

Nikon Exchange

version 1.00



Manual

Important Notice

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Version History

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1. Introduction

Nikon Exchange is a utility that can be used together with Nikon Surveying Instruments that output the Nikon RAW data format v2.00. This utility allows you to transfer data between the instrument and your PC. The program offers a simple, user-friendly interface that supports several data conversions.

Available functions:

- Download data (raw or XYZ) from the instrument.
- Upload coordinates to the instrument.
- Upload code file to the instrument.
- View / Edit data using notepad or another user defined editor.
- Selectable coordinate order NEZ/ENZ.
- User customizable communication settings.
- Automatic re-creation of NikonExchange.ini, using default settings.
- Data format conversions from download format to:
 - MAPA 2 raw data format.
 - SDR-2x and SDR-33 raw and coordinate data format.
 - KOF raw and coordinate data format.
 - Coordinate file.
 - DXF.

Nikon Exchange runs under Microsoft Windows 9x//NT/2000. Therefore is easy and simple to use and just a few mouse clicks are enough to start downloading or uploading data.

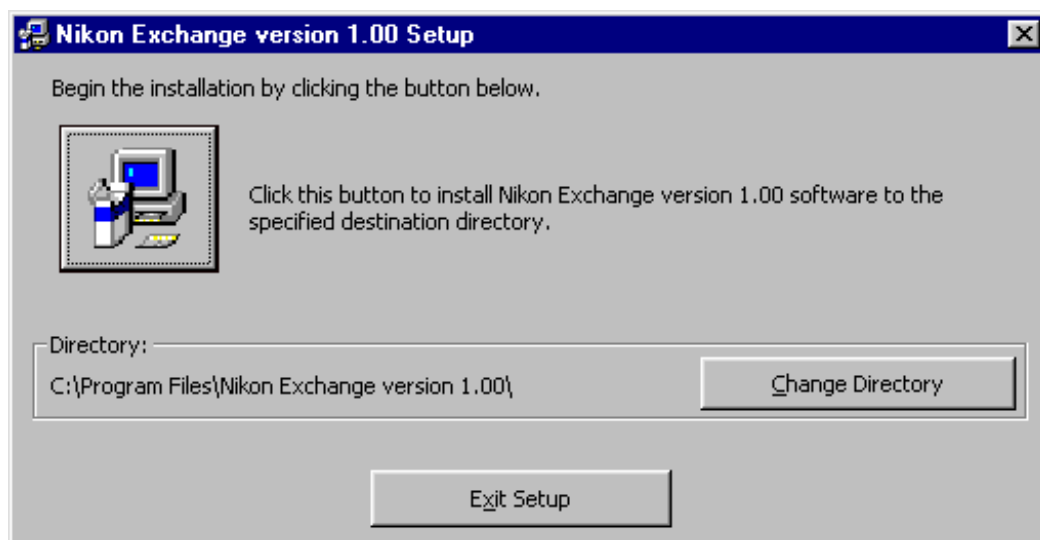
2. Installation

To install the program on the computer the user should run the setup program that is supplied on the distribution CD.

Please put the CD in the CD-ROM drive. The setup program runs under Microsoft Windows 9x/NT/2000, so ensure that Windows is running.

To start the setup program execute the file SETUP.EXE from the installation CD.

After copying the temporary installation files to the computer, the setup program will ask the user to specify the information necessary to install the software.



The user can specify the installation directory, if the directory does not exist, the program will generate the directory.

Next the program will ask the user to specify a program group or accept the default by clicking on *Continue* button. The file copy procedure will start, when the installation is completed the following window will appear.



The installation is now complete. The user can start Nikon Exchange by selecting the Nikon Exchange shortcut from the Nikon Exchange program group located under the Programs folder on the Start menu.

3. Starting the Program

As Nikon Exchange requires Microsoft Windows 9x/NT/2000, ensure that Windows is running before starting the software. Select the Nikon Exchange shortcut from the Nikon Exchange program group located under the Programs folder on the Start menu.

While loading the program will show the introduction logo.



After a few seconds the program will start. The first time, the program will be auto-configured with the default settings: COM1,19200,8,N,1,Xon/Xoff etc. The user should customize these settings only the first time that the program has run, as the program will always remember the last used settings.

Additional tool tips are available for each item. Simply leave the mouse on the item in question and a tool tip text explaining its functionality will appear.

The program is divided to three major sections selectable by the tabs below the title bar of the main window (*Receive/Send/Settings*). The usage of each tab will be explained in the next chapters.

The buttons at the bottom of the screen *Help* and *Exit* are always available, no matter which of the tabs is active.



Program exit

Clicking the *Exit* button terminates the program and stores all changes made in *NikonExchange.ini* file, so that the next time the program is launched all of the user-defined preferences will be retrieved.

Help window

Clicking the *Help* button displays the help window. The default window is shown below.



