Printed Documentation

Format Manager

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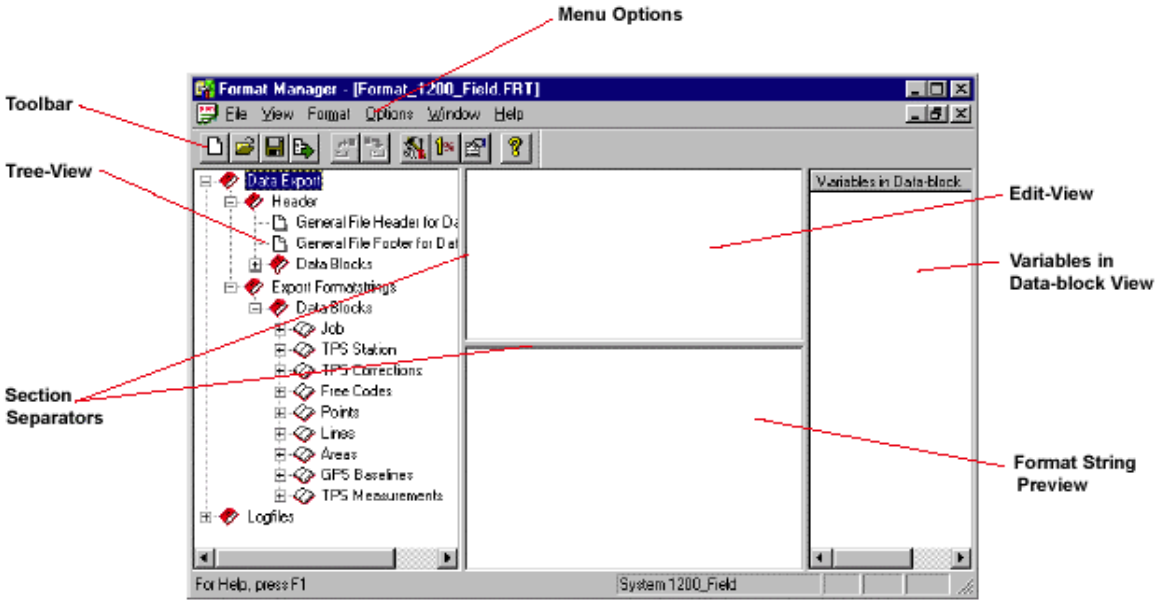
What is the Format Manager?

Format Manager is the software that is used to create format files. It is automatically installed onto your PC when you install LGO. You do not require a software protection key (dongle) to use the Format Manager.

The Format Manager screen is divided into four sections - the **Tree-View**, the **Edit-View**, the **Format String Preview** and the **Variables in Data-block** view.

The size of each section can be adjusted by clicking and dragging the **Section Separators**.

The **Menu options** and **Toolbar** are used to navigate through the software.

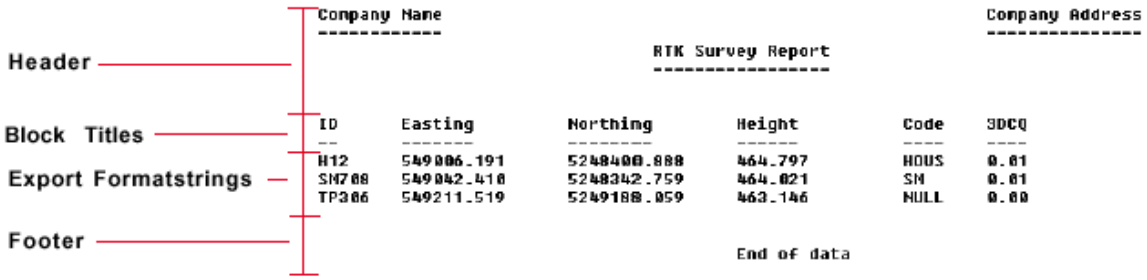


Tutorial

Quick Tour I: Creating a Report Style Output

This Quick Tour is a step-by-step tutorial to create a format file that will output data in a "report style" format.

The following output is required:



This format file has the following sections:

- **Header** information appearing only once at the head of the report.
- **Data Block titles** appear once over the actual surveyed data output.
- **Export Formatstrings** (the surveyed data) arranged in tab delimited columns.
- **Footer** information appearing only once at the end of the report.

Note:

- A format file does not always have to include a Header, Block Titles or a Footer.

Note also the following characteristics of this format file:

- All the **Export Formatstrings** are left aligned.
- The **Coordinate** values are output to 3 decimal places but the **CQ** values are output to 2 decimal places.
- There are two blank lines between the **Header** and the **Data Block titles** and two blank lines between the **Export Formatstrings** and the **Footer**.
- Point **TP306** was not coded when it was surveyed. In the output above, it is given a "default value" of **NULL**.

Continue with Lesson 1: Creating the Header and Footer.

QT1 - Lesson 1: Creating the Header and Footer

In Lesson One you will learn how to create the header and footer for the format file.

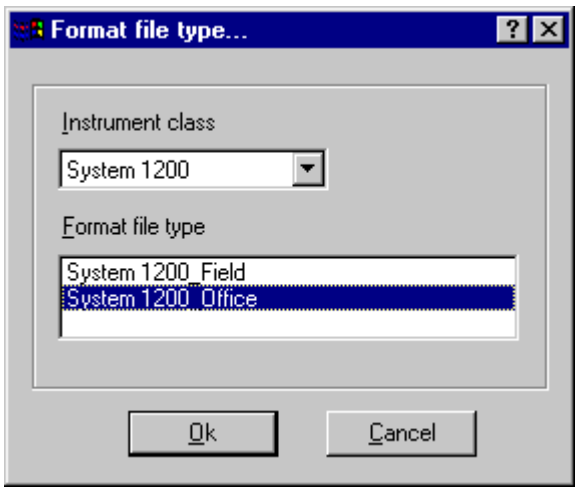
Start-up the Format Manager:

1. Start LGO and from the **Tools** main menu select **Format Manager** or press  (Format Manager) from the **Tools** List Bar.
2. From the **File** main menu select **New** or click on the  toolbar button

The **Format file type...** dialog appears. In this dialog:

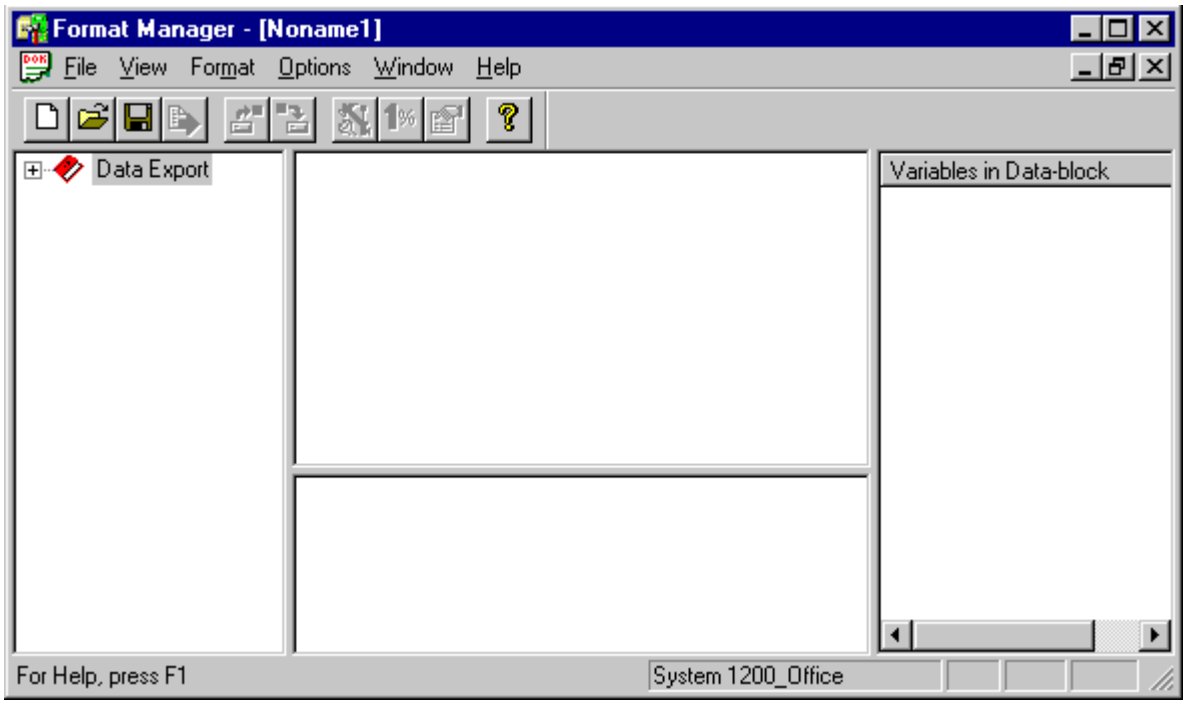
3. Select System 1200 as **Instrument Class**. The **Format file type** *System 1200_Office* supports all variables, whereas *System 1200_Field* only supports the instrument variables.

   Example:



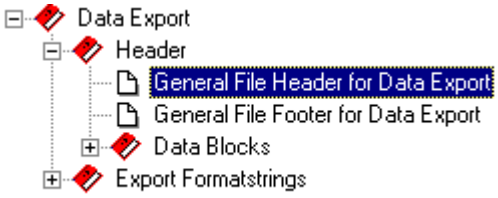
4. Select *System 1200_Office* and click **OK** to create a System 1200 new format file.

The main Format Manager window appears:



5. In the Tree-View open the **Data Export** folder and then the **Header** sub-folder.
6. Select the **General File Header for Data Export** page.

   Example:

7. Click in the Edit-View and enter the text for the first line of the header:

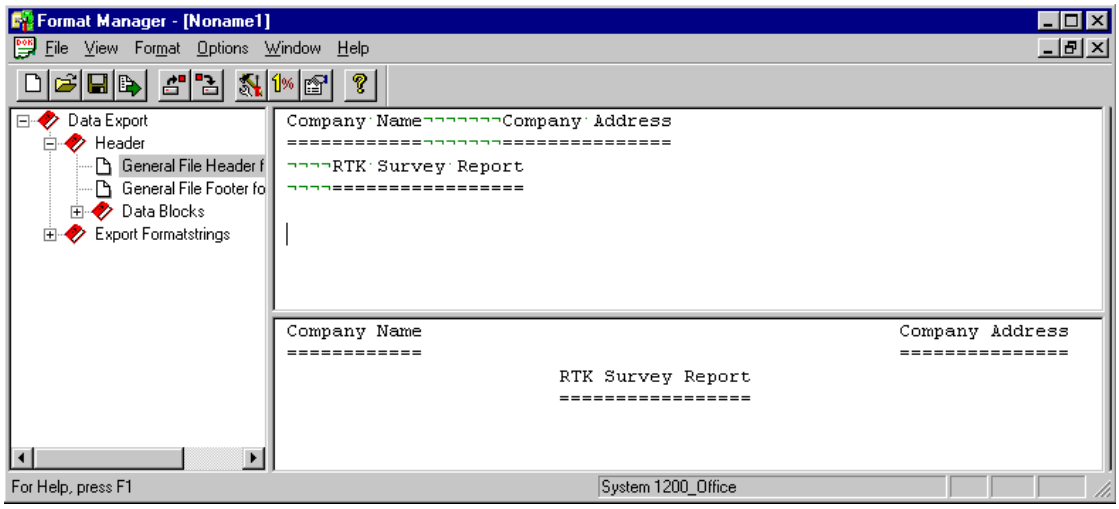
   Type the words **Company Name** and then press the **Tab** key on your keyboard 7 times.
   Then type the words **Company Address** and then press **Enter**.

