

Ultrasonic Flow Meter  
Series 6

# SonicExplorer

Software Application Manual  
Version: 1.0.6.28



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# 1 The SonicExplorer Concept

**SonicExplorer** is a Windows based PC software tool that provides user-friendly healthcare monitoring for ultrasonic flow meters (UFM); working specifically in coordination with Elster's complete line of **Q.Sonic Series 6 Ultrasonic Flow Meters**.

Using SonicExplorer on a routine basis is a proactive way to detect any malfunctions before they develop into problems. SonicExplorer focuses on providing intuitive, detailed data that can be used to make informed decisions with respect to maintenance and recalibration. The software calculates physical properties, e.g. velocity of sound, density, superior calorific value, etc. These calculations are made according to generally accepted standards: AGA 8 / 10 and ISO 6976.

A brief overview of the functions provided by SonicExplorer:

- Healthcare monitoring and reporting
- Generating customer service packages
- Live and historical diagnostics analysis
- Database supporting multiple meters
- Fingerprint reference cases
- Spectral noise analysis
- Configuration capability (if security switches are deactivated)
- Device configuration reports
- Offline data analysis

As SonicExplorer is a software program designed with ease-of-use for the customer in mind, the intention is to provide you with a healthcare management system capable of showing the wellbeing of your UFM in real time, as well as monitoring the long term stability of the flow meter using periodically generated reports and historical archives. This enables you to see any changes that have occurred with time and use.

If there are any doubts about the performance or health of your meter, the service feature of SonicExplorer can be used to collect and analyze the appropriate data for analysis of the problem. SonicExplorer will prepare this

information in a “.zip” file and arrange to send it to Elster for a detailed inspection of the meter.

## 1.1 Limitation of Liability

No license is required for SonicExplorer or the .Net Framework 3.5 service pack 1 and .Net Framework 4.0. These software programs are provided on an as-is basis. In no case will Elster be liable for direct, indirect, incidental or consequential damages resulting from a defect in the software, or the unintentional or deliberate misuse of the software.

We reserve the right to make technical changes within the scope of improving performance characteristics and continuous development of the software.



### Caution!

Please read through this manual carefully before using SonicExplorer.

The manufacturer assumes no liability for loss and malfunctions that result from non-compliance with these instructions.

## 1.2 Customer Service

Our customer service team is responsible for troubleshooting and providing technical information. Our employees are constantly striving for new information and experience, as these are valuable sources for improving our products.

For any SonicExplorer inquiries please send an email to [aftersales@elster-instromet.com](mailto:aftersales@elster-instromet.com) and our customer service team will respond as soon as possible.



## 1.3 Warranty Conditions

You can find our current warranty conditions in the General Terms and Conditions on our website:

<http://www.elster-instromet.com/en/general-terms-of-business>

## 2 About these Instructions

This manual describes how to install SonicExplorer and provides a detailed explanation of the basic functionalities included in the software. This includes connecting, monitoring, and verifying the performance of a Q.Sonic Series 6 Ultrasonic Flow Meter.

This documentation is intended for personnel who will install the software, monitor the healthcare of the UFM, and generate any corresponding reports. These instructions do not contain any operating instructions regarding the ultrasonic flow meter itself.



### Saving documentation on the service PC

This documentation is provided in electronic format. It is recommended that the document is saved on the PC intended to be used for service activities so that it may be accessed at any time.

You can download this and other manuals in PDF format from our Docuthek ([www.docuthek.com](http://www.docuthek.com)). These documents are regularly updated.

For a complete list of UFM Series 6 Manuals, please refer to [Appendix I – References](#) at the back of this manual.

## 2.1 Text Labelling

This manual employs consistent visual cues and standard text formats to help you easily locate and interpret information. This information will help you quickly identify relevant content.

### 2.1.1 Terminology

The following words and images are used consistently in this manual:

**Choose/Press:** To use a mouse or key combination to pick an item that begins an action in SonicExplorer.

**Click:** To quickly press and release the **left** mouse button.

**Right-Click:** To quickly press and release the **right** mouse button.

**Window:** A rectangular region of the screen containing a set of controls that accept input from the user and display information to the user.

