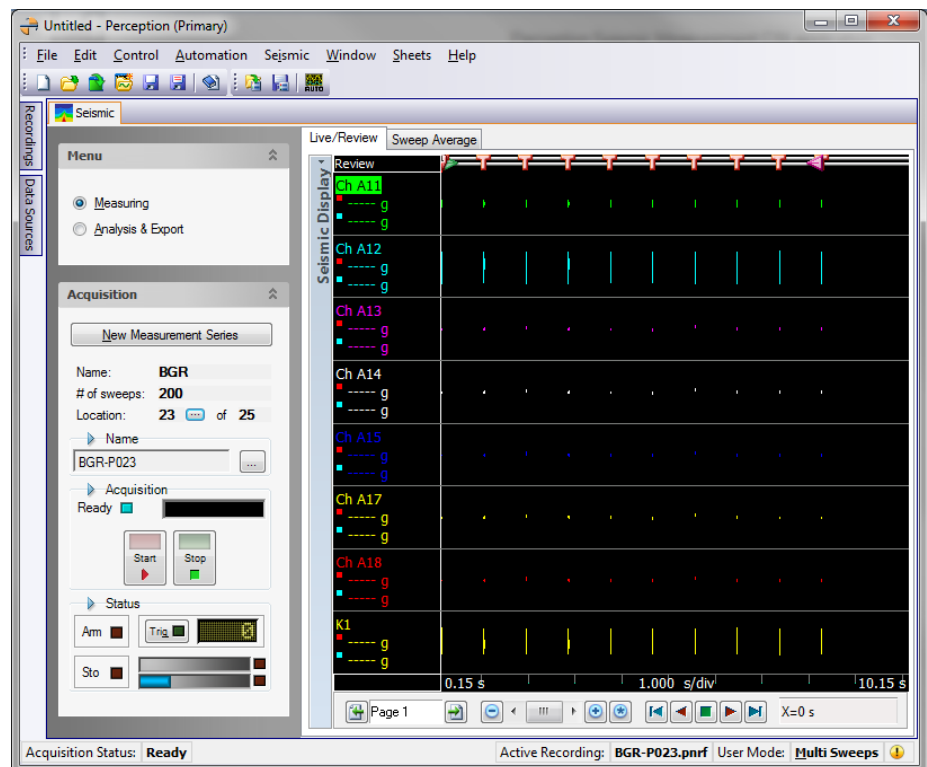**Genesis** HIGH SPEED

User manual

Perception CSI Extension
Seismic Measurement
Version 1.1

HBM

Document version 1.1 – December 2011

For Perception 6.16 or higher

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1   Introduction

Welcome to the Seismic Measurement software manual. This document describes how to use this software application.
The purpose of the new application is to automate seismic measurements.
A special user interface is created to make this possible. How this will work will be described below in more detail.

The application is an integrated part of the Perception software.

The application is based on the Perception Custom Software Interface (CSI).
This manual assumes you understand your Genesis HighSpeed Test and Measurement equipment, software and basic acquisition terminology. You may like to use the Perception User Manual as a reference.

2   Scope

This Perception software extension enables the use of Seismic Measurement with any GEN DAQ hardware.
Via the extra sheet the operator can do the following things:

- Make recordings, using a special naming convention
- Calculates average of recorded sweeps
- Export the following data into WFT format:
    o   a complete recording
    o   a single sweep
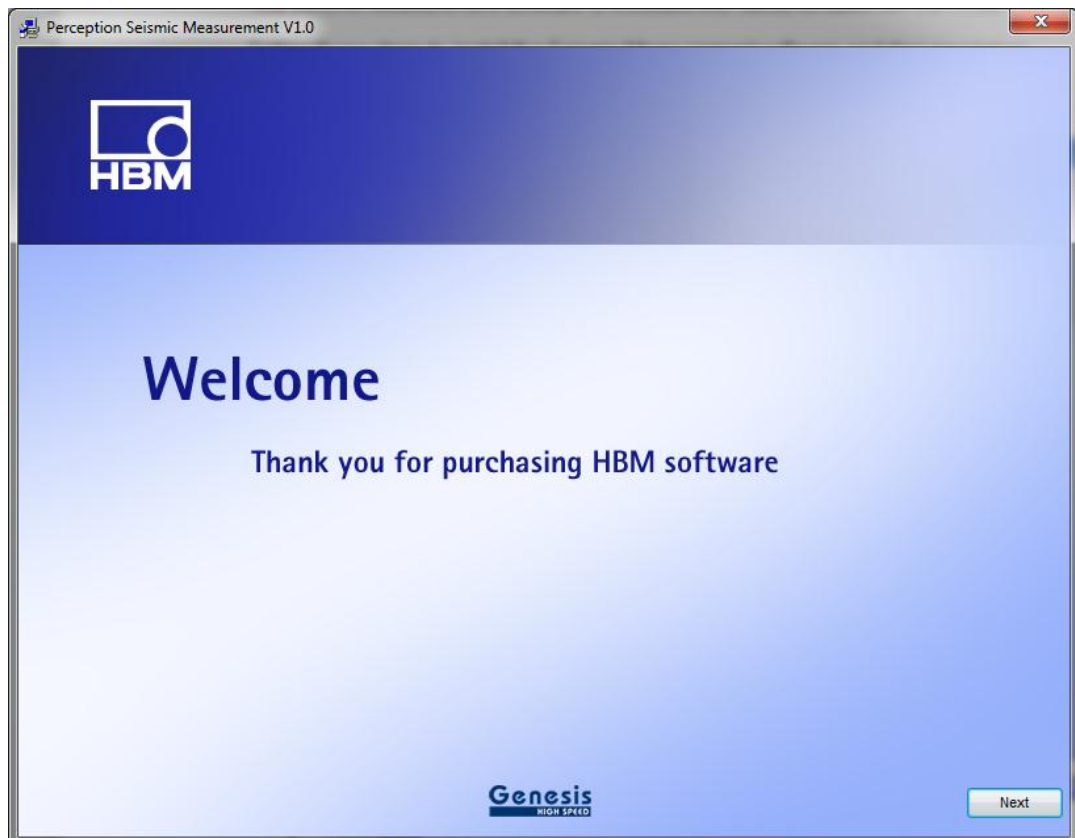   o   the average of all measured sweeps
- Reload recordings.
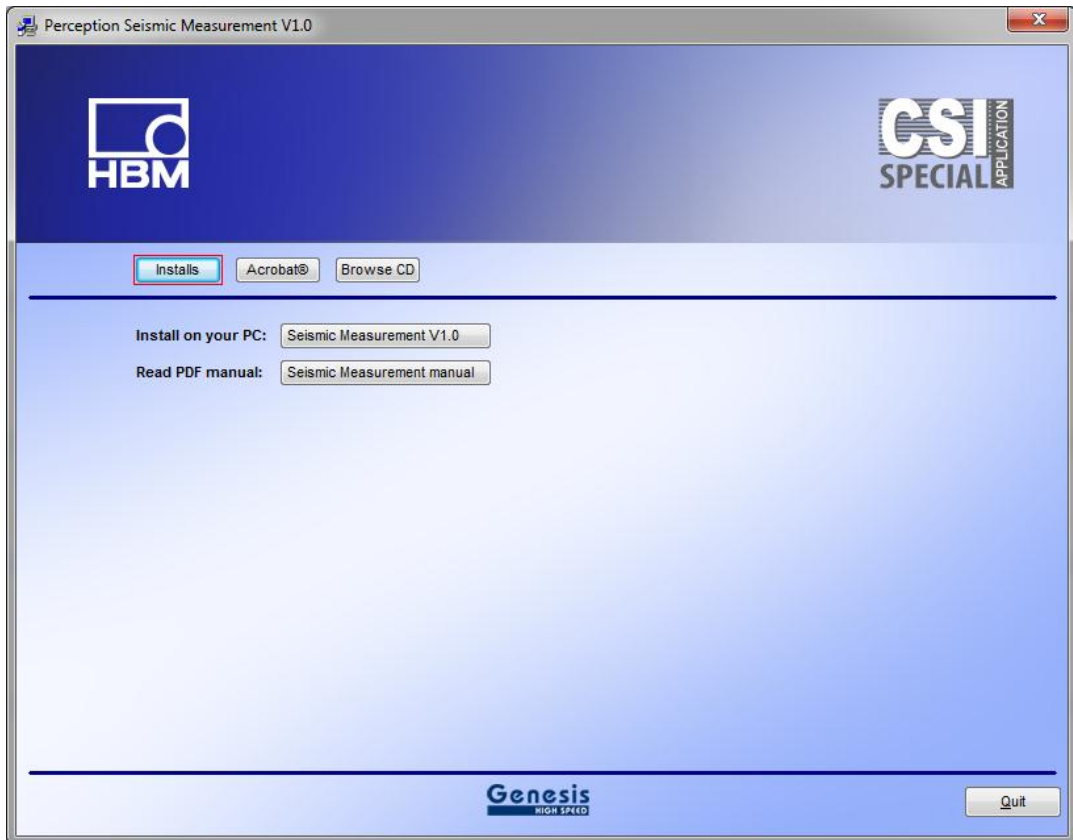
3   Getting Started

3.1   Installation

The Seismic Measurement software is included with documentation on CD-ROM.

Follow these steps to install the Seismic Measurement software and documentation:

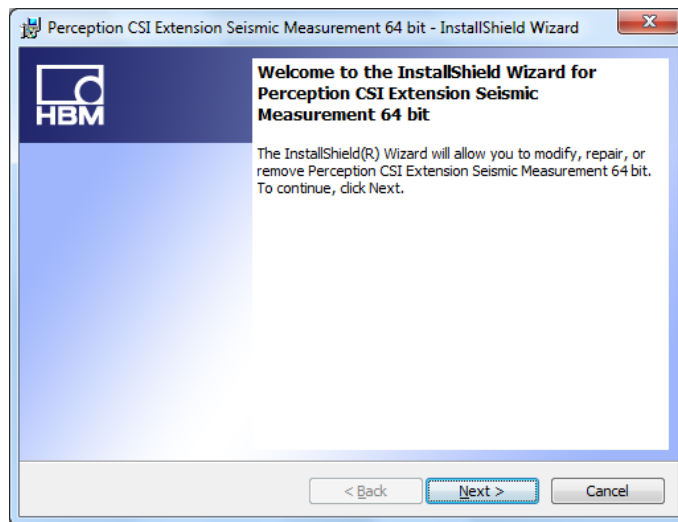- Put the installation CD into your CD-drive. The following screen comes up:

- Click **Next**

Depending on the Perception version either a 32 or 64 bit install will be done.

- Click **Extension Seismic Measurement V1.0**

- Click **Next**, and follow the on-screen instructions to complete the installation. When the process is complete, a message tells you that the option is installed. Click **Finish**.

Now the software and manual should be installed on your PC.
The Seismic Measurement software is **not** a stand-alone program which can be started from the Windows Start menu! It is an integrated part of the Perception software program. Once you start Perception you will see an extra sheet called: **Seismic**

The manual has also been installed on your PC. It is a PDF file which can be opened via the windows HBM menu.

If you cannot open this pdf file then you may have to install the Acrobat® Reader® which can be found on the installation CD.
The manual is also available on the CD, you can read it before installing the software, to do this you just have to click **User Manual Seismic Measurement** (See previous shown installation screen).

3.2   Requirements

Seismic Measurement software operates on any PC where Perception is running.