   Underline the words 'Company Name' and 'Company Address' using **=** to underline the text. Press **Enter** after entering the last **=**.

   Enter the rest of the header text. Enter 4 **tabs** before the words **RTK Survey Report** to centre this text.
   Press **Enter** after the last **=**.

   Press **Enter** 2 more times. This will put two empty lines before the text which will follow.

   Example:



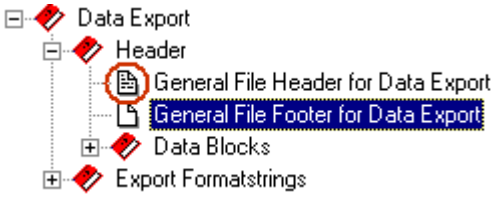
Note:

As you enter text in the Edit-View, the same text can be seen in the Formatstring-Preview section. Remember, you cannot enter text in this section - it is a preview screen of what is currently shown in the Edit-View.

You have now completed the header for this format file. We will now enter the footer details.

8. Select the **General File Footer for Data Export** page.

   Example:



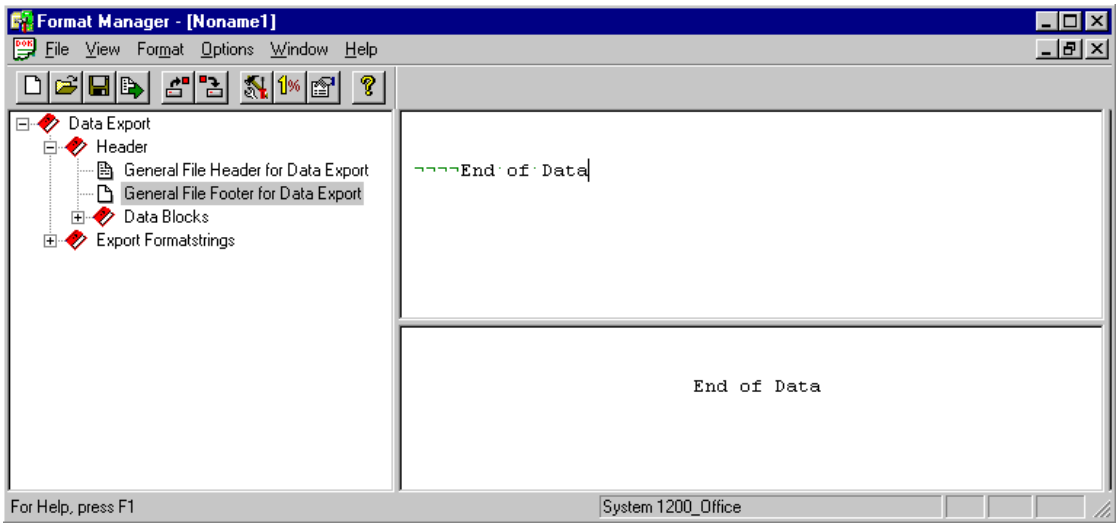
   Note how the General File Header page has become grey to show that there is data entered for this page.

9. Click in the Edit-View and enter the text for the footer:

   Press **Enter** twice. This will put two empty lines after the data that will be output and before the footer text.

   Enter 4 **tabs** and then type the words **End of Data**.

   Example:



You have completed the footer for this format file. We will now create the **Data Block titles**.

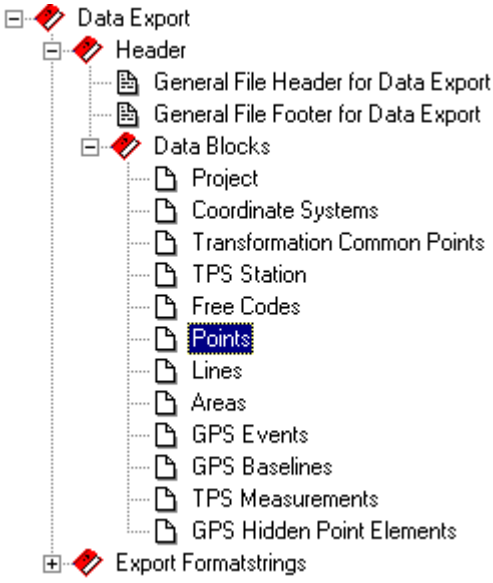
Continue with Lesson 2: Creating the Data Block titles.

QT1 - Lesson 2: Creating the Data Block titles

A **Data Block title** is text that will appear as a "title" above any surveyed data that will be output as **Export Formatstrings**.

1. In the Tree-View open the **Data Blocks** folder and then select the **Points** page.

   Example:

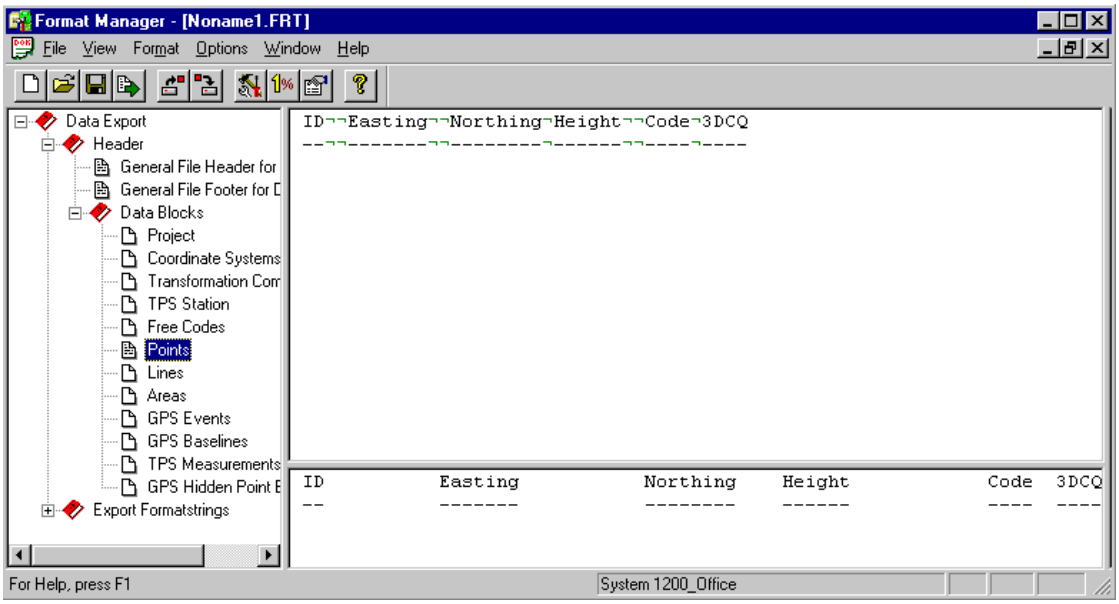
   

2. Click in the Edit-View and enter the text for the Data Block title.

   Enter the text as shown in the example below and then press **Enter**. Use the **-** to underline the text.

   Press **Enter** at the end of the last **-**. This will ensure the **Export Formatstrings** are output on a new line.

   Example:

   Note:

There are two tabs between **ID** and **Easting**, **Easting** and **Northing** and **Height** and **Code**. This is to space the output data correctly.

You have completed the data block titles for this format file. We will now create the **Export Formatstrings output**.

Continue with Lesson3: Creating the Export Formatstring output.

QT1 - Lesson 3: Creating the Export Formatstring output

The **Export Formatstrings** are the actual surveyed data values that are required to output. For this format file we need to output the following **export variables**:

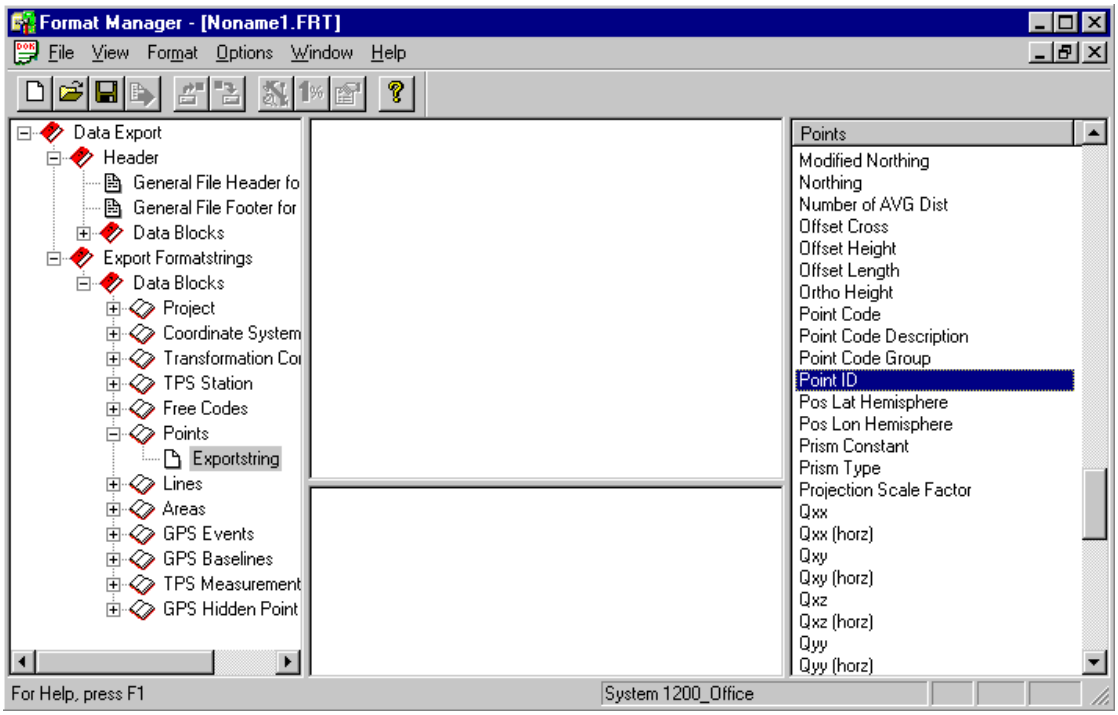
- Point ID
- Coordinates - Easting, Northing and Orthometric height
- Code ID
- 3D Coordinate Quality

Note:

- An Export Formatstring can consist of both variables and text.

1. In the Tree-View open the **Data Blocks** sub-folder in the **Export Formatstrings** folder. In the **Data Blocks** sub-folder open the **Points** folder.
2. Select the **Points** Exportstring.

   Example:



   Note:

   When you select an Exportstring the Variables in data-block View becomes filled with the export variables available for that Exportstring. This allows the different variables you need for a format file to be chosen.

The first variable needed in this format file is the **Point ID** variable.

3. In the Variables in data-block View scroll to find the **Point ID** variable. Select this variable either by double-clicking on it, or by highlighting it and then dragging and dropping it into the Edit-View.

   Alternatively: Right-click on it and select **Insert** from the context menu.

The **Point ID** variable will appear in the **Edit-View**. Export Variables that have been selected are shown in the Edit-View with << >> brackets.

In the Format String Preview screen you can see how this variable will look when the format file is used (Format Manager uses a dummy point ID value).

For this format file, we require 10 characters for the Point ID to be output. (No Point ID in our surveyed data has more than 10 characters). We also require the Point ID data to be left aligned.