**Tab:** A sub-heading in a specific window, allowing the user to flip between different pages within the same window.

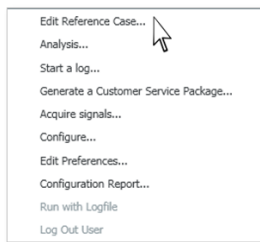
**Home Screen:** The window that is initially displayed upon starting SonicExplorer.

**Flow Meter Icon:**



Right-click on the **Flow Meter Icon** to view the quick start menu (below).

**Quick Start Menu:**



**SonicExplorer Button:**

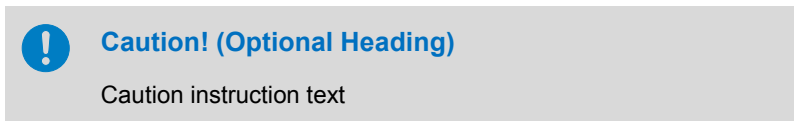


## 2.1.2 Presentation of Instructions

### Caution

A caution box is used to indicate operations or practices that may cause the meter or software to operate in an undefined or unexpected way, or may produce non-specification results.

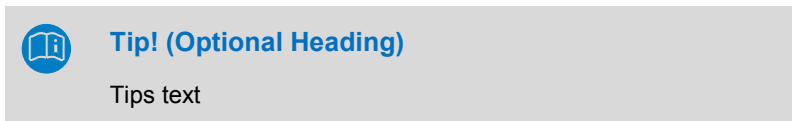
Caution instructions are formatted as follows:



### Tips and Recommendations

Tips include comments and information to facilitate working with SonicExplorer.

Tips are formatted as follows:



## 2.1.3 Paragraph Formats

- ▶ This triangle prompts you to take an action.
- ✓ This character shows you the immediate result of your action.

---

### Example

Multi-row examples are marked by two continuous blue lines and the keyword "Example".

---

## 2.1.4 Character Formats

Example	Format usage in text
⇒ See Chapter <a href="#">8.1 Add a Meter</a> (p.21)	References to additional information are marked with an arrow. If the arrow refers to information within the document, these references are formatted as hyperlinks in blue font. Click on the blue text to go directly to the corresponding section.
<b>Data Sources</b> tab	Marking of graphic screen elements or messages in <b>bold</b> which you will see within the software. These include, for example, menu items, marking of tabs, and content headings.
<MeterName>	Optional or user specific information is specified in italics in angle brackets. In the example, the meter name is only shown once you have created and uniquely named your device.
<a href="http://www.docuthek.com">www.docuthek.com</a>	Links (Hyperlink)
readme.txt	All sequences of letters in sheer ASCII characters such as identifiers for physical quantities, directories, or filenames.
<b>Edit Reference Case → Data Sources → Meters → Reference Cases → &lt;desired case&gt;</b> and click <b>Edit</b> .	A guiding path, outlining step-by-step instructions of buttons to click in order to reach to a certain destination.

Table 2-1 Character Formats

## 3 System Requirements

The minimum system requirements necessary to run SonicExplorer are:

- Windows XP Service Pack 2, Vista, Windows 7, or Windows 8
- Installation requires Local Administrator Rights
- Free disk space with a minimum of 500 MB
- 2 GB RAM
- Screen resolution of 1024x768 or higher

## 4 Set PC/Laptop Network Connections

To be able to connect to a meter, the local network connection of the PC/laptop needs to match the connection properties of the meter, or to the Ethernet network where the meter is connected to.

- The IP-addresses of the laptop/PC and the meter should be within the same range.
- The subnet mask should be exactly the same (or wider) as the meter.
- The parameters and IP address of the meter can be obtained through the display on the meter itself. Please refer to the UFM Series 6 Operation and Maintenance Manual for your specific meter, available online from the [Docuthek](#) and also listed in ⇒ [Appendix I – References](#).



Please contact your IT department for assistance if necessary. Most likely you will need administrator rights on the PC/Laptop for viewing and changing the local network settings.

## 5 Installation

This section details the installation procedure. Please follow the instructions carefully.