The Seismic Measurement application can only be used when the HASP® USB key CSI option has been enabled. You can check it has been enabled by going to the Help About dialog and click **More….**. The "More About Perception" dialog shows which options are enabled.

The CSI option icon looks like:

4   Application functionality

4.1   General

Perception has been extended with one extra sheet. This sheet is an integrated part of the Perception application. The sheet is called "**Seismic**". This sheet contains its own site menu and sub pages.
The following paragraphs will describe the application in more detail.

4.2   Seismic sheet contents

The Seismic sheet contains two sub pages.
These pages are:

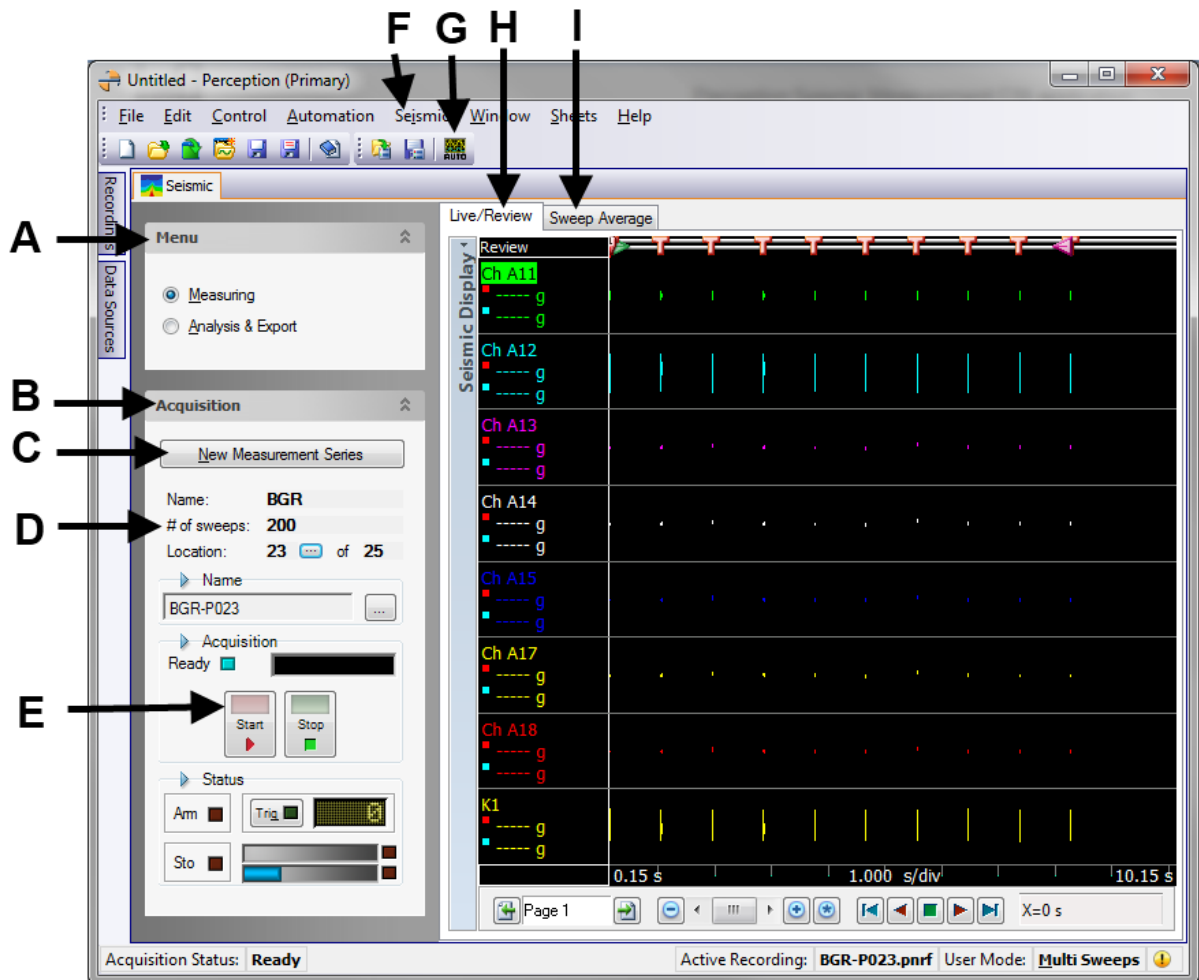- Measuring page
- Analysis & Export page

These pages can be selected via the Menu at the left side of the sheet:
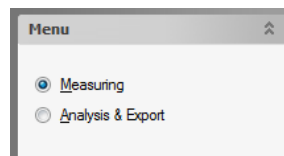
4.3   Measuring page

The measuring page is used to do the measurements and can also be used to export the average sweep data into a WFT formatted data file.

The following items can be found:

A **Main menu of the Seismic sheet**
Use this menu to switch between **Measuring** mode and **Analysis & Export** mode.

B **Acquisition menu.**
From here you can control the complete acquisition

C When you click at this button the **New Measurement Setup** dialog is shown:
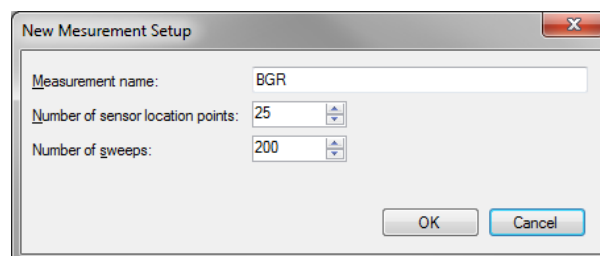
You can enter:

- **A new measurement name**.
  This name is used to construct the individual recording names. For example the first recording name in the example will be BGR-P001

- **The number of sensor location points**

Per location a recording will be done. In the example dialog above this means that 25 recordings are done. The location of each sensor will be changed in between two recordings.