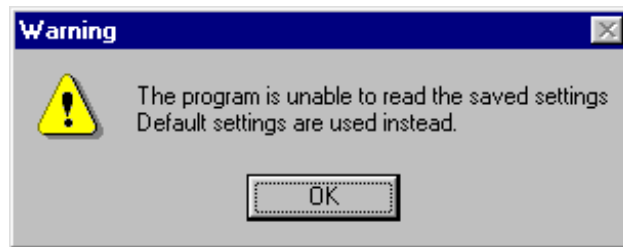
This window is divided into three sections, indicated by the frames:

- *Contact information:* Displays information about your local Nikon distributor.
- *Nikon on the Net:* Internet links concerning Nikon Surveying Instruments. Clicking any of these links will launch the default web browser and load the corresponding web page, providing a working Internet connection exists.
- *Nikon Exchange Help:* Opens and displays this manual.

Click the *OK* button to close the help window and return to the main program.

Emergency Program Start

The program stores the last used settings in the file *NikonExchange.ini*, located at the program directory. In case that *NikonExchange.ini* is missing or damaged, the program will display a warning message.



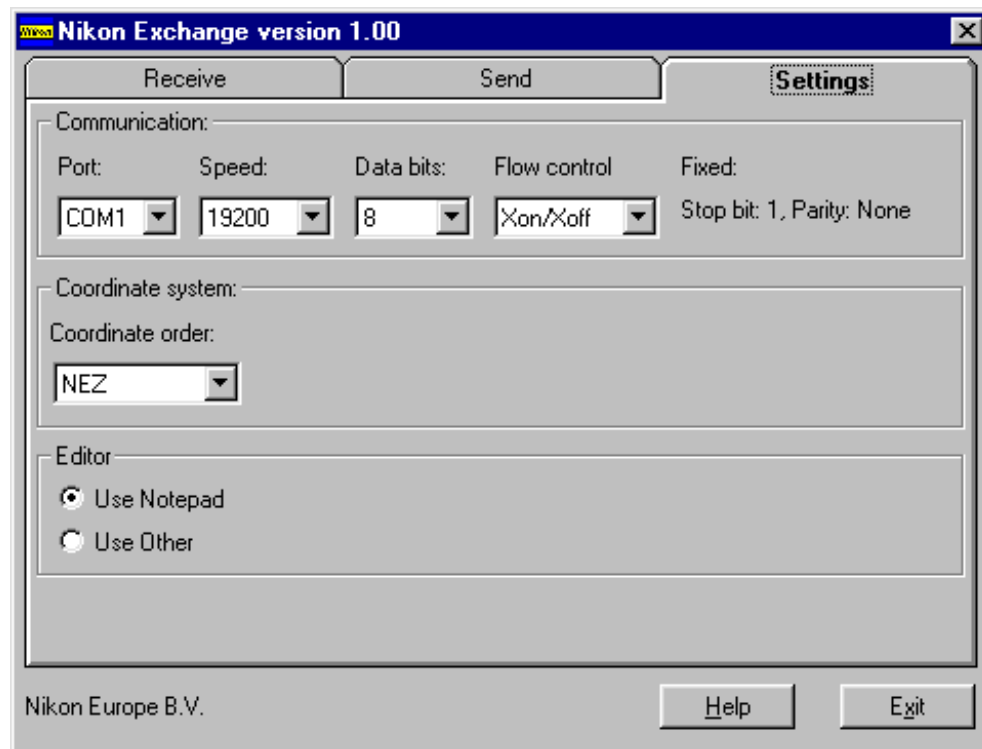
Click the *OK* button, the program will automatically re-create the file using the default settings. If this happens then the user should re-configure the program settings and parameters at the *Settings* tab.

The re-constructed *NikonExchange.ini* file will display the program interface in English only. If a local program interface was included on the distribution CD, then the program should be re-installed for the messages to be displayed to the local language.

Please note that although that this feature was designed for emergency use, the program is fully functional with the re-constructed file, so in case of emergency the user can still use the program with the English interface. This means that if the program interface was already in English, there is no need to re-install the software.

4. Settings tab

After the installation the software is configured with the default settings. Click on the *Settings* tab to get the window below:



The *Settings* tab is divided to three minor sections indicated by the frames:

- *Communication:* The user can specify the communication parameters.
- *Coordinate system:* The local coordinate system can be defined.
- *Editor:* An external data editor can be specified.

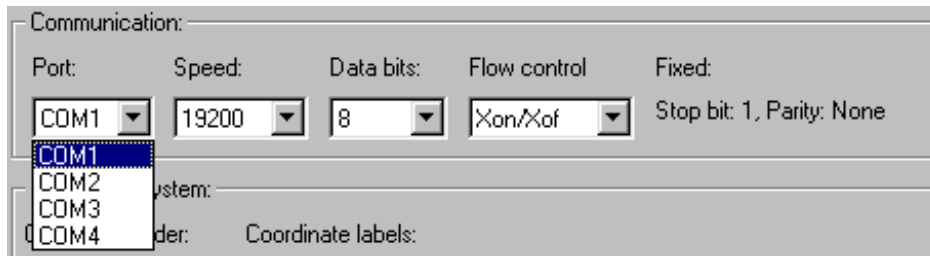
The user should customize these according to his/her needs. The program will save these settings in *NikonExchange.ini* upon exit.