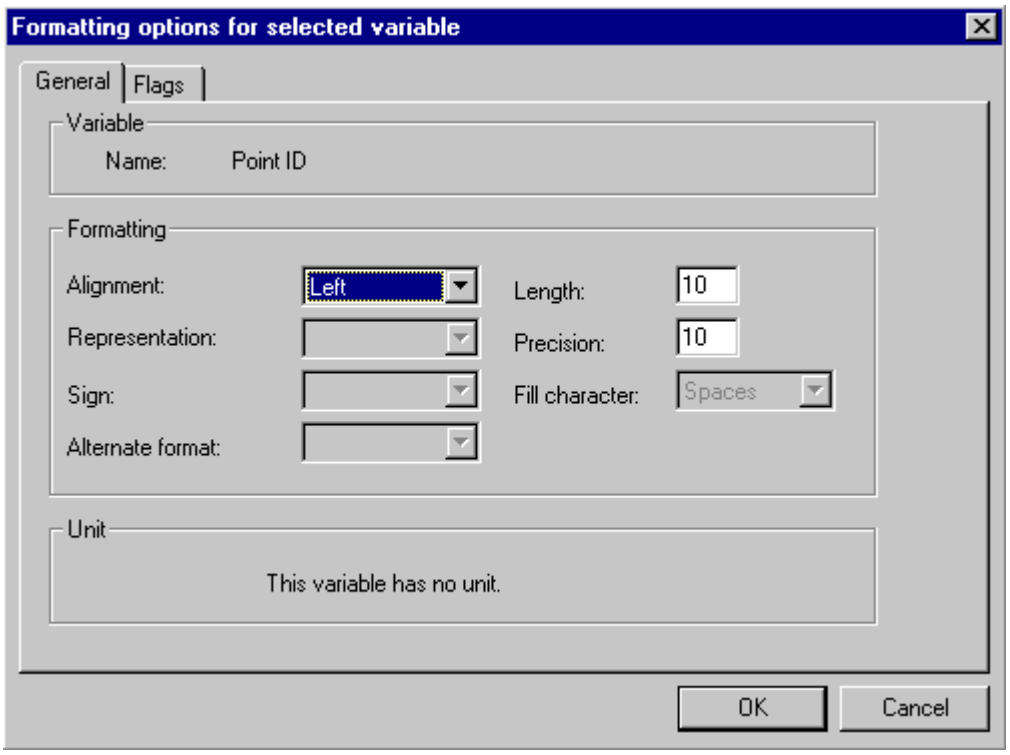
4. Double click on the **Point ID** export variable in the Edit-View. The Formatting options for selected variable dialog box will appear. In this dialog:

   Select the **Alignment** to be **Left**.

   Choose the **Length** to be **10** and the **Precision** to be **10**.

   Click **OK**.

   Example:



Note:

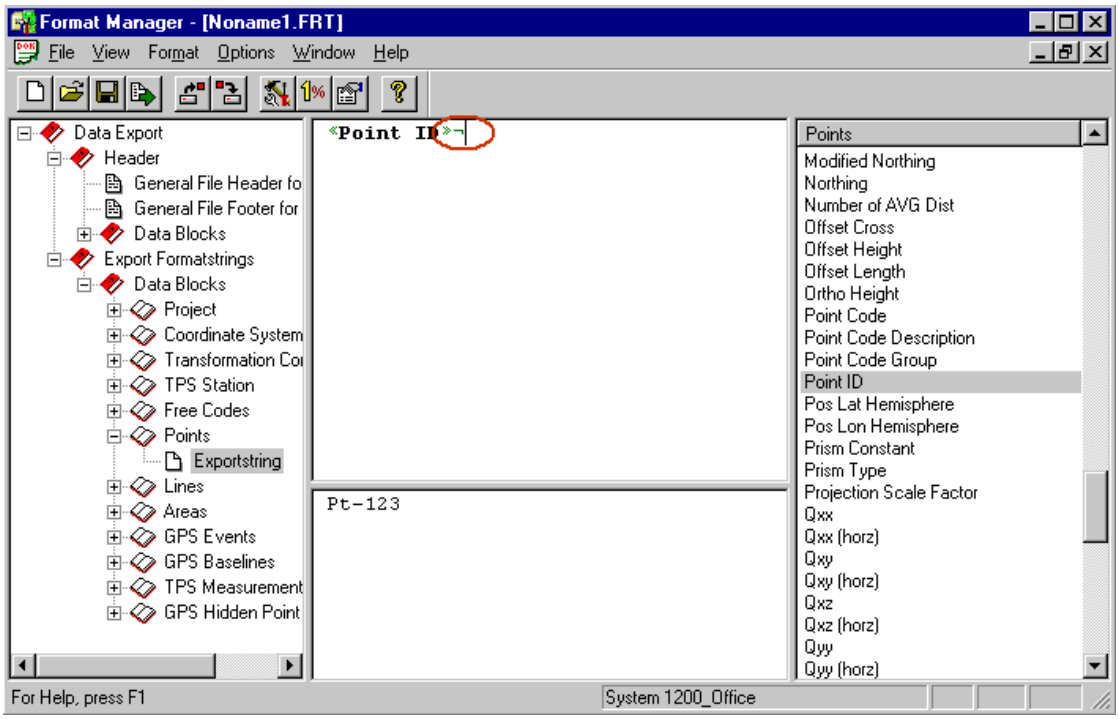
Because **Point ID** is a **String** (text) variable, the **Representation** and **Sign** options are grey. These settings only apply to **Floating Point (numerical)** variables such as grid or geodetic coordinates.

The example Point ID in the **Format String Preview** screen will now appear as left aligned with 10 characters.

We now need to enter the coordinate variables.

5. Click in the **Edit-View** to put the cursor behind the <<**Point ID**>> variable.
6. Enter a **tab** which will separate the <<**Point ID**>> export variable from the **Easting** export variable.

   Example:



Before entering the coordinate variables, we should consider something.

Previously, after we had entered the variable <<**Point ID**>> we then had to set the alignment and the length and precision by using the **Formatting options for selected variable** dialog box.

This was because the default settings for alignment, length and precision were not as we required.

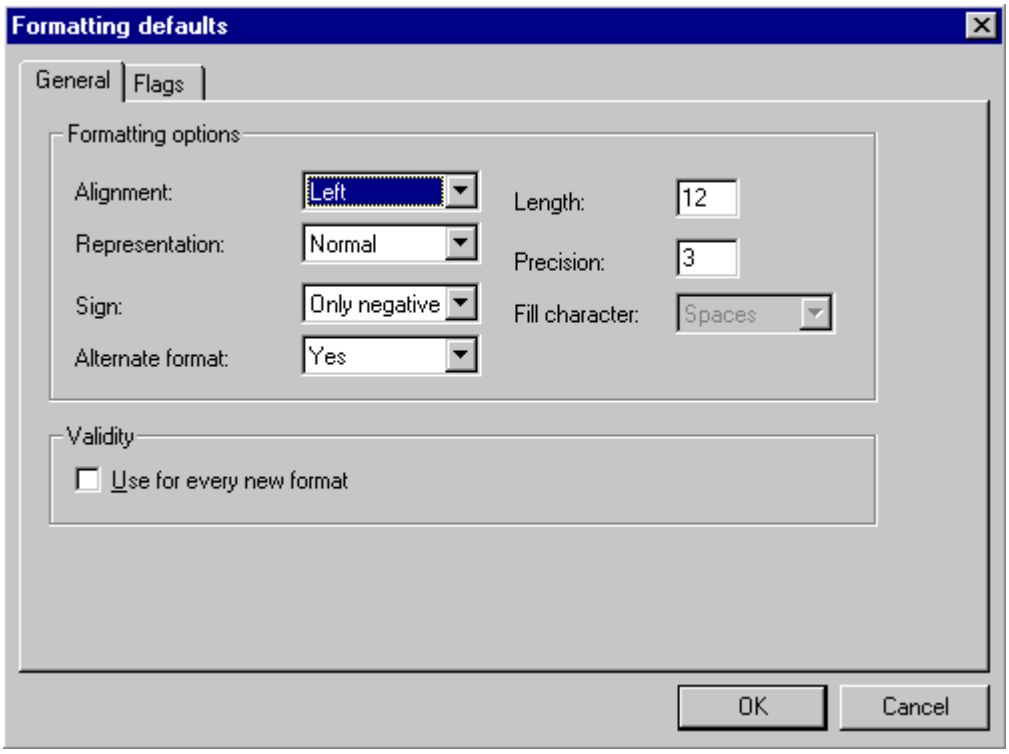
It is possible to set the default settings for a newly selected variable. This would then mean we do not have to set the format settings individually for each of the coordinate export variables.

7. From the **Options** main menu select **Formatting Defaults...** or press the **Formatting defaults** button from the toolbar.

The dialog, which appears, shows the current output settings that will be applied to any variable which is selected.

However, the next three variables we will enter will be **Easting**, **Northing** and **Height**. For these 3 variables we require the same format settings: **Alignment** to be **left**, the **length** to be **12** and the **precision** to be **3**.

8. Edit the formatting defaults to those shown below:



Note: If you require these settings also to be applied to subsequently created format files, select the **Use for every new format** option.

9. Ensure the **Use for every new format** option is selected ☑.
10. Click **OK**.

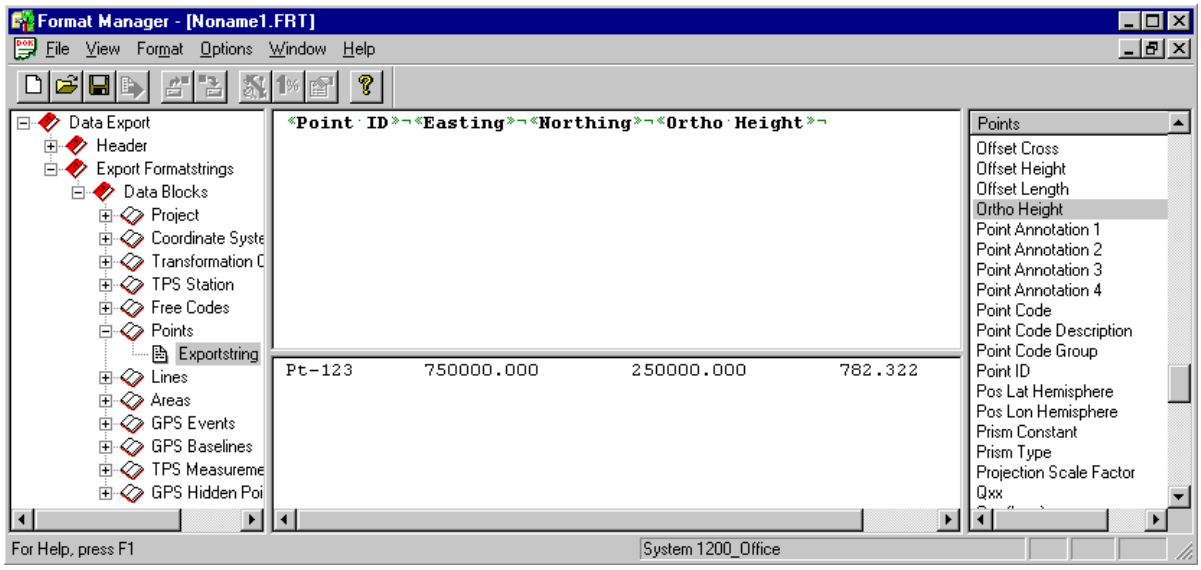
We can now enter the Easting, Northing and Height export variables.

11. From the **Variables in Data-block View** insert **Easting**. Enter a **tab**.
12. From the **Variables in Data-block View** insert **Northing**. Enter a **tab**.
13. From the **Variables in Data-block View** insert **Ortho Height**. Enter a **tab**.

Note: For this format file we need the local orthometric height. This is because the sample data we will use with this format file has **local orthometric** heights, not **ellipsoidal** heights. To output a local ellipsoidal height in a format file, use the **Local Ellipsoidal Height** export variable.

If you select a wrong export variable, put the cursor to the right of that export variable by clicking just behind it and press **Backspace**. This will delete that export variable.

You should now see the following:



- Double-click on, for example, **Ortho Height**. The **Formatting options for selected variable** dialog box will show the formatting defaults you have previously set to be the default. Click **Cancel**.