- **Number of sweeps per recording**
  Per recording the number of sweeps can be defined, the Seismic CSI program will automatically calculate the average over all the sweeps at the end of a recording.

D   **Measuring point information**
The name of the current measuring is shown. You can also see how many sweeps are used per recording. The current measuring point is shown. This number will automatically be incremented when the acquisition starts. You can also change this number by clicking at the small button with the three dots.

E   **Start and Stop an acquisition**
To start a new recording click the **Start** button. The location will be incremented and a new recording name will created. The following format will be used to create the new recording name:

<Measurement Name>-P<Location>

If for example *Measurement Name* is **BGR** and the *location* is **12** then the new recording name will be **BGR-P012**.

F   **Seismic main menu**
This menu is related to the seismic sheet it will be described later on.

G   **Auto configure all displays used at the Seismic sheet**
If you click this toolbar button then all the displays of the **Seismic** sheet will be **auto** configured.
All available traces from the active data source tree are added to the various displays. The channel average data sources are all added to the average displays.
You can define your preferred display layout via the Perception preferences dialog. (File->Preferences...)
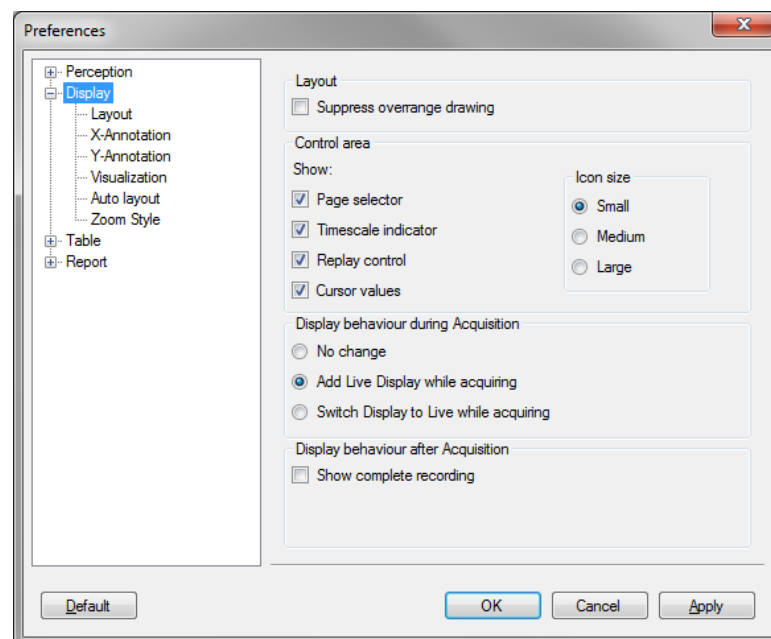
You can also use the Display Copy and Display Paste from the Seismic menu to copy and paste the display layouts. See also **Display Layout** section in this manual.

H   **Live/Review display**

This display is shown during recording; it shows the live data during recording and also a preview of the already recorded part. If you do not see data at the left side, try to click the asterisk (*) at the bottom of the display, the time scale will be changed in a way that all recorded data is visible.
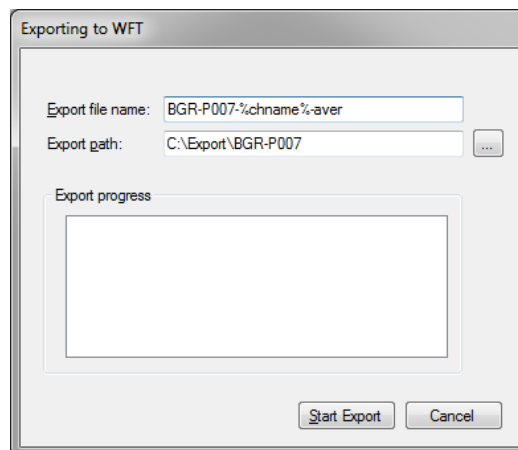

I **Sweep Average display**
This display shows the average sweep of the active recording.
When the recording is ready this display will automatically be shown.
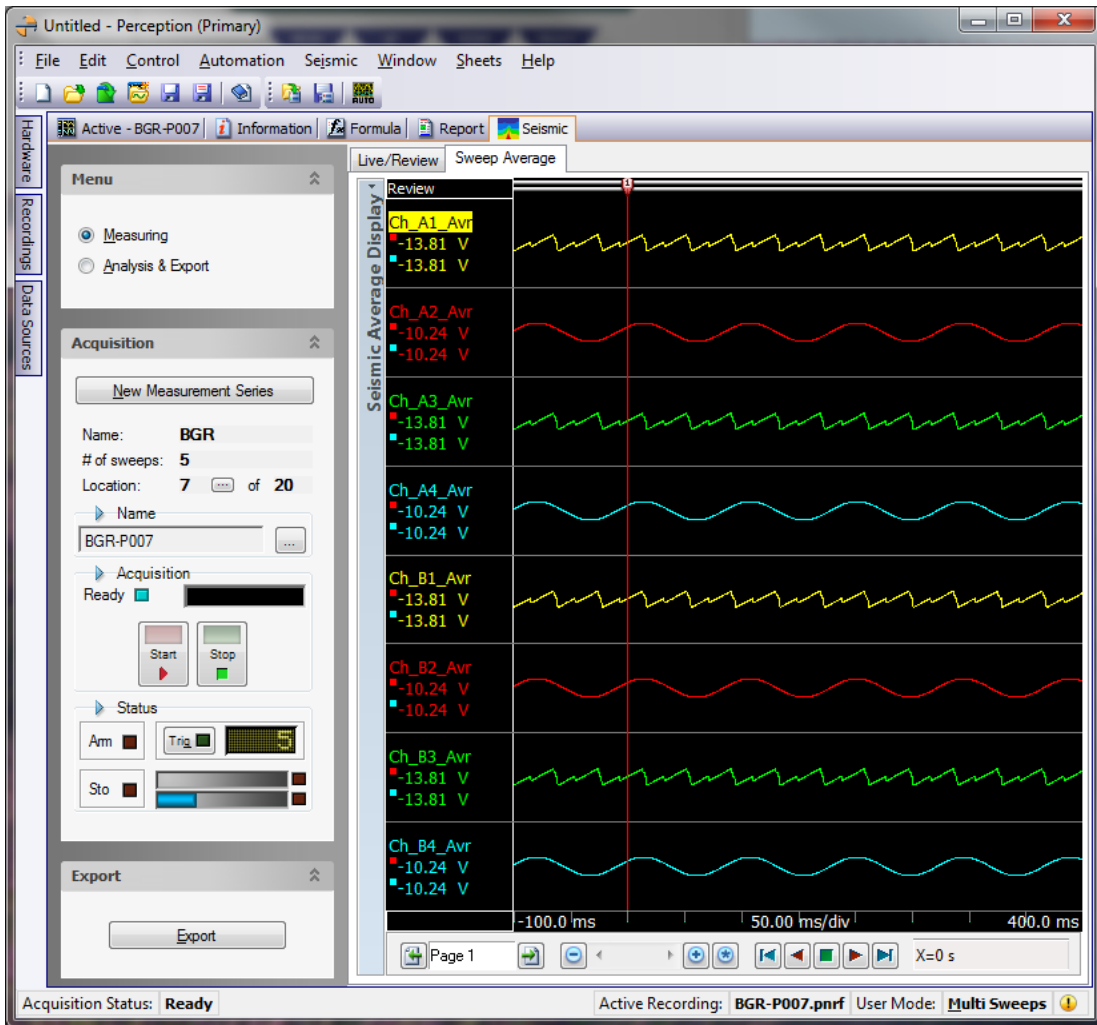
When the Sweep Average display is shown than you also will see the **Export** menu at the left side.
When you press this **Export** button the **Export to WFT** dialog comes up.