The next time that the program is started, it will read the settings from *NikonExchange.ini* and use them by default.

Communication port settings

The first section of the *Settings* tab, contains information about the *communication* parameters. Before you start to upload or download data to or from the Total Stations, make sure that the *communication* settings are the same for both the PC and the instrument.

For all fields the selection is done from a drop down list containing all available options.



Port: The program offers a selection of four different communication ports. The user should select the communication port to which the cable to the Total Station is connected.

Speed: The baud rate can be set between 1200 and 38400 baud. These options are also available in the instrument. The user should make sure that this setting is the same for both the program and the Total Station.

The next two settings should normally be set as indicated below.

Data bits: Should normally be set to "8".

Flow control: Should normally be set to "Xon/Xoff".

The rest of the communication parameters are fixed as follows:

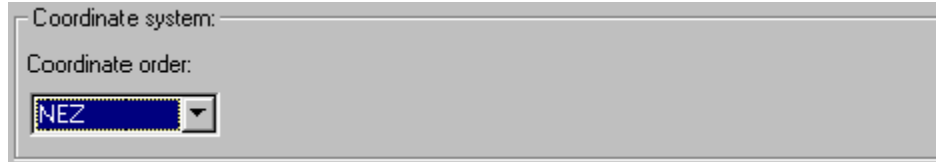
Stop bit: The value is fixed to "1".

Parity: The value is fixed to "None".

Please check the instrument's manual on how to change the communication parameters on the instrument.

Coordinate system

In this section the user can specify information about the local coordinate system, using the appropriate list box options.



Coordinate order: This function allows the user to select the order of the coordinates in the data files or instrument. Please refer to the instrument's manual in order to determine the instrument's coordinate order. The *NEZ* setting tells the software that the Northing coordinate is first in the data files. When *ENZ* is selected, then the software considers the first value that follows the point number, to be the Easting coordinate. This setting is important when using coordinate listings for uploading coordinates to the Total Station or when converting the data to a different format.

Editor selection

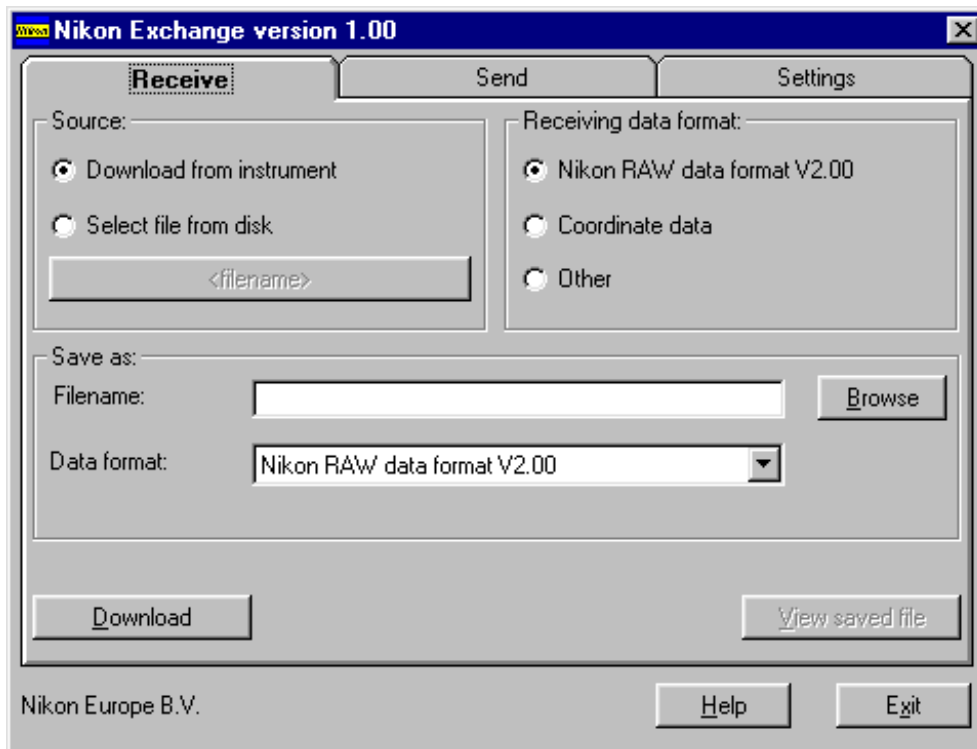
The program by default uses notepad for editing/viewing data files. The user can select another external editor by selecting the option button *Use other*. Then the user can either type the full filename, in the supplied space or locate the editor using the *Browse* button.



The *Browse* button opens the standard Microsoft Windows file selector window for locating the new editor.

5. Receive tab

This section of the program handles the download and data conversion from the instrument or a file stored in disk.



The *Receive* tab is also divided to three sections:

- *Source:* The data source: communications port or file from disk.
- *Receiving data format:* The type of the source data.
- *Save as:* The filename and format conversion of the target file.