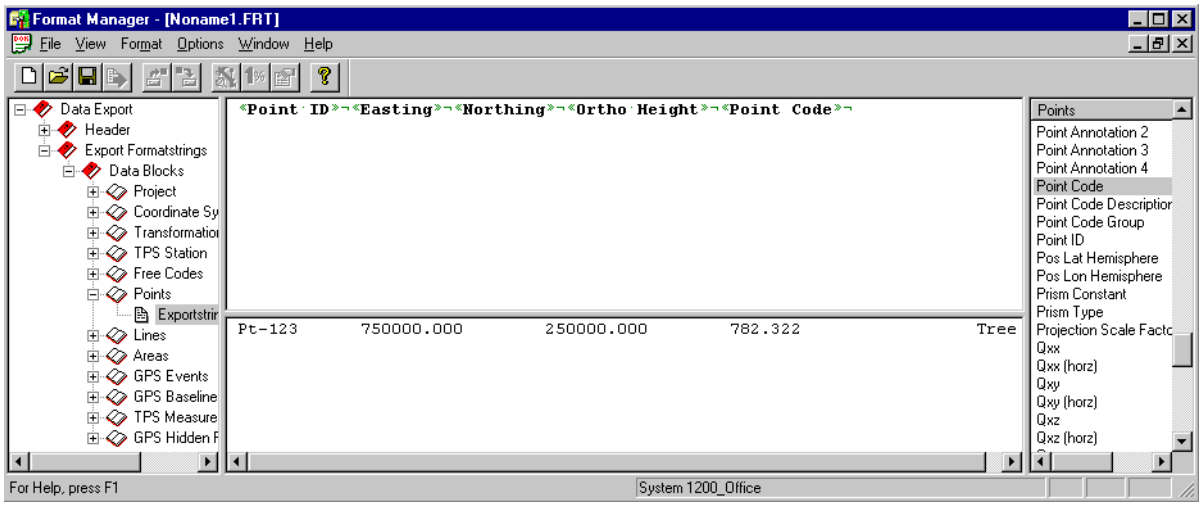
We now need to choose the **Point Code** export variable. This is also stored in the **Points** data block type.

14. Put the cursor behind the **Ortho Height** export variable and the **tab** by clicking in the Edit-View.
15. From the **Variables in Data-block View** insert **Point Code**. Enter a **tab**.

The format settings for the **Point Code** export variable are however again different to those we have previously set to be default. Thus we need to edit the formatting options for the **Point Code** export variable.

16. Double click on the **Point Code** to activate the **Formatting options for selected variable** dialog box.
17. Select the **Alignment** to be **Left**.
18. Choose the **Length** to be **4** and the **Precision** to be **4**.
19. Click **OK**.

You should now see the [following:]



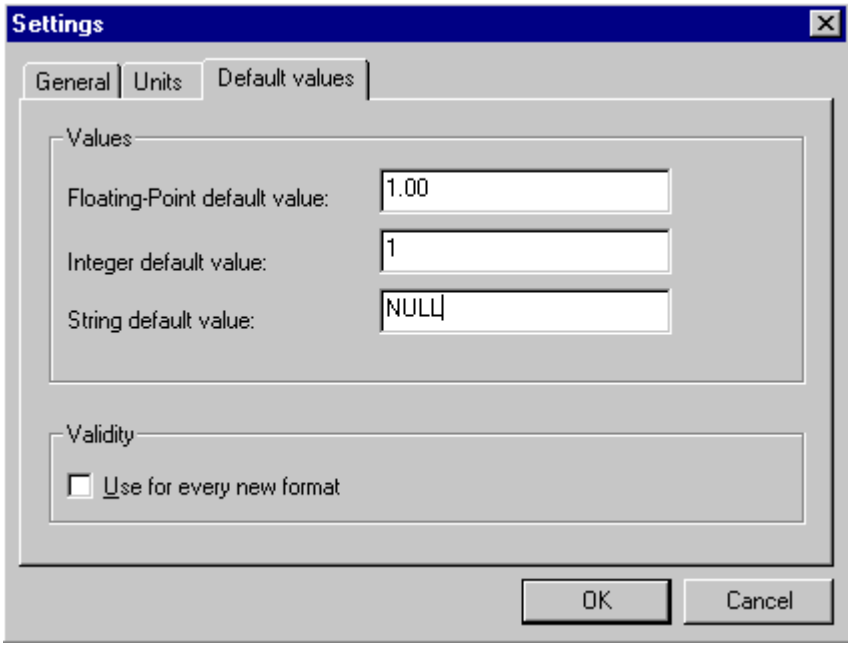
It is of course possible to use this format file with surveyed points that were not coded. For these points, a default value would be assigned to these points. To edit the default value proceed as follows:

It is possible to edit the default values that are assigned to points that do not contain data for the export variables that are being used.

- From the **Options** menu or from the Toolbar select **Settings**  .

The following dialog box will appear. Select the **Default values** tab. This shows the current default settings.

- Change the **String default value** to be **NULL**.



This means that when this format file is used, any point surveyed without a code will be given the value **NULL**.

- Click **OK**.

It is also possible to change the default values for **Floating-Point** variables (such as coordinate values) and **Integer** variables (such as angular values). Refer to Settings Options for a complete description of the use of the **Settings** dialog box.

The final export variable to enter is the **3D Coordinate Quality**. This is also stored in the **Points** data block type.

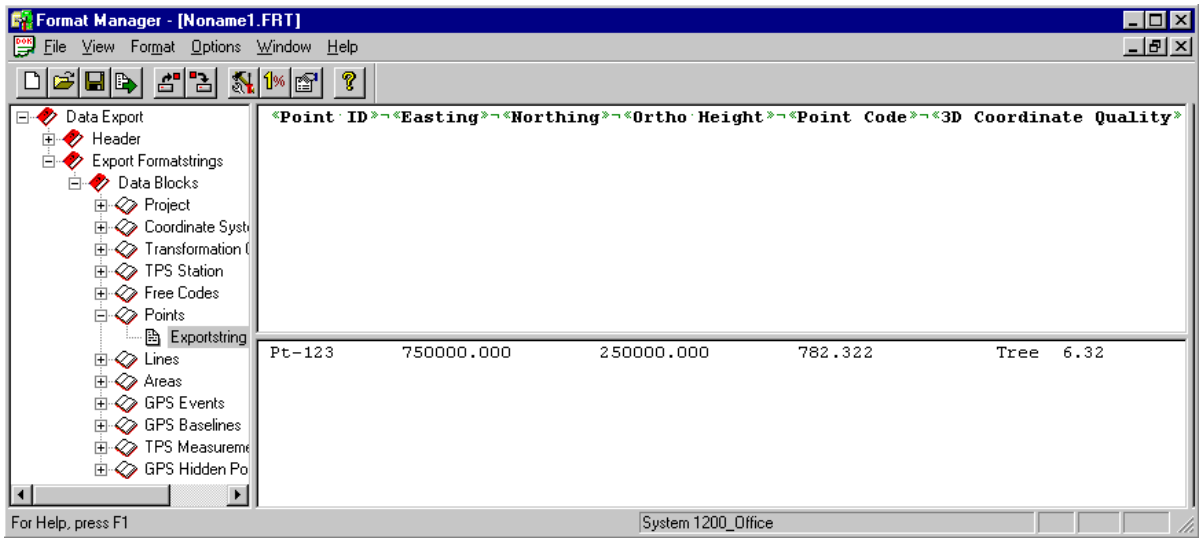
20. From the **Variables in Data-block View** insert **3D Coordinate Quality**. Press **Enter**.

    Note: Because this is the final export variable we need to enter a carriage return at the end of the line. This will ensure the information for each point will start on a new line.

The format settings are again different to those we have previously set to be default and need to be changed for the **3D Coordinate Quality**.

21. Double click on the **3D Coordinate Quality** to activate the **Formatting options for selected variable** dialog box.
22. Ensure the **Alignment** is set to be **Left**.
23. Change the **Length** to be **5** and the **Precision** to be **2**.
24. Click **OK**.

You should now see the following:



The exportstring and the format file is now complete and needs to be saved.

25. From the **File** menu choose **Save as...**
26. Choose the directory where you wish to save this format file. Give the format file a file name and click **OK**. The *.frt extension is automatically added.

Congratulations! You have created a Report Style format file that can be used with either LGO or on board the System 1200 instruments.

You may use the sample data provided with your LGO installation to test this format file. Import the sample data into LGO and then export the data using this format file.

If you are not sure how to use the format file in LGO, please refer to the Online Tutorials: Quick Tour I in the LGO Online Help.

When you export the RealTime sample data using this format file, you should see the following output. If you do not, check the format file to identify the problem.

```
Company Name                                                Company Address
============                                                ===============

                              RTK Survey Report
                              =================

ID              Easting         Northing        Height          Code    3DCQ
--              -------         --------        ------          ----    ----
315             548314.879      5247659.360     419.719         NULL    0.00
Point 001       548854.515      5247827.567     414.262         NULL    0.01
Point 002       548855.024      5247827.264     414.276         NULL    0.01
Point 003       548864.602      5247815.164     414.271         NULL    0.01
Point 004       548872.807      5247804.844     414.266         NULL    0.01
Point 005       548879.897      5247795.940     414.309         NULL    0.01
Point 006       548887.392      5247786.519     414.334         NULL    0.01
Point 007       548894.699      5247777.344     414.333         NULL    0.02
Point 008       548902.094      5247768.035     414.373         NULL    0.02
Point 009       548909.046      5247759.316     414.360         NULL    0.02
Point 010       548917.260      5247748.991     414.396         NULL    0.02
```

Note: The best way to test a format file is to use any sample data and inspect the output. The format file can then be edited until you are satisfied with the output.

User Interface

Views

Each Format fie window is divided into four sections - the **Tree-View**, the **Edit-View**, the **Format String Preview** and the **Variables in Data-block** view.

Tree-View:

The Tree-View provides an overview of all the **Data Export** and **Logfiles** data blocks in an expandable hierachy of books and pages.

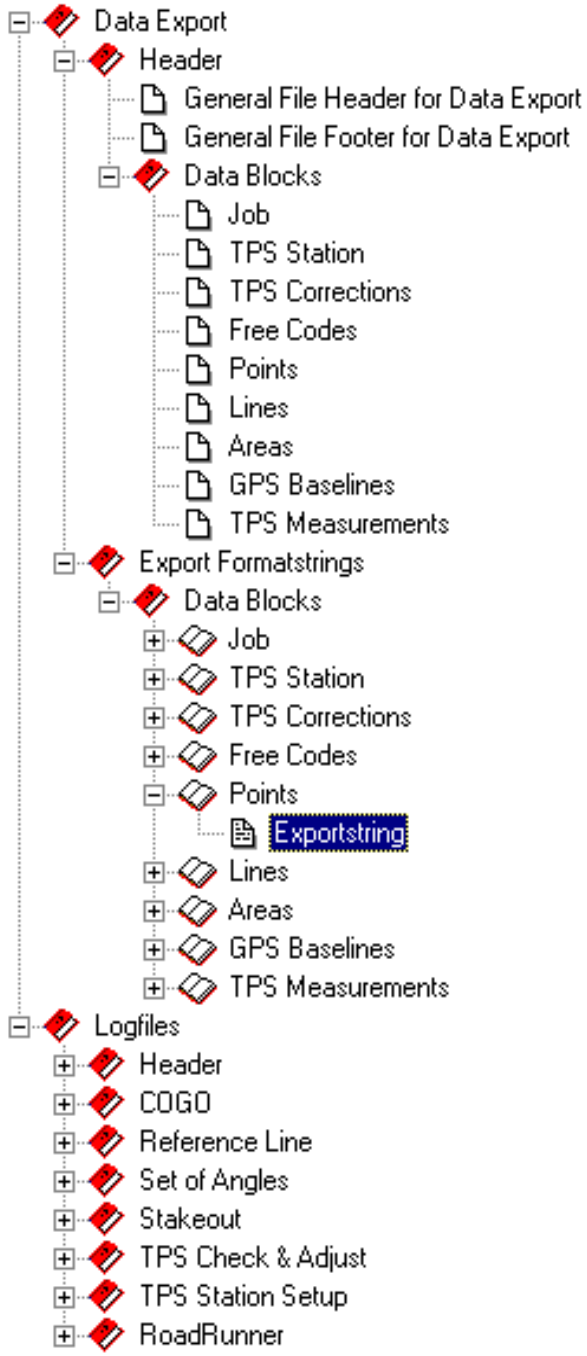
- Double click on an item or click to expand it.
- If an item is open, double click on it or click to close it.