### Caution!

Elster recommends installing SonicExplorer on a laptop/PC under the account of the user who will be using SonicExplorer. During installation the user will need administrator rights.

- ▶ Click [here](#) to open the SonicExplorer download page.
- OR
- ▶ Begin at the Elster homepage and follow the path below:  
<http://www.elster-instromet.com/en/index> → Products →  
 Software Downloads → SonicExplorer → **SonicExplorer V1.0.6.0028**
- ▶ Click on the SonicExplorer Download (ZIP) logo and choose **Save**. You can save the files to your desktop for easy access.
- ▶ Once the download is complete, unzip the SonicExplorer folder and drag the contents (SonicExplorer 1.0.6.0028 Folder) to your desktop.

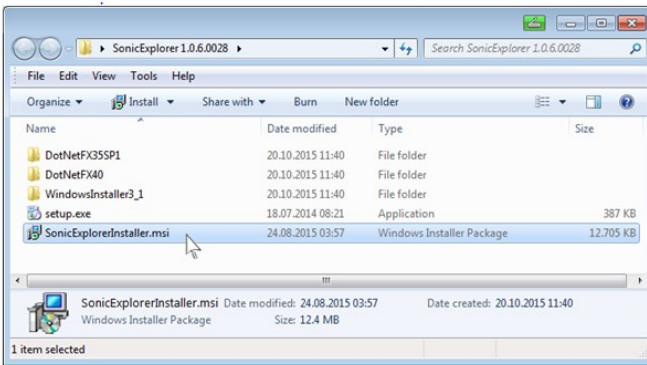


Figure 5-1 SonicExplorer download folder

- ▶ Open the folder. Double click on 'SonicExplorerInstaller.msi'. See Figure 5-1.
- ▶ Accept terms of the License Agreement.
- ✓ SonicExplorer will begin installation.
- ✓ When the procedure is finished SonicExplorer will be installed. If any questions or problems arise during the installation please contact Elster or your local agent.



### Tip!

Although you will have the opportunity to adjust the file paths during setup, it is highly recommended by Elster to use the default paths provided.

## 6 SonicExplorer Settings

The following sections explain how to view and adjust basic settings and preferences in SonicExplorer.

### 6.1 General Preferences

Figure 6-1 shows the **General Preferences** window. This window contains most of the basic settings used in SonicExplorer.

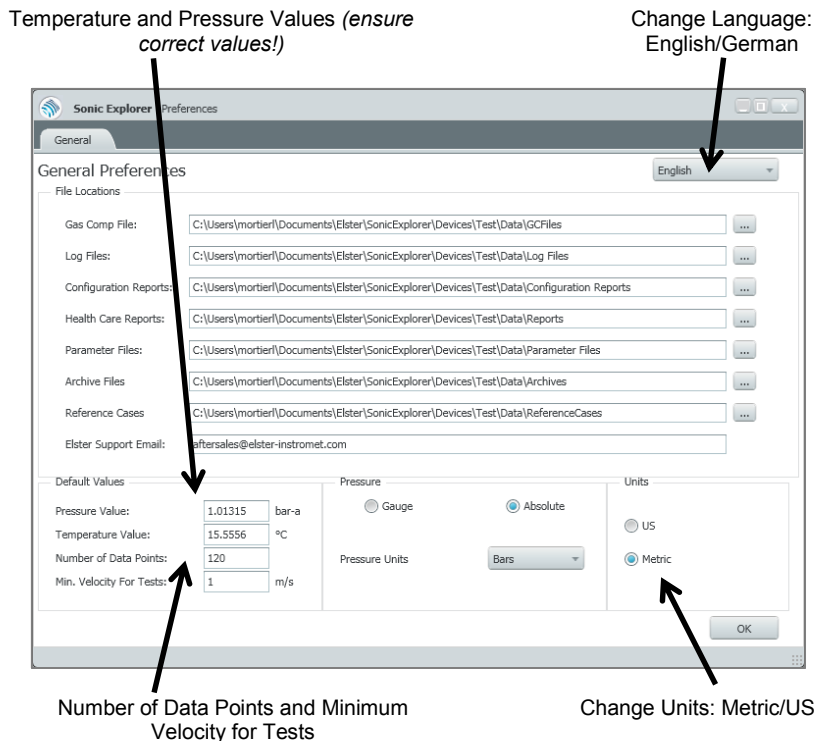


Figure 6-1 Edit General Preferences



Following installation, Elster recommends setting the following default preferences:

- **Number of Data Points** to **120** (default is 20)
- **Min. Velocity For Tests** to **1 m/s** (default is 0)

For further instructions please see ⇒ Chapter [6.1.3 Change Default Values: Pressure, Temperature, Data Points and Min. Velocity](#).