Receive source

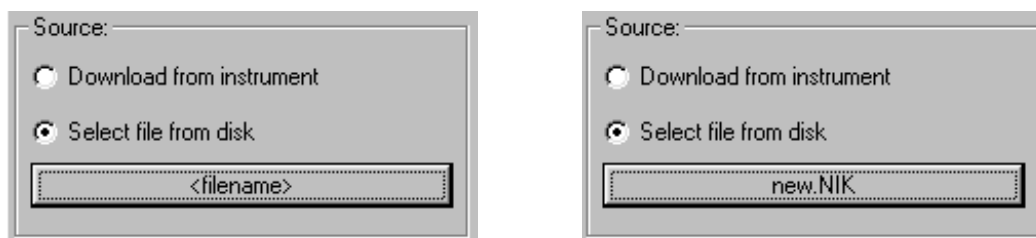
The user can select the source of the data from either directly from the instrument via the RS-232 cable or a file previously stored on disk.

If the *Download from instrument* option is selected, then the program will use the communication parameters as specified by the user in the *Communication* frame of the *Settings* tab.

If the option *Select file from disk* is selected, then the button *<filename>*, just below will become available. Clicking this button will open the standard file selector window.

The user can then select an existing raw file (*.nik, *.dn?, *.raw) or a coordinate file (*.asc) for conversion.

After selecting a proper file the button will show the selected filename. The user can still click on the filename button to select another file.



Please note that the *Download* button will change to *Convert* if a file is selected as source.

Receiving data format

The user can specify the format of the data to be received.

If an instrument is selected as source, then the data could be either raw or coordinates depending on the instrument setting. The user should select the proper option depending on the data send format.

Also if a file is selected as source, the data format of the source file should be specified. In this case, the option *Also save the original data format* will not be available, as the selected source file has already the original format.

Depending on the selected *Receiving data format* the *Save as file data* formats (conversions) will be modified accordingly. Different conversion formats are available for each case if an instrument or a file is selected as source.

If an instrument is selected as source the available data formats are:

Received data format	Save file data format
Nikon RAW data format v2.00	Nikon RAW data format v2.00 KOF raw data file MAPA 2 raw data file SDR-2x raw data file SDR-33 raw data file
Coordinate data	Coordinate file DXF file KOF coordinate file SDR-2x coordinate file SDR-33 coordinate file
Other	N/A

If a file is selected as source then the available data formats will become:

<i>Received data format (file)</i>	<i>Save file data (conversion) format</i>
Nikon RAW data format v2.00	KOF raw data file MAPA 2 raw data file
Coordinate data	DXF file KOF coordinate file

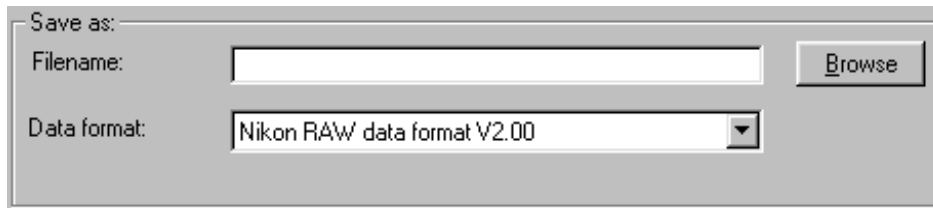
Note that the option *Other* is available only when an instrument is selected as source. If *other* is selected as receive format then no data conversion will be available. In this case the received data will be saved at the target file “as is”, no conversion will be made.

Depending on the saved file format, the button *Settings*, in the frame *Save as*, may become available. Clicking on this button will open a format depended window as it will be explained later on this manual.

Save as file options

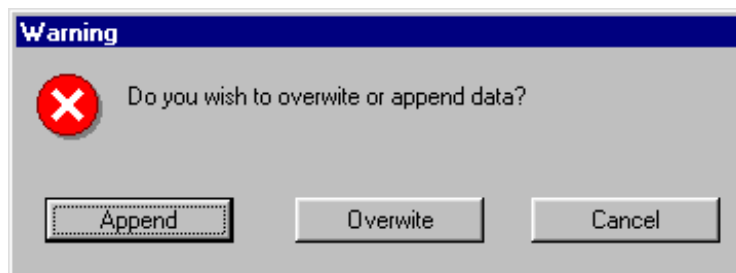
The user should select the *Data format* to be exported from the list box containing all the available data conversions. The list is modified accordingly when different source formats are selected and becomes unavailable when the *other* source format is selected.

In the *Filename* field, the user should type the destination file for the converted data or use the *Browse* button to specify the target file.

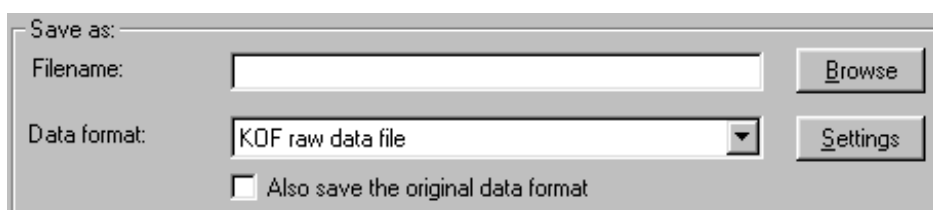


It is suggested to use the *Browse* button, as the correct file extension will be automatically added to the filename.