If you click on any of the **Exportstrings** the Tree-View changes to display a short explanation of the respective Exportstring in its lower section. You will get information on which kind of data and how the data will be exported for that Exportstring.

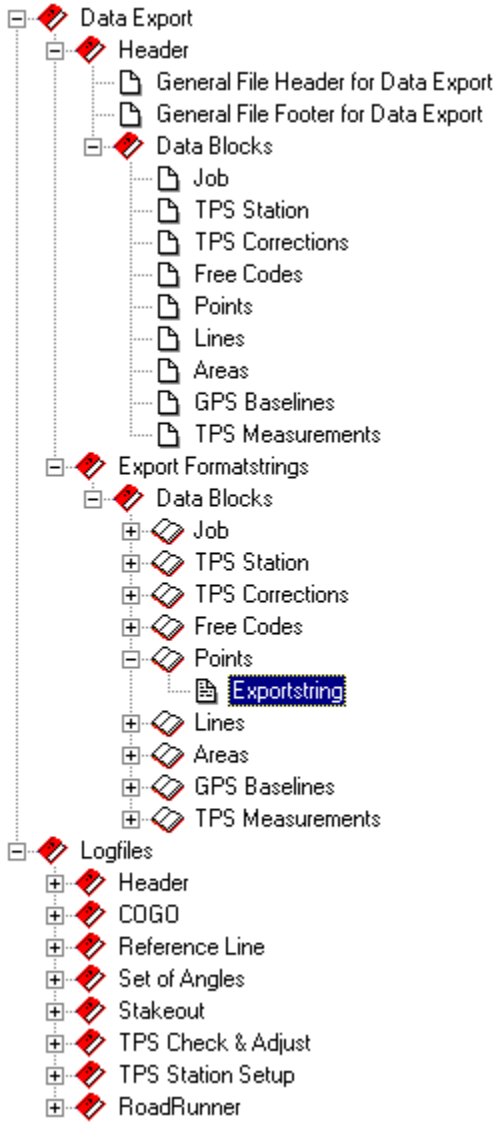
If a **Header** data block, an **Export Formatstring** or a **Logfile** data block contains data then the page is shown thus: .

Example:

Tree-View of a System 1200_Field template:



Tree-View of a System 1200_Field template:



Edit-View:

After selecting a **Data Export** data block or a **Logfile** data block from the Tree-View, the data to be exported for those data blocks has to be entered in the Edit-View.

The Edit-View is basically similar to any text editor. Any text that is required to be included in the output file needs to be entered here.

If an **Export Formatstring** page or a **Logfile** page for one of the applications (COGO, Stakeout etc.) is selected from the Tree-View then the **Variables in Data-block View** is filled with the format string variables available for each specific Exportstring. This allows any variables that are to be exported to be chosen.

The chosen variables may be separated by the following delimiters:

- · = Space: a single space will be inserted between two variables in the output.
- ¬ = Tabulator: 8 spaces will be inserted between two variables in the output.

The beginning and the end of a single variable is denoted by: **« »**
A carriage return is not indicated by any visual representation in the Edit-View. When you press **Return** the cursor moves to the next line.

In the Format string Preview you may control the effect that the inserted delimiter has on the output.

Variables in data-block View:

The Variables in Data-block View shows the Exportstring specific variables for each Exportstring. It allows any variables that are possible with a specific Exportstring to be chosen for Export.

- Select a variable from the list and drag and drop it into the Edit-View. Alternatively, double click it to insert it into the Edit-View or right-click onto a specific variable and select **Insert** from the context menu.

When you select a variable the Variables in data block View changes to display a short explanatory definition of the respective Variable in its lower section.

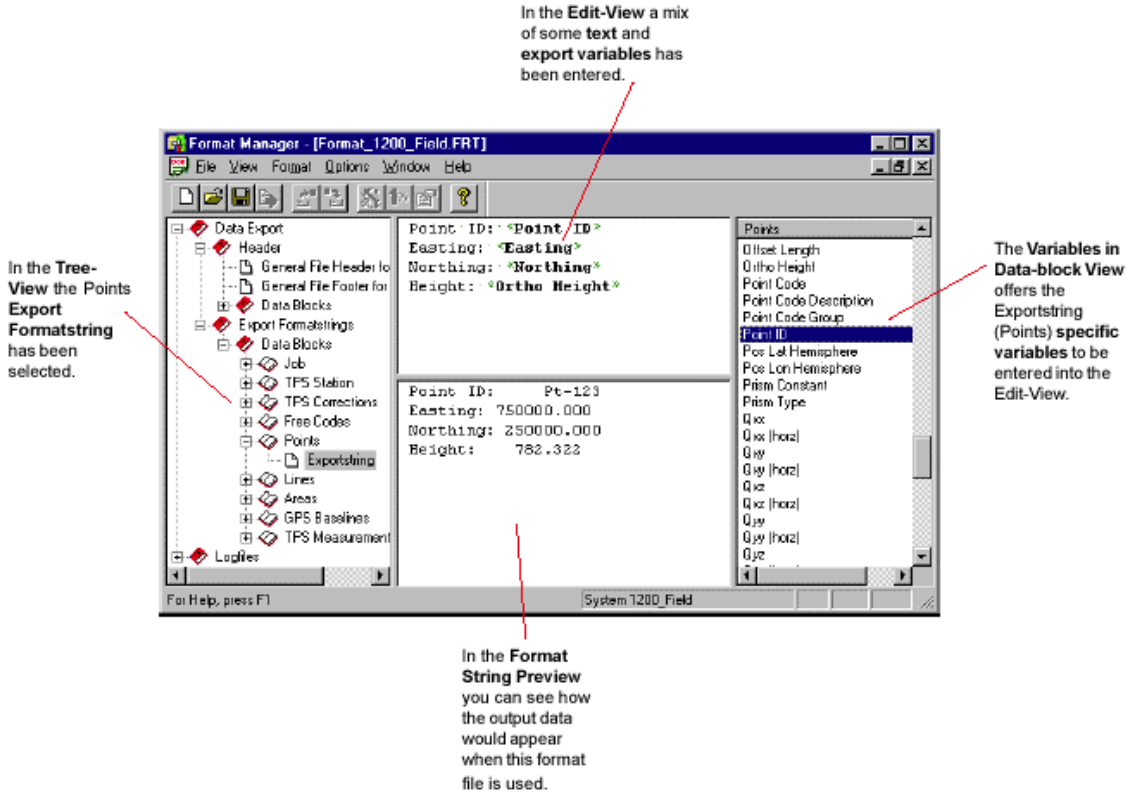
Format String Preview:

The Format String Preview section is simply a preview screen. It allows you to see how the text and export variables will look when the format file is used. No data can be entered in this screen.

The exemplary values of the inserted export variables displayed in the preview pane are predefined in the format template and cannot be edited.

While the Format String Preview offers you a preview of how a single Exportstring will appear in the output file you might also want to see a preview of how the Exportstrings defined in the format file will appear altogether. To get a preview on all Exportstrings as defined in the current format file click on Preview from the toolbar.

Example of how the Views may look whilst working in the Format Manager with a System 1200_Field template:



Window Commands

Format Manager is a fully multitasking software environment allowing you to run different tasks at the same time. E.g. several Format file Windows can be open simultaneously. The Window Commands enable you to arrange the Windows in the way you want.

The Window Commands are available from the **Window** main menu. All open windows are listed in the **Window** main menu. To jump to another open window select it from the list.

New Window:

Opens a new window with the same contents as the active window contains so that you can view different parts of a Format file at the same time.

That the "new" window is **just a copy** of another active format file (and **not** the window of a new format file!) is indicated in the caption bar by the naming convention [Filename x**:1**] (for the original) and [Filename x**:2**] (for the copy). When you close the copy the file name of the original will be set back to [Filename x]

Cascade and Tile:

Both commands offer special ways of arranging open windows thus that all are visible in the main Format Manager pane.

Arrange icons:

All minimized format file windows are arranged from left to right across the bottom of the main Format Manager window.

The View main menu

The **View** main menu contains the following items:

Toolbar

Displays or hides the **Format Manager Toolbar**. A √ beside the menu item indicates that the toolbar is displayed as part of the Format Manager main window.

Statusbar

Displays or hides the **Format Manager Statusbar**. A √ beside the menu item indicates that the statusbar is displayed as part of the Format Manager main window.

The main information given in the statusbar is to indicate the template of the current Format file.

Format Files

What is a Format file?

A format file is quite simply a "mask" or "filter" which allows surveyed data and logfiles written in the field to be exported in any format as an ASCII text file. Format files can be written both, for use with **LGO** and with the **field instruments**.

For example, one user may wish to export data from LGO in a standard Leica GSI16 format. A second user wishes to export data from the instrument in a "Report Style" format.

Using the appropriate format file, the export of any data from the instrument and LGO into both these formats is possible. It is thus easily possible to build up a library of many different output formats.

Since not all of the Exportstrings and the variables they contain are available with each instrument, format files are instrument specific and bound to a specific format template. The number and type of Exportstrings available with each format template vary for the different instrument classes and LGO.

In general, format files are defined by the following data block sub-categories for **Data Export**:

- **Header:** in your format file you may include **general header information** and **headers for the single data blocks** by simply typing the appropriate text into the Edit View.
- **Export Formatstrings:** select the appropriate **variables** from the Variables in Data-block View to export Job information, surveyed data codes etc. in a structured ASCII text file.

For detailed information on the Data Export categories and the Logfiles category (System 1200) see:

Data Export data block: Header

Data Export data block: Export Formatstrings

Logfiles data block (System 1200)

Create a new Format file

To create a new Format file proceed like follows:

1. From the toolbar click  **New format** or select **New** from the File main menu.
   Alternatively, press **Ctrl+N** on the keyboard. The **Format file type...** dialog opens.
2. In the **Format File type...** dialog select the **Instrument class** for which you want to create a format file. If there exists more than one **Format file type** (template) for the selected instrument class select the one you need from the list. For most of the supported instruments a Basic or Field template plus a Standard or Office template exists.
3. Click **Ok** to open the new Format file or **Cancel** to abort the function.
   Alternatively, double-click the format template under **Format file type** to open the format file.

Note:

- In a newly created format file all Exportstrings are empty  . The Settings options are set to default values.

See also:

Save a Format file

Close a Format file

Open a Format file

Open a Format file

To open a format file proceed like follows:

1. From the **File** main menu select **Open...** or click  **Open format** from the toolbar. Alternatively, press **Ctrl+O** on the keyboard. The **Open File** dialog appears.
2. Under **Files of type** make sure that the focus is set to **Formats (*.frt)**.
3. Under **Look in** select the directory where your format files (*.frt) are stored.
4. Select the file you want to open from the list.
5. Click **Open** to open the format file or **Cancel** to abort the function.