Depending on the preference setting **Start exporting automatically after a recording is done** this dialog can automatically be shown and the Start Export will be then be done also automatically.
The definition of the file name can be set via the Seismic Preferences dialog which will be described in a separate chapter. After a **Start Export** click the export from all the average traces in the active data sources sub tree will be exported to **wft** format.
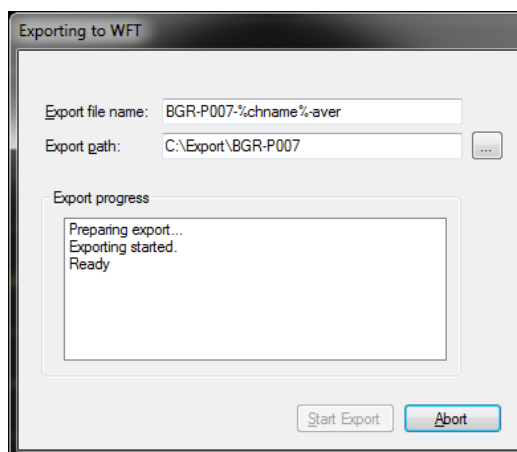
The dialog will close automatically after the exporting is ready.
For each average sweep a new **wft** file will be created because this export file can contain only one trace. See picture below.
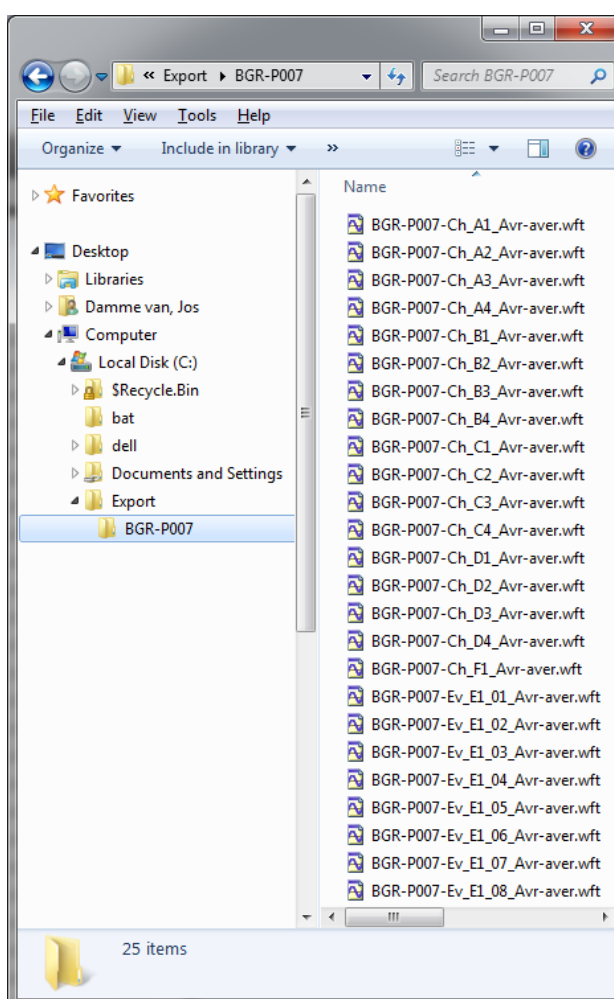
4.4 Analysis & Export

This menu selection is used when you want to reload an existing measurement. You can enter the measurement name and location point and then click the button **Load selected data** to open the recorded data. If the data cannot be found then the probably the folder is incorrect, in this case click at the button with the three dots and select the recording file you want to open. This action will not open the recording but will only update the **Measurement name** and **Location point** fields. It will also

update the folder location. To load the selected data you have to click the **Load selected data** button again.
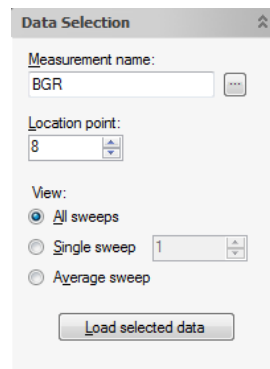

If you want to open the next location point then select the new wanted location point in the related numeric entry field and after that you should click the **Load selected data** button again.