### Caution!

Some preferences apply to the entire SonicExplorer program, while some are specific only to a particular meter. **Default Values** and **File Locations**, for example, will only apply to the meter that is currently highlighted. Please pay attention to whether you are adjusting settings for the entire SonicExplorer program or only for a specific meter.

## 6.1.1 Change Language of Operation

- ▶ Right-click on a **Flow Meter Icon** from the homescreen.
- ▶ Choose **Edit Preferences**.
- ✓ The **General Preferences** window will open as seen in Figure [6-1](#).
- ▶ Change the language between **English** or **Deutsch** in the top right-hand corner of the window.
- ▶ Restart SonicExplorer for changes to take effect.

## 6.1.2 Change Unit of Measure

- ▶ Right-click on a **Flow Meter Icon** from the homescreen.
- ▶ Choose **Edit Preferences**.
- ✓ The **General Preferences** window will open as seen in Figure [6-1](#).
- ▶ Change the units between Metric or US.
- ✓ SonicExplorer will warn you that it requires a restart.
- ▶ Press **OK** and re-open SonicExplorer.



### 6.1.3 Change Default Values: Pressure, Temperature, Data Points and Min. Velocity

- ▶ Right-click on a **Flow Meter Icon** from the homescreen.
- ▶ Choose **Edit Preferences**.
- ✓ The **General Preferences** window will open as seen in Figure 6-1.
- ▶ Change the default values as desired in the bottom right-hand corner of the window.



#### Tip!

To take full advantage of all graphs and healthcare tests, Elster recommends making the following changes to the default preferences:

- ▶ Click on the **SonicExplorer Button** and choose **Preferences**
- ▶ Adjust default values as below:
  - **Number of Data Points** to **120** (default is 20)
  - **Min. Velocity For Tests** to **1 m/s** (default is 0)
- ▶ Press **OK**
- ✓ Default values will be set for the selected meter. Please repeat this process when new meters are added.



#### Caution!

If the language of your computer or laptop has been switched between German and English (including changing the decimal/comma as number separator) the temperature and pressure values may be incorrect. For example, the temperature may display as 155556°C instead of 15.5556°C.

**Please verify these values are accurate!**

### 6.1.4 View/Change File Path Locations

Preferably the **File Locations** should not be changed, making future assistance easier.

- ▶ Right-click on a **Flow Meter Icon** from the homescreen.
- ▶ Choose **Edit Preferences**.
- ✓ The **General Preferences** window will open as seen in Figure 6-1.
- ✓ All file locations are displayed for that specific meter.



#### Tip!

The General Preferences window can be opened two ways:

1. From the SonicExplorer homescreen, click on the **SonicExplorer Button** and choose **Preferences**.
2. From the SonicExplorer homescreen, click on the appropriate **Flow Meter Icon** and choose **Edit Preferences**.

Please Note: The preferences window will always open relating to a specific meter (highlighted on the home screen). Therefore it is possible to have different values for each meter. (**Default Values** and **File locations**, for example.)

## 6.2 Log Out User

After entering a username and password once in your session, you will not be prompted to do so again. This means that after entering a password once, multiple functions can be completed. To ensure security within SonicExplorer, please log out after completing a password protected feature.

- ▶ Click on the **SonicExplorer Button** from the home screen.
- ▶ Choose **User Logout**.
- ✓ Current user will be logged out.

## 6.3 View Software Information

To view information about SonicExplorer, including your current running version:

- ▶ Click on the **SonicExplorer Button** from the home screen.
- ▶ Choose **About**.
- ✓ Information about SonicExplorer will be displayed.