See also:

Close a Format file

Create a new Format file

Close a Format file

To close a format file:

- Select **Close** from the **File** main menu or double-click onto  in the top left-hand corner of the format window.

Note:

- In case your format file contains unsaved changes, you will be prompted by the system to save the file before closing.

See also:

Open a Format file

Create a new Format file

Save a Format file

To save a **new**, **unnamed** Format file proceed as follows:

1. Click **Save**  .from the toolbar or from the **File** main menu.
   Alternatively, press Ctrl+S on the keyboard.
2. The **Save as** dialog pops up. Under **Save in** select the directory to which you want to save the format file.
3. In the **File name** edit field enter a name for the new format file.
4. From the **Save as type** combo box select the right a file type (Formats (*.frt)).
5. Click **Save** to save or **Cancel** to abort function.

See also:

Create a new Format file

Export Preview

Before you actually use a format file to export data you might want to check how the result will look like, i.e. how the single Exportstrings fit together, if headers and footers are placed correctly etc.

- Click **Preview**  from the toolbar to see how the output file will look like. The **Export Preview** is displayed in a stand-alone window.
  Alternatively, select **Export Preview...** from the **Format** main menu or from the context-menu in the Tree-View or Edit-View.

When the Preview window is active the main menu and toolbar of the Format Manager change to offer a minimum of functionality:

- Click **Close**  from the toolbar to close the **Export Preview** window.
- Click **Print**  from the toolbar to print the **sample output** of the format file.

Note:

- To reflect adaptions you make in a format file **close** the Preview window and **re-open** it after you've made your changes.

View Format file Properties

To view the Properties of the current Format file:

- Click **Properties**  from the toolbar or select **Properties** from the **Format** main menu.

In the **Properties of current format** dialog the following format file properties are displayed:

- **Name**
- **Version**
- **Author** (editable)
- **Company** (editable)
- **Creation date**
- **Instrument class**
- **Format type**
- **Comment** (editable)

Click **OK** after viewing the properties or **Cancel** to abort the function.

Views

Each Format fie window is divided into four sections - the **Tree-View**, the **Edit-View**, the **Format String Preview** and the **Variables in Data-block** view.

Tree-View:

The Tree-View provides an overview of all the **Data Export** and **Logfiles** data blocks in an expandable hierachy of books and pages.

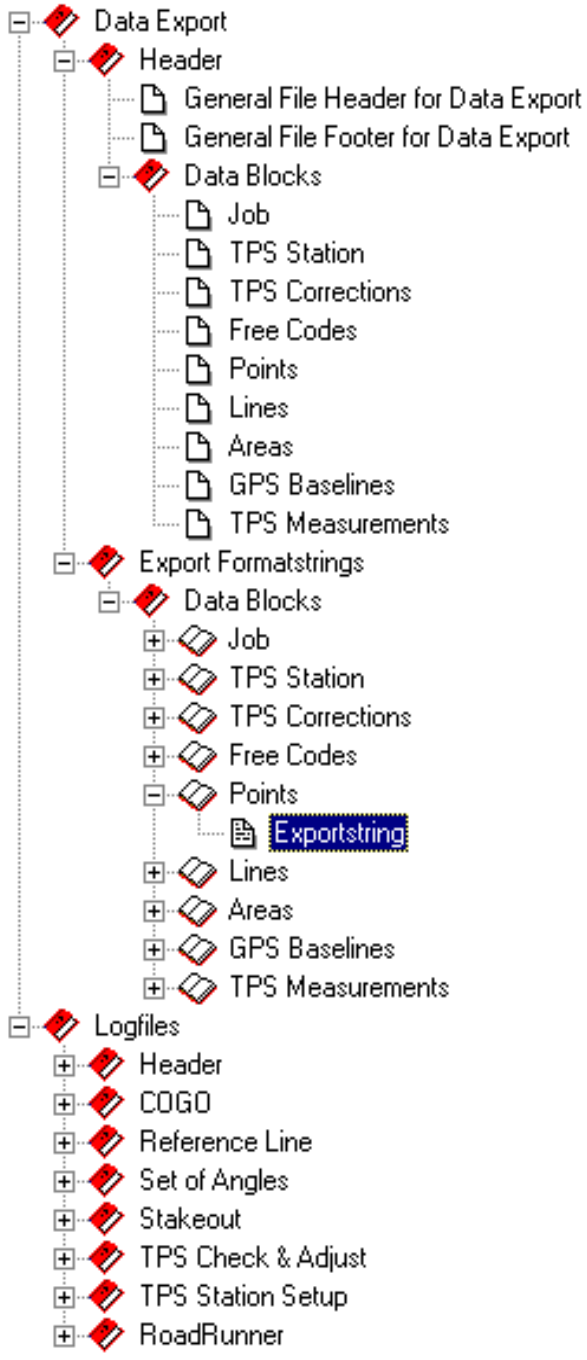
- Double click on an item or click to expand it.
- If an item is open, double click on it or click to close it.

If you click on any of the **Exportstrings** the Tree-View changes to display a short explanation of the respective Exportstring in its lower section. You will get information on which kind of data and how the data will be exported for that Exportstring.

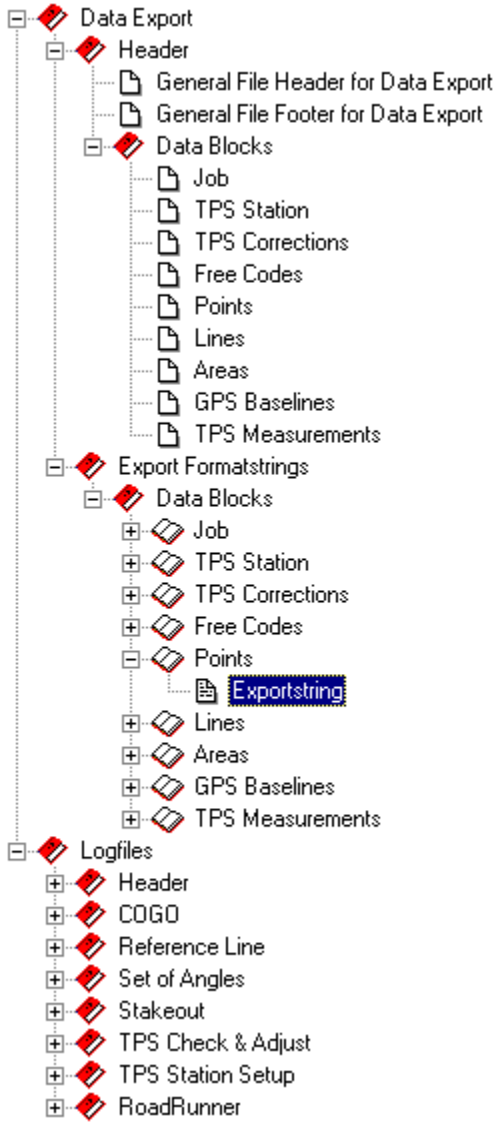
If a **Header** data block, an **Export Formatstring** or a **Logfile** data block contains data then the page is shown thus: .

Example:

Tree-View of a System 1200_Field template:



Tree-View of a System 1200_Field template:



Edit-View:

After selecting a **Data Export** data block or a **Logfile** data block from the Tree-View, the data to be exported for those data blocks has to be entered in the Edit-View.

The Edit-View is basically similar to any text editor. Any text that is required to be included in the output file needs to be entered here.

If an **Export Formatstring** page or a **Logfile** page for one of the applications (COGO, Stakeout etc.) is selected from the Tree-View then the **Variables in Data-block View** is filled with the format string variables available for each specific Exportstring. This allows any variables that are to be exported to be chosen.

The chosen variables may be separated by the following delimiters:

- · = Space: a single space will be inserted between two variables in the output.
- ¬ = Tabulator: 8 spaces will be inserted between two variables in the output.

The beginning and the end of a single variable is denoted by: **« »**
A carriage return is not indicated by any visual representation in the Edit-View. When you press **Return** the cursor moves to the next line.

In the Format string Preview you may control the effect that the inserted delimiter has on the output.

Variables in data-block View:

The Variables in Data-block View shows the Exportstring specific variables for each Exportstring. It allows any variables that are possible with a specific Exportstring to be chosen for Export.

- Select a variable from the list and drag and drop it into the Edit-View. Alternatively, double click it to insert it into the Edit-View or right-click onto a specific variable and select **Insert** from the context menu.

When you select a variable the Variables in data block View changes to display a short explanatory definition of the respective Variable in its lower section.

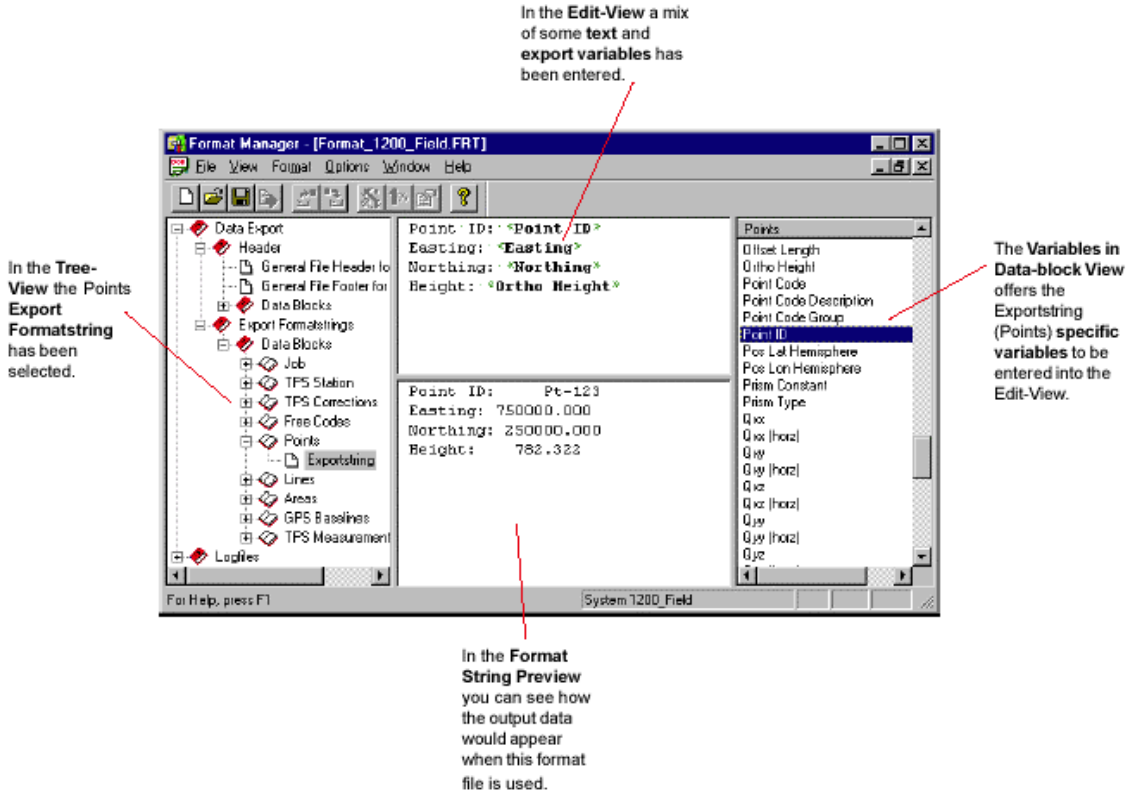
Format String Preview:

The Format String Preview section is simply a preview screen. It allows you to see how the text and export variables will look when the format file is used. No data can be entered in this screen.

The exemplary values of the inserted export variables displayed in the preview pane are predefined in the format template and cannot be edited.

