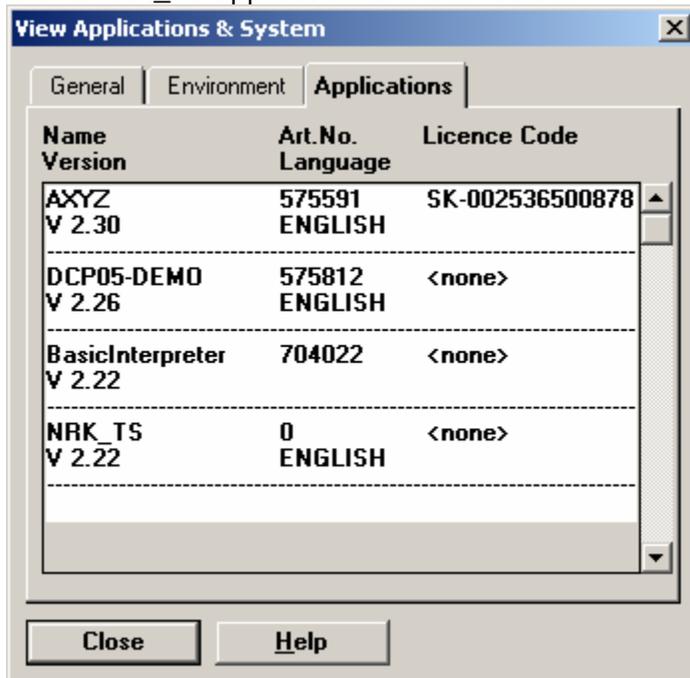
If the instrument is in 'On-line Mode (GeoComm)' mode the View Applications & System dialog box will show the applications currently held within instruments. The figures below shows an example of the three tabs from the dialog.



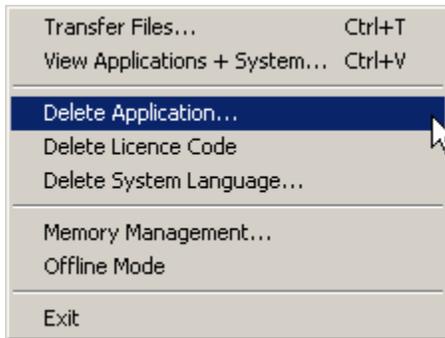
If the Applications tab shows that the NRK_TS application is already on the instrument. You should be ready to use the instrument with SpatialAnalyzer by restarting the instrument and running the application. If you need to either change or reload the NRK_TS application please follow the steps in the 'Deleting a prior version of NRK_TS' section before uploading a new copy.

Deleting a prior version of NRK_TS

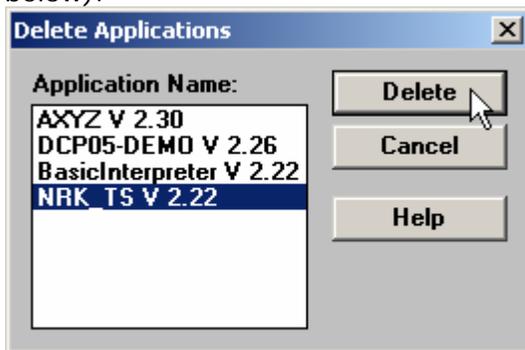
If the NRK_TS application is already on the instrument it must be deleted before uploading either the same or different version. An example of the Application tab from an instrument with a NRK_TS application is shown below.



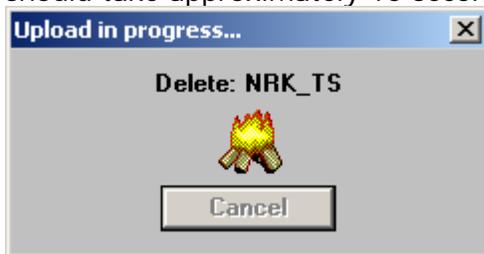
To delete an existing application from the instrument please select the [Utilities >> Delete Application] menu option (as shown below).