At the right side of the screen there are three different displays:

- **All Sweeps**
  This display shows the complete recording
- **Single Sweep**
  This display shows a specific single sweep
- **Average Sweep**
  This display shows the average sweep

You can either select a display by selecting the correct radio button in the **View** section of the **Data Selection** menu, or you can click at the tab above the displays.
For the single sweep you will have an extra entry where you have to select the sweep you want to see. You can either do this by selecting the sweep number in the entry behind the **Single sweep** radio button or you can use the **Ctrl + T** or **Ctrl + Shift + T** of the display. Note: If you enter a number larger than the maximum number of sweeps in the numerical entry than the last sweep will be shown. The display always shows the actual sweep at the lower left corner, see picture.
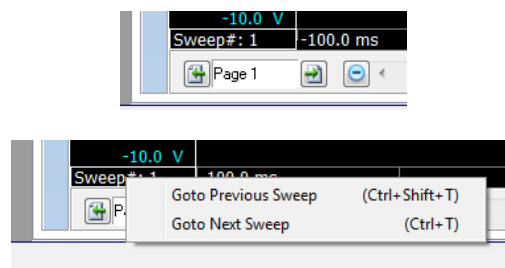
The export button is used again for exporting to a wft file format. The selected view determines what will be exported:
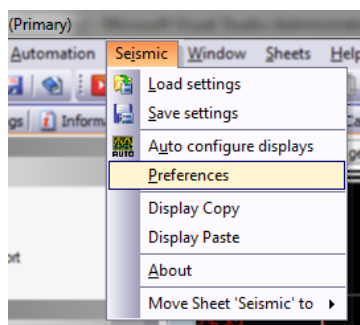
- **All Sweeps**
  All sweeps of all channels in the active data source sub three will be exported
- **Single Sweep**
  Only the selected single sweep of all channels in the active data source sub three will be exported
- **Average Sweep**
  The average sweeps of all channels in the active data source sub three will be exported.

Note: All channels in the active data source sub three are exported whether or not they are displayed in one of the displays. The displays are only used to give you feedback on what is going on. You can modify the displays by removing or adding traces, this will have no effect on the export. However we recommend to set the display mode of the **Single** and **Average Sweep** displays to **ReviewSweep**.

The next chapter will explain how you can modify the export name and path.

4.5 Export Preferences

Use the Preferences dialog to define the export settings. This dialog is called from the **Seismic menu - Preferences**, see picture.

Per export type the preferences can be defined. The export types are:

- **All Sweeps**
  All sweeps of all channels in the active data source sub three will be exported
- **Single Sweep**
  Only the selected single sweep of all channels in the active data source sub three will be exported
- **Average Sweep**
  The average sweeps of all channels in the active data source sub three will be exported.

The export **Preferences** dialog for **All Sweeps** looks like:
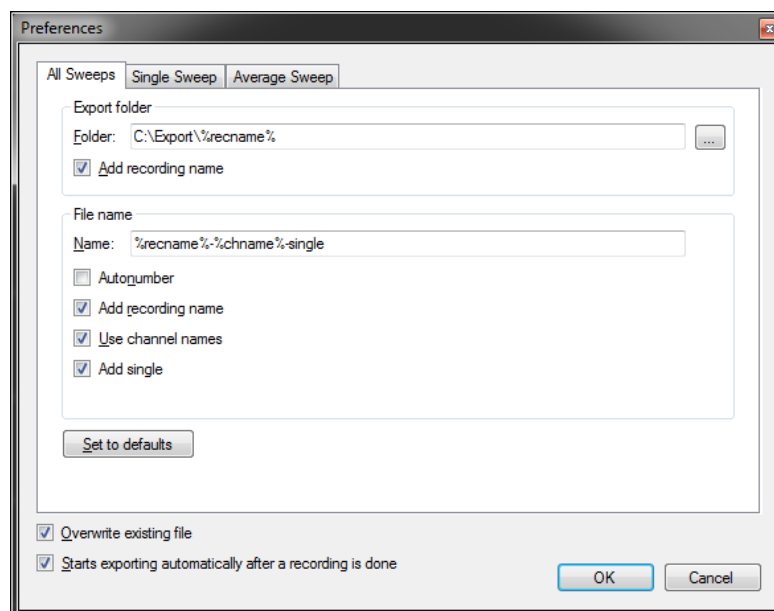
Export folder
Determines the folder where the export files will be saved. The export folder name can be constructed from the actual recording name by adding the **%recname%** to the folder name. This can be done by enabling the Add recording name check box.

File name

Determines the file name of the exported file. Remember that for WFT export a file will be created for each channel which is exported.
The recording name can be defined using the checkboxes below the name entry field:

- **Autonumber**
  Adds a number to the file name, if the same file name has to be created again this number will automatically be incremented by 1.
- **Add recording name**
  Uses the recording name to create the file name to be created
- **Use channel names**
  Use the name of the channel in the file name to be created
- **Add single**
  Add the text single to the file name to be created.

If you click **Set to defaults** all entries specific for the **All Sweeps** export are set back to their default values.

The other two export types do have almost the same entry fields, except that the fixed texts which can be added are "**meas**" and "**aver**".
For the **Single Sweep** it is also possible to add the sweep number to the export file name.

The **Overwrite existing file** is used to automatically override existing files with the same name.

The **Start exporting automatically after a recording is done** is used to enable or disable the automatic start of the exporting of the last recording after the recording has been finished.