In case that an existing filename is entered, a warning window will appear, requiring user confirmation about overwriting/appending data to the existing file, or cancel the file selection.



Depending on the user selection on source and target file formats, some additional controls may become available.



When the selected *Data format* is other than *Nikon RAW data format v2.00* or *Coordinate file* and an instrument is selected as source, the option *Also save the original data format* will be available.

If the *Also save the original data format* is checked, then the program will save the original source data under the same directory as the *Save as filename* with the same filename and a *.nik extension. If the filename already exists then the original data will be saved as filename1.nik, filename2.nik etc.

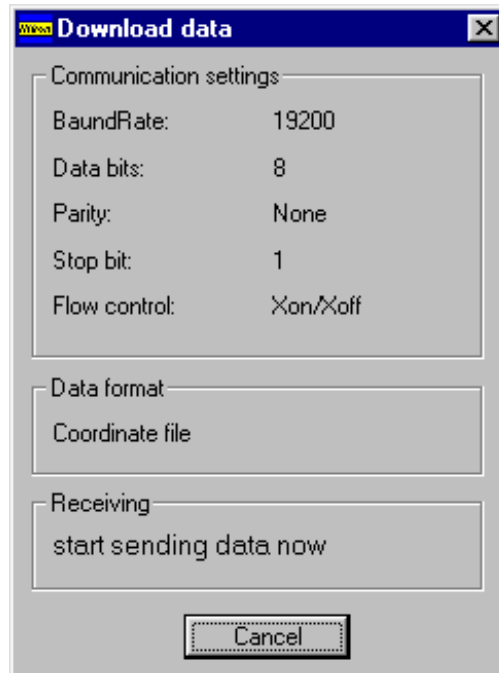
The *Settings* button contains format depended information and if clicked displays a window in which the user can modify the settings of the selected format.

For more information about the *Settings* windows and supported conversion formats please refer to the *Conversion* section of this manual.

Download/Convert button

After all of the required actions and settings are complete, the download can start. Click the *Download* (or *Convert*) to initiate the download/convert procedure. Depending on the conversion format that is selected the format settings window may appear, for more information about conversion, please refer to the *Conversion* section of this manual.

If an instrument was selected as source the following window will appear:



The communication settings and the selected data format are displayed.

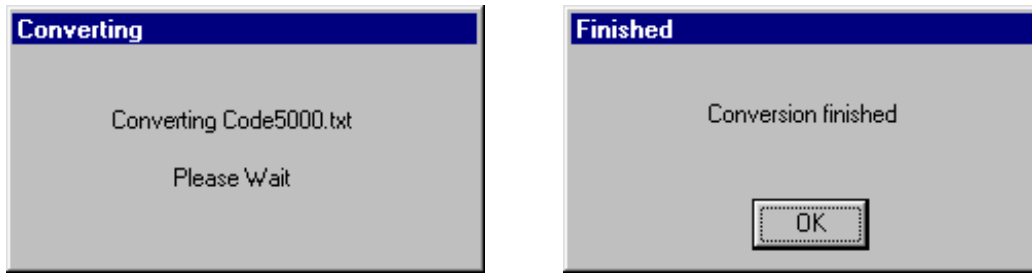
Now the user can start sending data from the instrument, as data is received the message *start sending data now* will be replaced by the byte counter, which indicates the total amount of data received in bytes.



The procedure can be interrupted at any time by clicking on the *Cancel* button. An appropriate error message will be displayed.

When the download is completed a message indicating a successful or not result will be displayed.

In case that a file was selected as source the file conversion window will appear and the conversion will be started automatically. When the conversion is completed a confirmation window will appear.