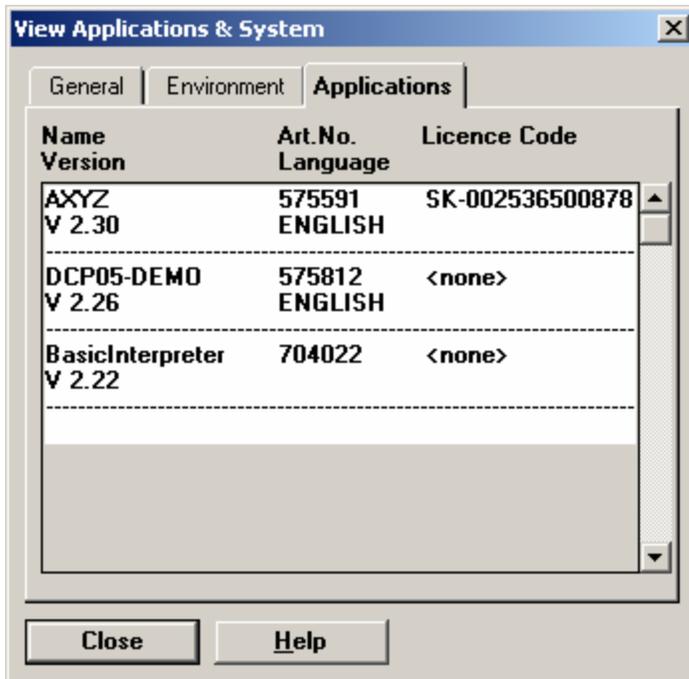
Select the NRK_TS application from the list and then hit the Delete button (as shown below).



A dialog (shown below) during the deleting process should be displayed. This process should take approximately 10 seconds.

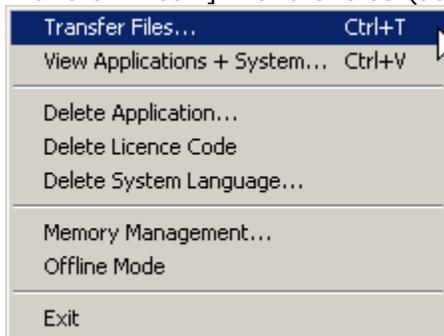


Confirm the deletion by selecting the [Utilites >> View Applications + System...] menu choice. It should appear as shown below.