4.6 Average sweep data sources

The Seismic application automatically calculates the average sweep after the recording has been finished or when you open an existing recording. The average sweeps are available as calculated waveform data sources in the **Data Sources** dialog. They can be used throughout the Perception application. They can be used for doing calculations, for reporting etc..
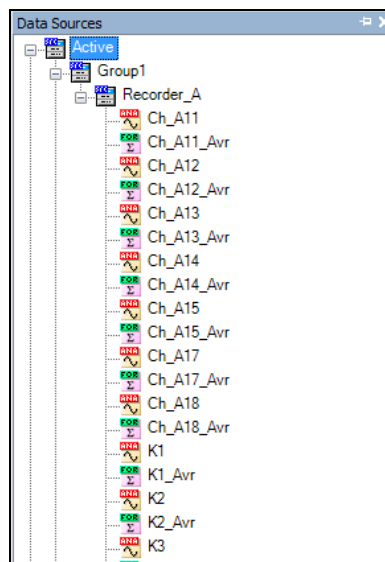

4.7 Display Layout

The display can be configured manually by drag and drop channels onto it, or using the display setup form.
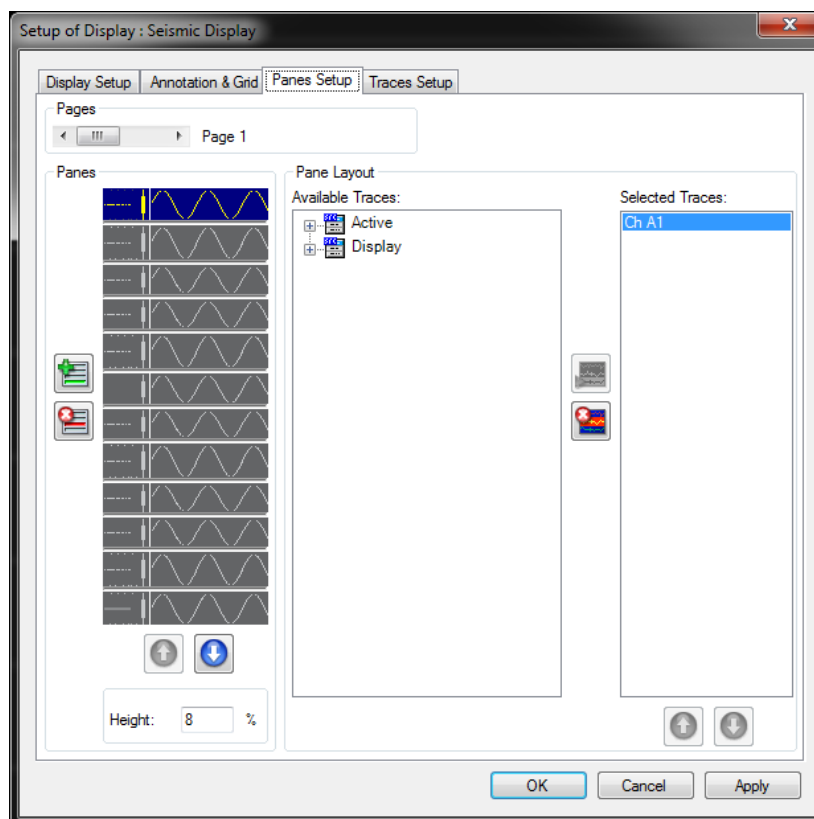
However you can also use the **Auto configure all displays used at the Seismic sheet** tool button to make configure your display. See section **H** of the **Measuring page** paragraph of this manual.

If you are ready with the setup of a display, you always can use this configuration to setup the other Seismic displays. You have to use the **Display Copy** and **Display Paste** menu items from the Seismic menu.
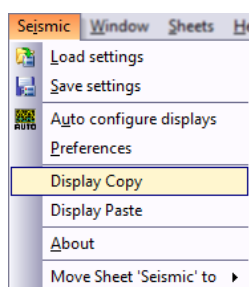
You can do the following steps to accomplish this:

- Configure one of the displays
- If you are ready select the **Display Copy** menu
- Go to one of the other displays
- Select **Display Paste** to configure this display.

Note: The Display Copy and Paste only works if the display contains channel data!

## 5 How to get started with the Seismic Measurement application

If you have installed the new application Perception will have an extra sheet called **Seismic**.
Before you will use this make sure you are connected to the mainframe, for a Perception GEN5i this
will be done automatically.

Select as user mode: **Multi Sweeps**.