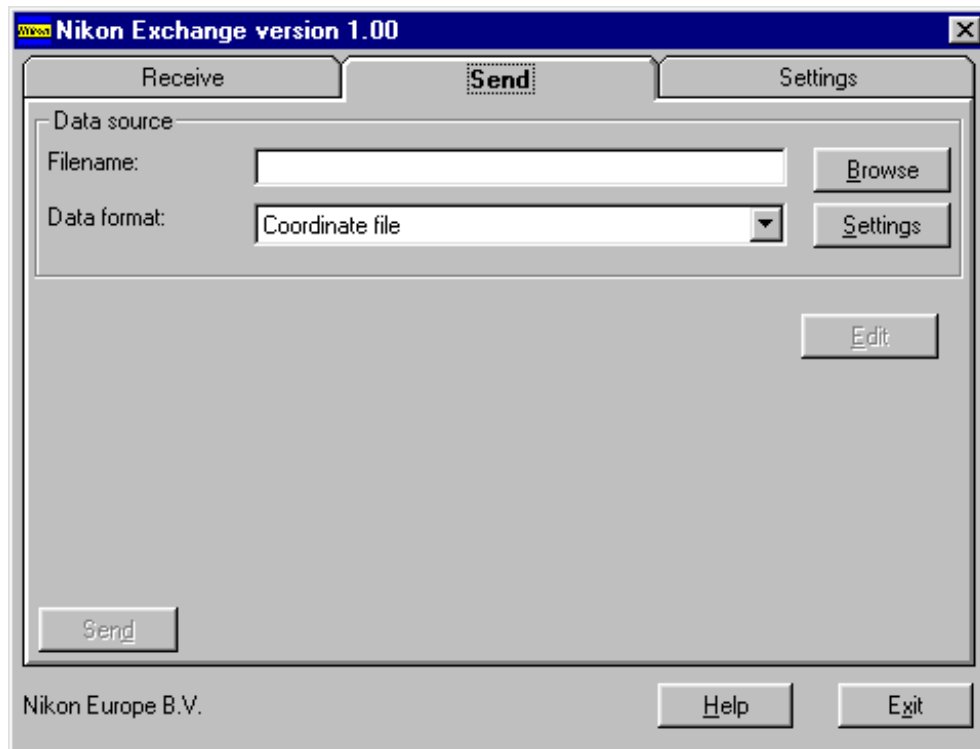


After the completion of the download/convert the *View saved file* button will become available. By clicking on it, the saved data file will be opened using the editor that was specified at the *settings* tab.



6. Send tab

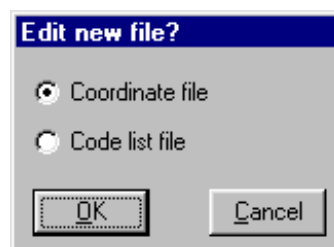
The upload operations are handled in this tab. Data files will be uploaded directly to the instrument using the communication port and settings as specified in the *settings* tab.



First the user should select first the *Data format* to be uploaded to the instrument. Then the filename should be specified either by typing the filename or by using the browse button.

The buttons *Edit* and *Send* will become available only after a file is specified. Click on *Edit* to view/edit the file before upload, the editor as specified at the *Settings* tab will be used.

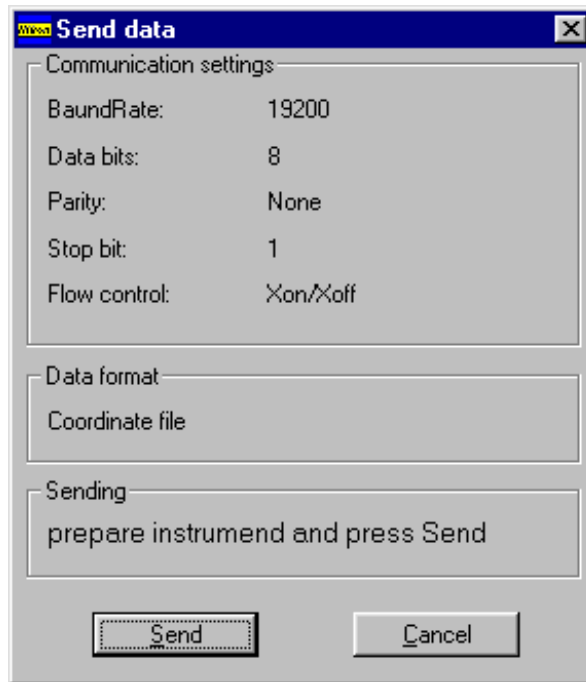
It is possible to edit and upload a new file. If a new or zero length file is given as source then an option window for editing will appear.



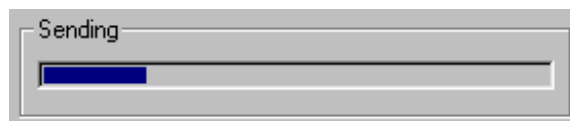
The user should select the desired format of the new file by selecting the appropriate option. The file will be opened for editing using the editor as selected at the *Settings* tab. After the completion of the data editing the file should be saved, prior uploading.

The *Settings* button will display a format specific window, depending on the format selected. Please refer to the Conversion section on this manual about more information on the supported formats.

Click on the *Send* button to start the upload procedure. An information window showing the communication settings and data format will be displayed. Depending on the selected upload file format the settings, confirmation window may be displayed prior this window. Please refer to the Upload data formats on the next page of this manual.

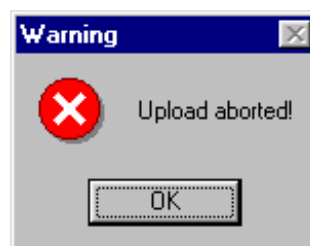


Please refer to the instrument's manual on how to prepare the instrument for data upload. After making sure that the instrument is ready to accept data via the communications port click on the *Send* button. The upload procedure will start and the text *prepare instrument and press Send* will be replaced by a progress bar indicating the amount of data already transferred.