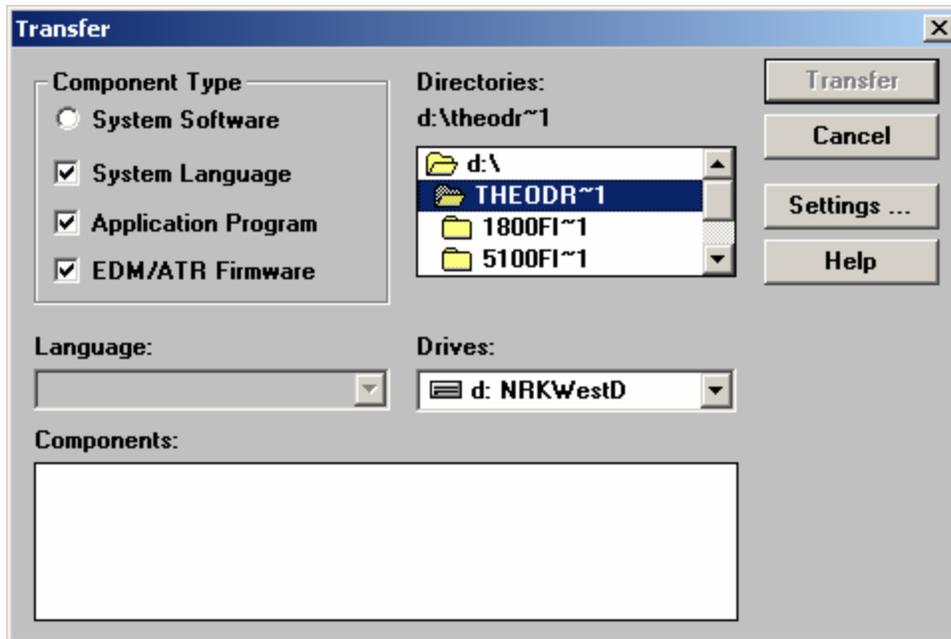


Uploading

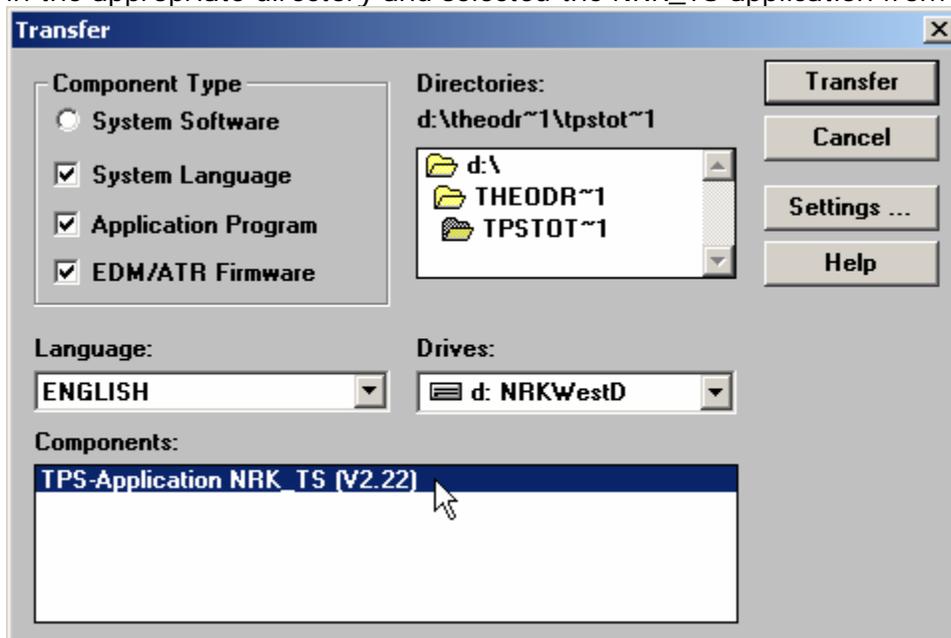
Loading the NRK_TS application on the instrument is done by selecting the [Utilities >> Transfer Files...] menu choice (as shown below).



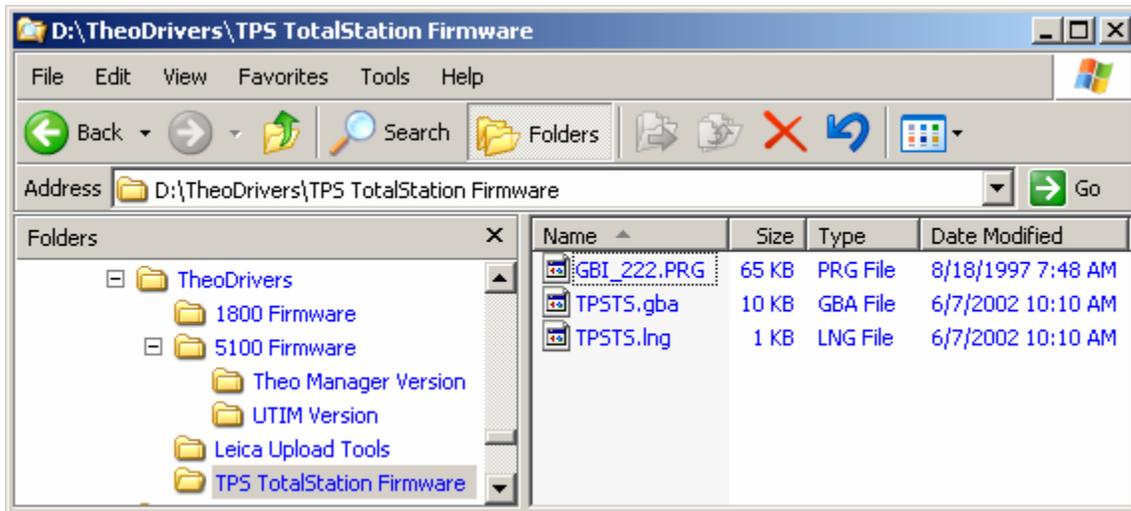
The Transfer Files menu choice brings up a file transfer dialog as shown below.



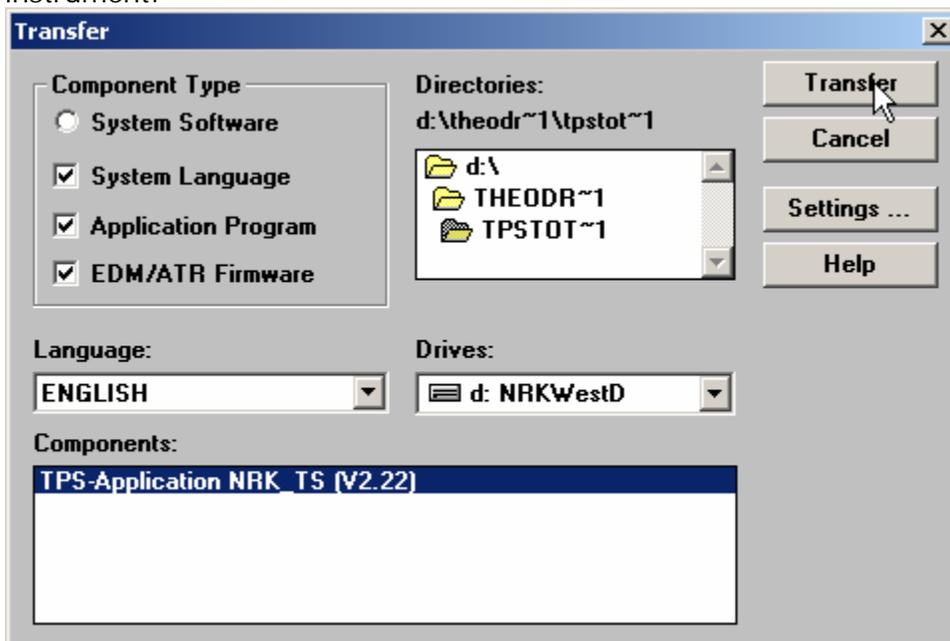
This dialog allows you to select the appropriate program for your instrument. Using the [Directories control] navigate to the appropriate subdirectory under the TheoDrivers directory. As an example we will use the TPS Total Station instrument. The process is similar for the other instrument types. The dialog will appear as shown below when you are in the appropriate directory and selected the NRK_TS application from the Components list.