While the Format String Preview offers you a preview of how a single Exportstring will appear in the output file you might also want to see a preview of how the Exportstrings defined in the format file will appear altogether. To get a preview on all Exportstrings as defined in the current format file click on Preview from the toolbar.

Example of how the Views may look whilst working in the Format Manager with a System 1200_Field template:



Format templates

Each instrument class has specific output capabilities and, therefore, requires a specific type of format file. The Exportstrings definable for the single instrument classes are listed in the corresponding format templates.

For each Instrument class you have the choice between *Field (Basic)* and *Office (Standard)* **Format templates** to produce **Format files** of either **type** *Field (Basic)* or *Office (Standard)*. The format template defines which Exportstrings are available. In general the field instruments support different Exportstrings than the more complex Office software. For the DNA instruments the *Field* and *Office* templates are identical. Thus only *DNA_Standard* **Format file types** can be produced with Format Manager.

When you create a new format file you have to decide on the **Instrument class** and **Format file type** you want to create the format file for. The new format file will be linked to its specific template and can only be used with the chosen instrument class.

The Format template defines:

- which Exportstrings are available in the single Format file types.
- which Export variables are available with the single Exportstrings.
- the Header properties.
- the Exportstring properties.
- the exemplary values of the inserted export variables displayed in the Export Formatstring Preview.

The following Format Templates are available:

Instrument class	Format file type
DNA	DNA_Standard
GPS 500	GPS500_Field GPS500_Standard
System 1200	System 1200_Field System 1200_Office
TPS 300	TPS300_Basic TPS300_Standard
TPS 700	TPS700_Basic TPS700_Standard

Instrument Classes

Depending on which Leica instrument the Format File is to be used, it may vary slightly. Currently the following instrument classes are supported:

- DNA
- GPS 500
- System 1200
- TPS 300
- TPS 700

For each **Instrument class** you have the choice between *Field (Basic)* and *Office (Standard)* Format templates to produce **Format files** of either **type** *Field (Basic)* or *Office (Standard)*. The format template defines which Exportstrings are available. In general the field instruments support different Exportstrings than the more complex Office software.

Export Formatstrings

Data Export data block: Header

The Data Export sub-category **Header** allows you to define:

- **General** Format file Headers and Footers: General Header and Footer information appears only once at the beginning and the end of the output file.
- **Applications**: only available for DNA and TPS instruments. Headings for the applications that have been run in the field and are to be exported can be defined. Not for GPS 500 or System 1200.
- **(Data) Blocks**: the data blocks listed here correspond to the data blocks listed under **Export Formatstrings**. Headings for the single data blocks to be exported can be defined.

No export variables are available for the **Header** section in the Variables in Data-block View. Enter the text (headers/ footers) to be written into the output file in the Edit-View. See a preview of how the text will appear in the output in the Format String Preview.

To create a Header:

1. Open the **Header** section in the Tree-View and select whether you want to create a general header or footer, application headings or data-block headings for Data Export.
2. Open the corresponding sub-section (General, Applications or (Data) Blocks)
3. To define a general header/ footer or a heading for one of the applications or data blocks to be exported, **click** the corresponding and type the text that shall appear as the section heading **into the Edit View**. A working example is given in Quick Tour I: Creating a Report Style Output.
4. Save your changes. See how the Header page turns to signalizing that the string contains data.

Data Export data block: Export Formatstrings

The Data Export sub-category **Export Formatstrings** allows you to define **which** of the instrument specific **(Data) Blocks** shall be exported and **how** the output shall look like (see Formatting Options and Settings Options).

To define an Export Formatstring:

1. Open the **Export Formatstring** section in the Tree-View and select the **(Data) Block** for which you want to define an export mask. Click on to open the **(Data) Block**.
2. Click on **Exportstring** to define the variables to be exported.
3. From the Variables in Data-block View select the information (variables) to be exported. Click on any of the variables and drag & drop it into the Edit View. Explanatory text can be added if you like.
4. In the Edit View arrange the variables (and texts) as required for the special output format you need. Make use of the pre-defined delimiters and formatting options.
5. Keep control of the output appearance in the Formatstring Preview.
6. When you have finished defining an Exportstring proceed to the next **(Data) Block**. See how the Exportstring page turns to signalizing that the string contains defined variables.
7. Save your changes.

The **Variables in Data-block View** contains for each Exportstring **all** the variables which are possible with the respective Exportstring. They may be **inserted** into the Edit View in whichever sequence you need for your output.

When selected from the list their format corresponds to the defined **Formatting defaults**. Thus it may be necessary to adapt the formatting for single variables. Global Settings can be defined, too.

Note:

- For DNA and TPS300/ 700 instruments at least one application **must** be assigned to a defined Exportstring. The defined Exportstring is used to format data generated by the assigned application. The pre-defined **Default Exportstring** is used to format data generated by non-assigned application(s).
- The names of the single Exportstring **(Data) blocks** correspond to the names of the single **(Data) Block** headers. This makes it easy for you to identify the data blocks and the corresponding headings you have defined for each block.
- For some data blocks in the DNA or TPS standard templates (e.g. for the DNA **Application Results** or the TPS 300 **Measurement TPS**) more than one Exportstring may be defined

Logfiles data block (System 1200)

The category **Logfiles** is only available for the System 1200_Field template. It allows you to define the output format for the system specific application logfiles which are written while measuring in the field.

The available applications for system 1200 are:

- COGO
- Reference Line
- Set of Angles
- Stakeout
- TPS Check & Adjust
- TPS Station Setup

For System 1200 you can define a General File Header and Footer for **Logfiles** independently and separately of the General File Header and Footer for **Data Export**.

- Go to **Logfiles -Header** to define the **General File Header and Footer for Logfiles**.

Like with the general headers/ footers you define in the Data Export section there are **no** export variables available for General Logfile headers/ footers. Enter the text (headers/ footers) to be written into the output file in the Edit-View. See a preview of how the text will appear in the output in the Format String Preview.

The headings for System 1200 applications are defined within each of the **Logfiles - Application** (e.g. **COGO**) sections. With each **Application** listed under **Logfiles** goes a **Header for ...** string for which you may either enter an individual application heading or pick variables from the Variables in Data-block View to be filled with application inherent information like e.g. Application Name and Version Number.

To define a Logfile output format:

1. Open the **Logfile** section in the Tree-View.
2. Open the **Header** section and define a **General File Header and Footer for Logfiles** if needed/ desired.
3. Select one or more of the following applications to be output. Open the **Application** and select any of the **Exportstrings**.
4. From the Variables in Data-block View select the information (variables) to be exported. Click on any of the variables and drag & drop it into the Edit View.
5. Keep control of the output appearance in the Formatstring Preview.
6. When you have finished defining an exportstring proceed to the next. See how the exportstring page turns to signalizing that the string contains defined variables.
7. Save your changes.

The **Variables in Data-block View** contains for each Application exportstring **all** the variables which are possible with the respective exportstring. They may be **inserted** into the Edit View in whichever sequence you need for your output. When selected from the list their format corresponds to the defined **Formatting defaults**. Thus it may be necessary to adapt the formatting for single variables. Global Settings can be defined, too.

Export Variables & Settings

Insert export variable(s)

Export variables are available for:

- all **Data Export** Formatstrings
- all **Application** Exportstrings and the application specific Headers for... (under **Logfiles** for System 1200)

The export variables represent specific data items which are available on the instrument or in the Office software and might be of interest for export to ASCII.

To insert an export variable into the Edit-View for a specific Exportstring proceed as follows:

1. In the Tree-View expand the **(Data) Block** for which you want to define an **Exportstring**.
2. Select the **Exportstring** and go to the Exportstring specific Variables in data-block View to select the variables for which you want data to be output. Only one variable can be inserted at a time.
3. Select a variable from the list and **drag and drop** it **into the Edit-View**. Alternatively, **double-click** it to insert it into the Edit-View or right-click onto a specific variable and select **Insert** from the context menu.

   The chosen variables may be separated by the following delimiters:

   · = Space: a single space will be inserted between two variables in the output.
   ¬ = Tabulator: 8 spaces will be inserted between two variables in the output.

   The beginning and the end of a single variable is denoted by: **« »**
   A carriage return is not indicated by any visual representation in the Edit-View. When you press **Return** the cursor moves to the next line.

   In the Format string Preview you may control the effect that the inserted delimiter has on the output.
4. If needed or desired enter explanatory text in between the variables for an Exportstring.

   Example:

   Example for a Points Exportstring as defined in the Edit View:

   ```
   Point·ID:·«Point ID»
   Easting:·«Easting»
   Northing:·«Northing»
   ```

5. See how the Exportstring page turns to once you have inserted variables. Save the format file.

Note:

- The Default Formatting Options and predefined Settings are applied automatically to every newly inserted export variable. The Formatting Options and Settings can be viewed and edited.

See also:

Edit an export variable

Delete export variable(s)

Edit an export variable

When an export variable is inserted from the **Variables in data-block View** to the Edit View it inherits the  Default Formatting Options and predefined  Settings.

- Edit the Formatting options by either defining new  **Formatting defaults** or by changing the Formatting options for a **specific** variable.
- Edit the global  **Settings** for Scales, Unites and Default Values.

Learn more on how to proceed when you want to:

Define new Default Formatting Options

Define new Formatting options for specific variables

Define new global Settings

Delete export variable(s)

To delete individual export variables from defined **Exportstrings** proceed as follows:

- In the Edit View place the cursor either in front of the export variable to be deleted and press **Delete** on the keyboard or place the cursor behind the export variable to be deleted and press the **Backspace** key.

When all variables and text is removed from an Exportstring its icon turns to again.

See also:

Insert export variable(s)

Edit an export variable

Assign application(s)

At least one application **must** be assigned to each defined (non-empty) **Exportstring**. When you upload the format file to the instrument to export data to an ASCII file then the Exportstring(s) with assigned application(s) is/are used to generate the formatted output of the data produced by the specific application(s). The predefined **Default Exportstrings** are used to format data of applications that are not assigned to the Exportstring.

Note: Applications can only be assigned common Exportstrings but **never** to Default Exportstrings.

To assign or view application(s) assigned to a defined export string proceed as follows:

1. In the Tree-View expand the **(Data) Block** containing the defined Exportstring ( ) to which you want to assign the application(s).
2. Select the **Exportstring** and from the context menu or from the **Format** main menu select **Assign Application...**.

The **Assign application** dialog pops up. In this dialog:

3. Ensure the correct **Exportstring** is selected in the **Formatstring** combo box.
4. From the **Available applications** list box pick one or more of the applications which can be assigned to the defined Exportstring.
   - Select one of the applications and double-click it or press > to move the application to the **Assigned to this format string** box.
   - Press >> to move all applications at once to the **Assigned to this format string** box.

   If you want to remove applications from the **Assigned to this format string** box:
   - Select one of the applications and double-click it or press < to remove the application from the **Assigned to this format string** box.
   - Press << to remove all applications at once from the **Assigned to this format string** box.
5. Click **OK** to assign the selected applications to the **Exportstring** or **Cancel** to abort function.

See how in the Tree-View the icon of the **Exportstring** to which the application(s) has been assigned turns to .

Note:

- If you want to save a Format file containing defined **Exportstrings** without applications assigned an error message prompts you to assign at least one application to each defined Exportstring.

Formatting options & Settings

Formatting Options for Export Variables

Formatting options may be defined for individual export variables or as default settings that will be applied to every subsequently selected export variable for that particular format file. Additionally, you may select those default options to also be applied and used in every subsequent format file you create.

- To modify the format of an individual export variable double click on any export variable and change the settings in the **Formatting options for selected variable** dialog.
- To set the default formatting options for export variables select **Formatting defaults...** from the **Options** main menu or click the  **Formatting defaults** button from the toolbar. In the **Formatting defaults** dialog make your changes.