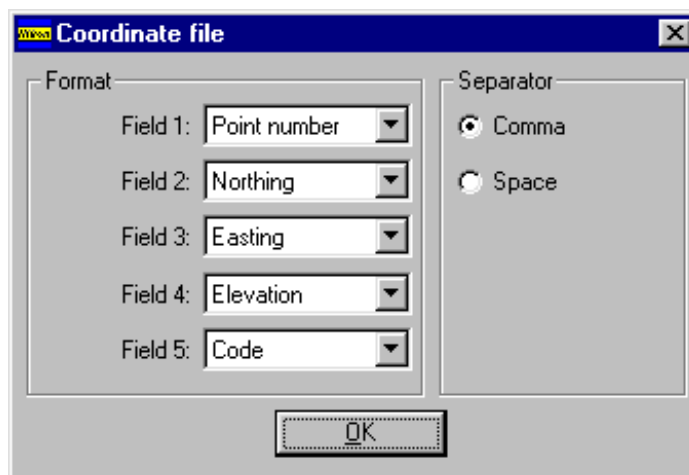
The user can stop the upload at any time by clicking the cancel button.

After the completion of the upload procedure a window will be displayed indicating a successful or not result.



Upload Coordinate format

First set the *Data format* to *Coordinate file*. Then select a proper coordinate file to upload using the *Browse* button. Click the *Settings* button for the coordinate file settings, window to be displayed. The same window will be displayed as user confirmation when the *Send* button is clicked.



Using the parameters on this window the user should define the field order and the field separator of the file to be uploaded.

The data might be separated with commas or an empty space, please select the corresponding value in the *Separator* frame.

In the *Format* frame the field order of the file should be defined. For each of the fields the user must set the corresponding value as described in the table:

Field	Description
Point number	Point number or name
Northing	Point's Northing coordinate
Easting	Point's Easting coordinate
Elevation	Point's Elevation
Code	Point's Code
Ignore	This field will be ignored
None	In case the file has fewer than five fields

The format specified will be stored automatically. The next time this menu is selected, the fields will have the same order. When download or convert data, the software will also use this format. Please refer to the Conversion section of this manual for more information.

In the above example window each record of the file to be uploaded will have the following format. Please note the comma that separates the fields:

<Point number>, <Northing coordinate>, <Easting coordinate>, <Elevation>, <Code>

Upload KOF format

Set the *Data format* to *KOF*. Then select a proper KOF file to upload using the *Browse* button. Click the *Settings* button for the coordinate file settings, window to be displayed.

The KOF format is a Norwegian data format. This format can store both raw and coordinate records. Please note the software will only read and upload the coordinate records. All other records will be ignored.

Upload Nikon code file

Set the *Data format* to *Nikon Code file*. Then select a proper Nikon Code file to upload. Note that there are no settings available for uploading a code file. Before uploading, please refer to the instrument's manual in order to set the instrument to receive a Code List file.

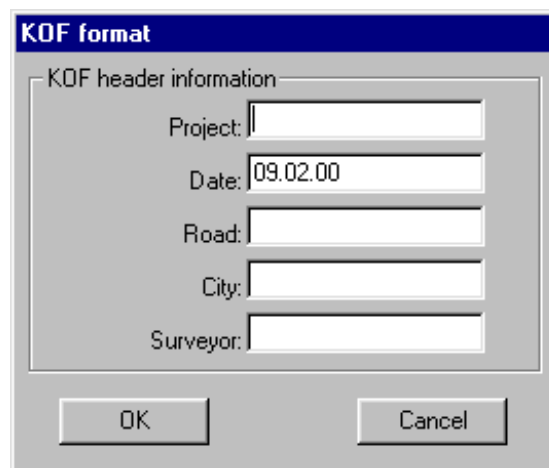
The instrument uses the Nikon Code List file for the input of feature codes, when recording a point. As the list a text file it can be easily modified using a text editor. For more information about the order of a Code List file please refer to the instrument's manual.

7. Conversion

KOF format

The KOF format is a Norwegian data format. Both raw and coordinate data can be converted to this format.

If a conversion to KOF is selected then the settings button will display the KOF header information window. The user can specify information needed in the appropriate fields.

The image shows a dialog box titled "KOF format" with a blue header bar. Inside the dialog, there is a section titled "KOF header information" which contains five text input fields: "Project:", "Date:", "Road:", "City:", and "Surveyor:". The "Date:" field is pre-filled with the text "09.02.00". At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

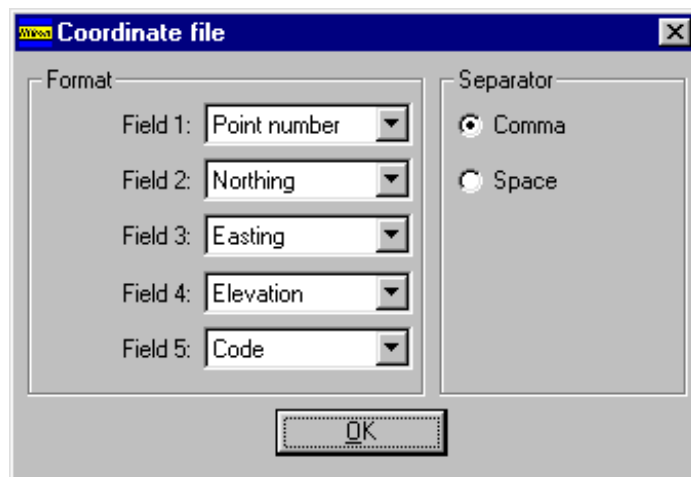
The default project name is the file name of the download data. The default date is the current date. If the Road, City and Surveyor information is entered, it will be remembered for the next KOF conversion.