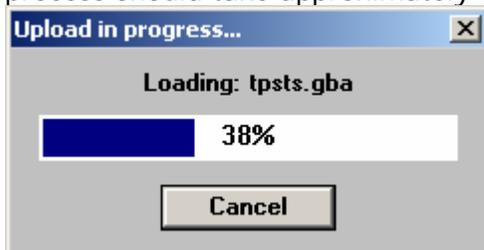
The directory should contain at least three files as shown below.



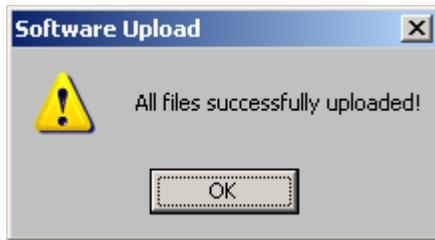
The next step is to select the Transfer button and the application will be set to the instrument.



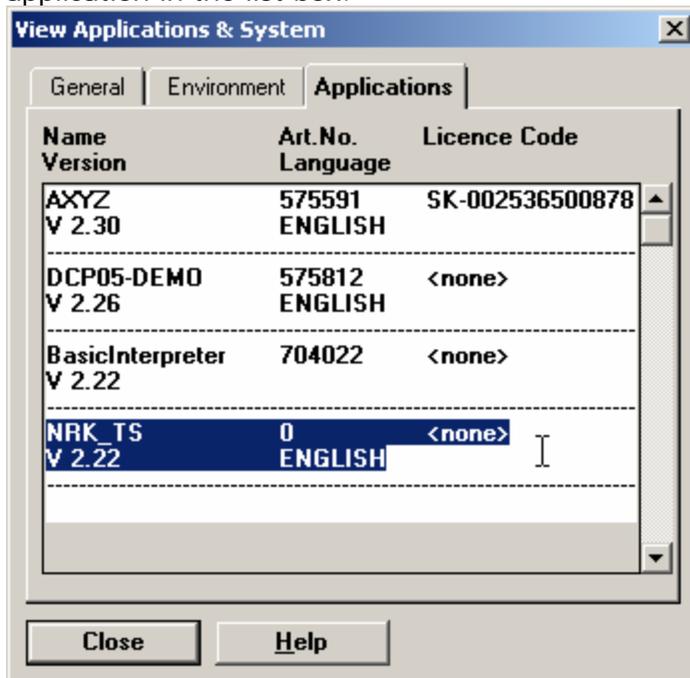
During the upload process a dialog like that shown below indicates the progress. The process should take approximately 30 seconds.



When the application transfer is complete a message box (shown below) appears to confirm.



To double check that that NRK_TS application is on the instrument select the [Utilities >> View Applications & System...] menu choice. The dialog should appear with the NRK_TS application in the list box.



The instrument must be turned off and then back on again to take it out of the On-Line Mode (GeoComm)' program. After turning it back on the SpatialAnalyzer program will appear on the instruments menu of applications to run.

Running the NRK_TS Program

Select the SpatialAnalyzer application from the menu on the instrument key board and the instrument will load the necessary communication and control options to work with SpatialAnalyzer. You are now ready to start the Theodolite Manager with SpatialAnalyzer.

Configuring Theodolite Defaults

On most of the modern Leica Theodolites the option to have the instrument automatically run the SpatialAnalyzer program is available. Please select the Config option on the instrument and follow the process to set the default program to SpatialAnalyzer.