The use of the options within these dialogs allows a large number of different output formats to be created.

If you want to modify an individual export variable it depends on the **type of variable** which options are available. Only if the selected export variable is a **Floating point** export variable are **all** format options available. This type of variable normally contains a decimal point and a decimal value. An example of such an export variable is **Coordinate (Easting)**.

If the export variable is a **String (text)** variable or an **Integer** variable then not all format options are available. An example of a String variable is a **Point ID**. An example of an Integer variable is the **degree part** of the **Latitude** of a point.

To learn more about the single **General** settings and **Flags** which may be set see the following topics:

Formatting Options for Export Variables: General

Formatting Options for Export Variables: Flags

In the detailed descriptions of each format option it is stated if that option is applicable to **String** and/or **Integer** export variables.

See also:

Settings Options

Formatting Options for Export Variables: General

Variable Name:

Only available in the **Formatting options for selected variable** dialog to indicate the name of a single variable that has been chosen to be formatted.

Alignment:

The alignment defines the orientation of the string within the defined string length (**left** or **right** alignment). Applies also to **String** and **Integer** export variables.

Representation:

The representation allows a decimal or an exponential representation to be chosen. Does **not** apply to String and Integer export variables.

Example:

Example (using **Easting** of 609.173):

Normal: 609.173

Exp. basis e: 6.092e+02

Exp. basis E: 6.092E+02

Sign:

The sign controls if a sign (**+** or **-**) will be output with the export variable. Does **not** apply to String export variables.

Example:

Example 1 (using **Easting** of 123456.123):

Only negative: 123456.123

Always: +123456.123

Example 2 (using **Easting** of -123456.123):

Only negative: -123456.123

Always: -123456.123

Length:

Defines the minimum length of the output. This length includes the sign (if selected to use) and the decimal point. Applies also to **String** and **Integer** export variables.

Length 0 is not allowed. Maximum length is 20.

See below in the description of **Precision** for examples of using the length.

Precision:

This has **different meaning** for String and Integer variables and Floating point variables.

String and Integer variables: Precision defines the maximum length of the output.

In the examples below, the output is shown for both using truncation and not using truncation is shown and uses **0** as the fill character.

Examples:

Examples (using **Point ID** of 12345678):

Length	Precision	Truncation	Output

5	0	No	12345678
5	0	Yes	45678
5	3	No	00123
5	3	Yes	00123
5	5	No	12345
5	5	Yes	12345
5	7	No	1234567
5	7	Yes	34567

It can be seen that using the correct **length**, **precision** and the **truncation** flag, any output can be achieved.

Note how a **precision of 0** does not set the maximum length - the whole string is output (truncated if the truncation flag is set).

If the length is greater than the precision, the remaining spaces are filled with the fill character.

Floating point variables: Precision defines the number of decimal places of the output. The examples below use a fill character of **0**.

Examples:

Examples (using **Easting** of 123456.12345):

Length	Precision	Output
15	3	00000123456.123
15	6	00123456.123450

Note that the length of 15 includes the decimal point.

Fill Character:

Fill characters are used to "fill" variables that have fewer characters than the defined **length** for that variable. Applies also to **String** and **Integer** export variables.

Either **spaces** or **0** can be used as the fill character.

In the example below, the output is **right aligned** and has a **length of 7**.

Examples:

Examples (using **Point ID** of 12345):

0 as **fill character**: 0012345

Space as **fill character**: 12345

Note: The Space fill character is **automatically** selected if a variable is **left aligned**.

Unit:

Only available in the **Formatting options for selected variable** dialog.

The unit type as to how the data will be output for each variable can be defined. This setting will **overide** any unit setting in LGO or on the sensor. Does **not** apply to String export variables.

Linear variables (such as coordinates, baseline lengths) can be set to **Meters**, **US feet**, or **Int. feet**.

Angular variables (such as convergence angle) can be set to **Radians**, **Gons**, **Degrees** (sexagesimal), **Degrees** (decimal) or **Mils**.

Tick ☑ the **Use instrument units** checkbox to read the instrument settings regardless of the Format Manager settings for that variable.

Validity:

In the **Formatting defaults** dialog decide on the range of validity for the new default settings:

Tick ☑ the **Use for every new format** checkbox to make the formatting options also be applied and used in every subsequent format file you create.

Formatting Options for Export Variables: Flags

Flags are special "attributes" that can be set to export variables to increase the flexibility of the output format.

Some flags are **not** applicable to **String** and **Integer** export variable types. For each flag it is stated in the following descriptions if that flag is applicable to these export variable types.

Allow scaling:

If this option is selected, variables will be multiplied by the entered scaling factor. Does **not** apply to String and Integer variables.

In the examples below, the **linear scale** is set to 1000.

Example:

Example (using **Easting** of 123456.789):

Flag Enabled (**use scaling**): 123456789.000

Flag Disabled (**do not scale**): 123456.789

Note: The scaling factors themselves are entered in the Settings dialog box.

Suppress rounding:

If this option is selected, the true value will be truncated (instead of rounded) at the specified precision. Does **not** apply to String and Integer variables.

In the examples below, the **Precision** is set to 2.

Example:

Example (using **Easting** of 123456.789):

Flag Enabled (**rounding suppressed**):123456.78

Flag Disabled (**rounding not suppressed**): 123456.79

Truncate value:

If this option is selected, variable values will be truncated to reach the desired string length. Applies also to String and Integer variables.

In the examples below, the **Length** is set to 7.

Example:

Example (using **Easting** of 123456.789):

Flag Enabled (**truncate**): 456.789

Flag Disabled (**do not truncate**): 123456.789

For **Floating Point** variables the truncation is **always from the left**. For **String** and **Integer** only variables, the text can be truncated from the **left or right** depending on the Length and Precision settings.

Export nothing if variable is empty:

If this option is selected, export variables which are empty will **not** be filled with the default value defined in the Settings dialog but remain just empty in the output.

Example:

For example, a simple format file is created which will output point ID, coordinates and code.

However, during the survey, not every point is coded.

As Default value the string '----' has been defined in the **Settings** dialog. Thus, the code variable should be filled with '----' for the points without codes.

If you set the **Export nothingif variable is empty** flag, though, the defined default value will be overridden and an empty string will be exported instead.

Repeat only once:

Only applicable for line and area specific export variables.

If this option is selected, the variable will only be output once for the whole line/ area object.

Validity:

In the **Formatting defaults** dialog decide on the range of validity for the new default settings:

Tick ☑ the **Use for every new format** checkbox to make the formatting options also be applied and used in every subsequent format file you create.

Settings Options

The use of the options within the **Settings** dialog allow the **Units**, **Scaling factors** and the export variable **Default values** to be set.

- From the **Options** main menu select **Settings...** or click the  **Settings** button from the toolbar to make your changes.

Scales:

Scales can be defined for all export variable types. **All** export variables will then be mutiplied by the specific scale factor.

Example:

Example (using **Easting** of 123456.12345):

In the example below, the linear scale is set to 1000.

Output: 123456123.45

Note:

- If you wish to use scaling for an export variable, remember to set the Allow scaling flag for that export variable.
- If you wish the scaling values also to be used in every subsequent format file you create, you should select the ☑ **Use for every new format** option.

Units:

The **Units** for angular, linear, temperature and pressure units can be selected. The output will then be converted into the selected units.

Note:

- If you wish the unit settings also to be used in every subsequent format file you create, you should tick the ☑ **Use for every new format** option.
- If you wish the units which are currently chosen on the instrument or in LGO to be output, you should select the ☑ **Use instrument units** option.

Default values:

This allows the **Default values** to be defined that will be output for **Floating Point**, **Integer** and **String** export variables.

- Examples of **Floating Point** variables are coordinate or baseline length variables. They are variables which could contain a decimal point in their output.
- An example of an **Integer** variable is the degree part of the WGS84 coordinates. They are variables which do not contain a decimal point in their output.
- Examples of **String** variables are Point ID or Code ID. They are purely text variables.

The default value you enter will be output when that variable type (floating point, integer or string) is output but no actual data for that particular variable is available.

For example, a simple format file is created which will output point ID, coordinates and code. However, during the survey, not every point is coded. When the format file is used with this survey data, the code ID that will be seen in the output for the points that have not been coded will be the default value.

Note:

- If you wish the unit settings also to be used in every subsequent format file you create, you should tick the ☑ **Use for every new format** option.

String Pool

Concept of String Pool

The Format Manager provides you with a useful feature called String Pool. The String Pool corresponds to an Exportstring library. Whenever you have defined complex Exportstrings or Exportstrings which you know you will reuse in another format file it might be recommendable to save the Exportstring to the String Pool.

The Exportstrings stored in the String Pool are identified by names and do not have any link back to the formats files in which they have been created first. The Exportstrings in the String Pool can be loaded to empty Exportstrings of similar data block types.

Click below to learn more about how you can:

Save a defined format string to String Pool

Load a defined format string from String Pool

Load a defined Exportstring from the String Pool

To load a defined Exportstring from the String Pool proceed as follows:

1. In the tree-view select the undefined Exportstring to which you want to load a definition out of the String Pool.
2. Click **Load from pool** from the toolbar or right-click and select **String Pool - Load...** from the context menu.
   Alternatively, select **String Pool - Load...** from the **Format** main menu.

The **Format string pool - Export formatstrings** dialog pops up. In this dialog:

3. Set the **Selection filter**. The pool is Template and Data block type specific. Thus select the **Template** and **Data block type** from which you want to load a defined Exportstring. In the Pool content list box all predefined strings available for that Template and Data block type are listed.

   Remember: The Data block type of the selected pool content should match the Data block type of the undefined string to which you want to load a definition. If you try to load an Exportstring whose type does not match the undefined string a Warning message is issued!
4. From the **Pool content** list box select the Exportstring you want to load.
5. Click **Load** to load its definition or **Close** to abort function. The loaded Exportstring will be displayed on the Edit-view.

See also:

Save a defined Exportstring to the String Pool

Delete a defined Exportstring from the String Pool

Save a defined Exportstring to the String Pool

To save a defined format string to the String Pool proceed as follows:

1. In the tree-view select the defined Exportstring that you want to save to the String Pool.
2. Click **Save to pool** from the toolbar or right-click and select **String Pool - Save...** from the context menu.
   Alternatively, select **String Pool - Save...** from the **Format** main menu.

The **Format string pool - Export formatstrings** dialog pops up. In this dialog:

3. In the String name edit field give the Exportstring to be saved a name.
4. In the **Pool content** list box see all the strings which have already been saved to the pool. The pool is Template and Data block type specific. Select any string in the pool content and click **Info...** to view the Exportstring properties.
5. Click **Save** to add the string to the pool or **Close** to abort the function.

See also:

Load a defined Exportstring from the String Poo

Delete a defined Exportstring from the String Pool

Delete a defined Exportstring from the String Pool

To keep your String Pool clean of Exportstring definitions which are outdated it might become necessary to remove strings again from the pool.

1. In the tree-view select any defined or yet undefined Exportstring.
2. Click **Save to pool**  or **Load from pool**  from the toolbar to open the **Format string pool - Export formatstrings** dialog.

In this dialog:

3. Select the **Pool content** to be deleted.
   Note: The pool is Template and Data block type specific.
4. Click **Remove** to delete the selected string definition from the pool.

View the Properties of Exportstrings in the String Pool

To view the properties of Exportstrings in the String Pool:

- Select any string in the **Pool content** list box of the **Format string pool - Export formatstrings** dialog and press **Info...**.

The **Formatstring properties** dialog pops up to display the following information::

- **Name** and **Length** of the Formatstring
- the **Template** and **Data block type** for which it has been defined (**Context**)
- its **Author** (editable), **Comments** (editable) and **Creation date**