The information typed in this window will be written in the KOF file header. Please note that as only one header is allowed in a KOF file, in case of appending data on an existing KOF file the old header information will be replaced.

Coordinate format

The user can use this conversion to generate a simple coordinate file if coordinates were measured with the instrument. This conversion will ignore the raw data. This means that only coordinate records will be converted. The data can be exported in a user-defined format, this means that the user can define the different fields in any order. The software will remember the order set, and use it until the user change it again.

When the *Settings* button is clicked, the following window will appear:



In the *Format* frame the user can define the output format of the generated coordinate file by modifying the appropriate fields. For each one of the format fields the user can select one of the following options:

Field	Description
Point number	Point number or name
Northing	Point's Northing coordinate
Easting	Point's Easting coordinate
Elevation	Point's Elevation
Code	Point's Code
None	In case of fewer then five fields are required
Ignore	This field will be ignored

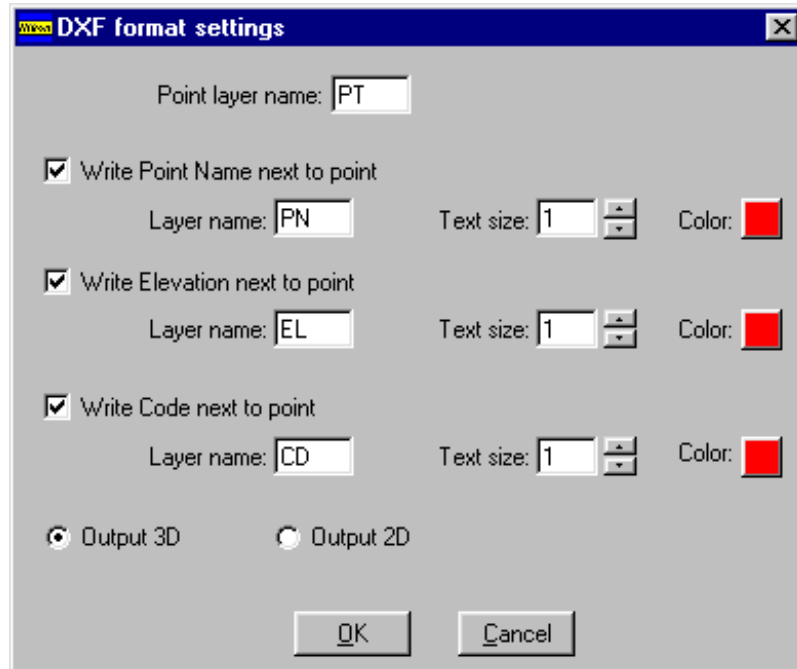
In the *Separator* frame the user can set the separator symbol that will be used between the fields. The available options are *Comma* or *Space*.

In the above example window each record of the generated file will have the following format. Please note that a comma separates the fields as *Comma* was specified as separator:

<Point number>, <Northing coordinate>, <Easting coordinate>, <Elevation>, <Code>

DXF format

It is possible to create a DXF file, which is available in many CAD and mapping software. This conversion, as the conversion to a coordinate file, will use only use the coordinate records. Any raw data will be ignored.



Clicking the *Settings* button will display the above window. It is possible to generate up to four layers:

<i>Point layer name</i>	The actual points, written as coordinates Can be defined to 3D or 2D by the <i>Output</i> options
<i>Point name layer</i>	The name/number of the point, written as text
<i>Elevation layer</i>	The elevation of the point, written as text
<i>Code layer</i>	The code of the point, written as text

Please note that the *Point layer name* will be generated always, this holds the coordinates of each point. All of the other layers can be switched on/off by checking the appropriate (*Write Point/Elevation/Code next to point*) check boxes.

The user can define the layer names for the point, point's name, elevation and code by typing in the appropriate *Layer name* fields. Also the text size and color can be specified separately for each layer. Clicking on the color button will open a list with the available colors for selection.

The option *Output 3D* generates a DXF file with the elevation for each point, that means each point will have X,Y,Z coordinates. The option *Output 2D* omits the elevation, each point will have only X,Y coordinates.

SDR-2x/33 format

The SDR-2x and SDR-33 data formats are supported by many programs. Both raw and coordinate data can be converted to these formats.

There are no settings to be set by the user, except that the instrument download format should be set to *SDR2x* or *SDR33* accordingly. The software will display a message window for reminding this to the user.

Please refer to the instrument's manual for more information on how to set the instrument to download *SDR2x/33* data.

MAPA 2 format

Only raw data can be converted to MAPA 2 format, as this format does not hold coordinate records. The *Settings* button is unavailable if MAPA 2 is selected, as the software does not need any user specified information in order to convert data to this format.

Nikon RAW data format V2.00

The software will create a file that holds all of the data from the instrument. As this file has already the original format the *Also save the original file* option is unavailable.