You can select this mode via the Perception main menu:
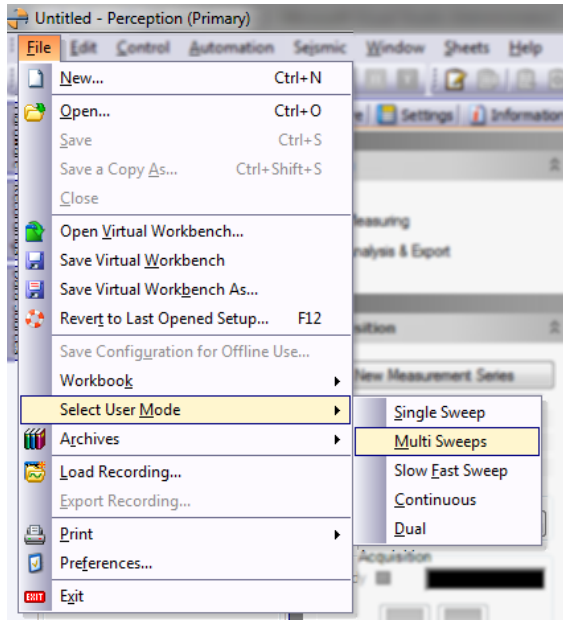
It is however also possible to set this mode as the default user mode, therefor you can use the
Preferences dialog:
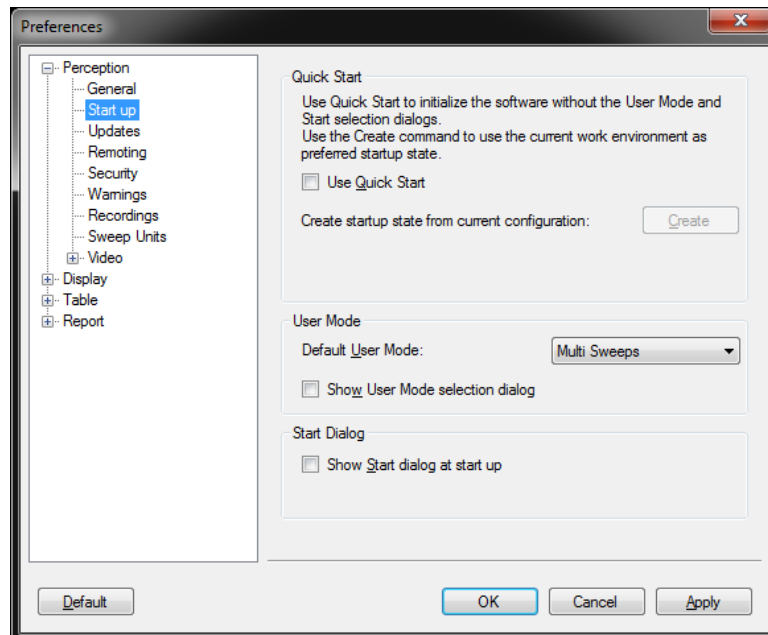
Go to the settings sheet and configure your Mainframe, Recorder and Channel settings. Make sure
your trigger settings are set correct.

We recommend hiding all sheets except the new **Seismic** sheet; this is not needed but can be convenient for operational usage of the Seismic measurements.

Use the **Auto Configure Displays** button to configure your displays. This is only a default, you are free to modify the display layouts, for the data to be recorded and to be exported this has no affect.

You can also go to the Display preferences (*File -> Preferences*) to define your default display layout, this layout will be used if you do an **Auto Configure Displays**.

Go to the Seismic preferences menu and setup your personal preferences.

Open the **New Measurement Series** and enter the way you want to do the recordings.

Perception can now look like the following picture:
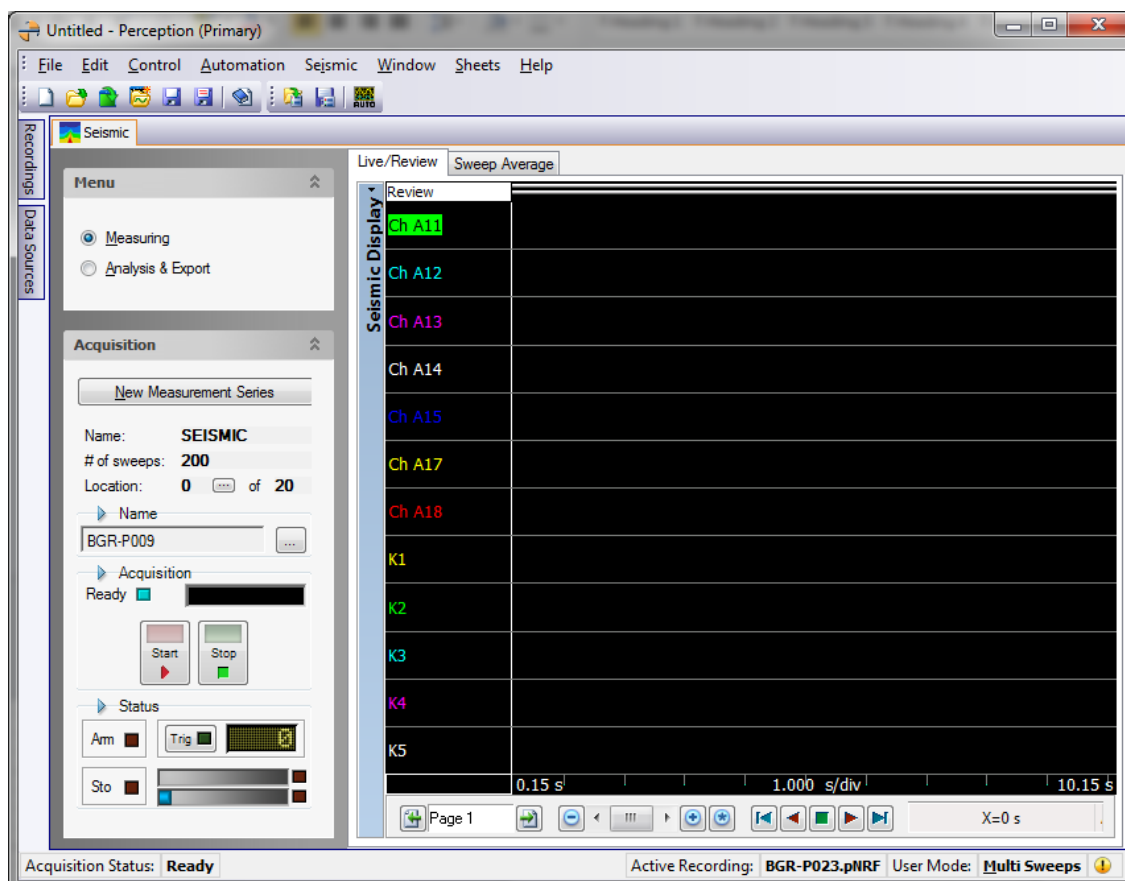
We recommend to save this configuration into a new workbench so you can reuse it later.

The system is now ready and you can do your first measurement. Just press the **Start** button and wait until all triggers have been recorded. When the recording is finished the Sweep Average display will become active and you can then export the average sweeps. When this has been done you reposition your sensors to the second location and when ready start the new recording by pressing **Start** again. The Live/Review display will be shown again. The previous described steps can be repeated until you have done all locations.

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