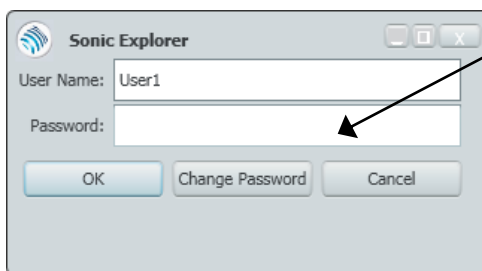
## 7 User Rights / Login

From meter software version 2.8 onwards user rights are implemented in the UFM Series 6. Access to the device with SonicExplorer is only granted after login with a password.

By default there are three user profiles available:

- Admin can modify all parameters
- User1 can modify non-fiscal parameters
- User2 cannot modify parameters – read access only

User1 and User2 do not have a default password set. Just leave “Password” blank and click “OK”.



To request an administrator password please contact Elster at:

[Aftersales.Essen@elster.com](mailto:Aftersales.Essen@elster.com)

## 8 Adding & Connecting Meters

- ▶ Open the short-cut of SonicExplorer on your desktop.
- ✓ The home screen of SonicExplorer will pop up.

The software version will be shown during start-up. Before connecting to a meter in SonicExplorer, you must first add one. All of your meters will be displayed on this home screen.



Figure 8-1 Add/Connect meters

The **Add** button at the bottom of the window is used for creating new meters. The **Delete** and **Edit** buttons should be used for managing previously created meters. (See Figure 8-1).

## 8.1 Add a Meter

- ▶ Press the **Add** button at the bottom of the home screen.
- ▶ A menu will pop-up asking you for a **Name** and an **IP Address**. Fill in these fields accordingly. (Please see Figure 8-2).

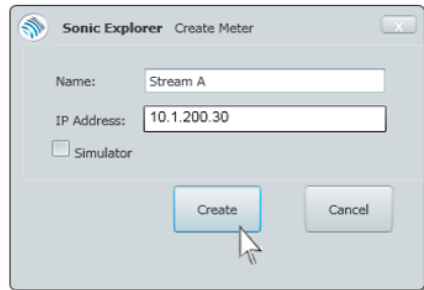


Figure 8-2 Create a meter



### Tip!

If the IP Address of the meter is not known, it can be obtained through the display of the meter. See the [Docuthek](#) for the UFM Series 6 Operation and Maintenance Manual for your specific meter, also listed in ⇒ [Appendix I – References](#).

Ensure the meter and the computer/laptop are both connected to the same Ethernet network. Otherwise it will not be possible for SonicExplorer to find the meter.

## 8.2 Connect the Meter

After a meter is added and appears on the home screen:

- ▶ Press **Connect** from the bottom of the home screen.
- ✓ Once connected, the gas velocity and performance of the meter are visualised.

## 8.3 Run a Simulation

It is possible to create a simulation meter. In this mode SonicExplorer is not connected to a meter, but is instead running a simulation. This function can be used for training purposes.

- ▶ Press the **Add** button at the bottom of the home screen.
- ▶ Check the **Simulator** box. You will no longer require an IP address.

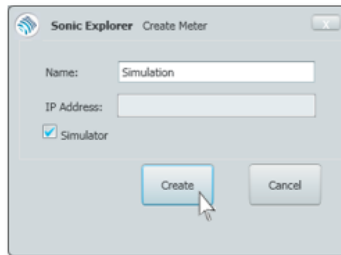


Figure 8-3 Create a simulation meter

## 8.4 Run with a Logfile

This function enables you to connect to a meter using a simulated or previously saved logfile in SonicExplorer. The information displayed will not be live, it will be your actual recorded data. This function is only available with a disconnected meter.

- ▶ Right-click on the desired **Flow Meter Icon**. Choose **Run with Logfile**.
- ▶ Select your logfile (.DAT file) when prompted.
  - ⇒ See Chapter [12 Start a Log](#) (p.41) on how to create a logfile.
- ✓ SonicExplorer will run using your data from the logfile.

# 9 Navigating SonicExplorer

Once a connection is made with a meter all functions will become accessible. There are three main navigation methods available from the home screen as depicted in Figure [9-1](#).

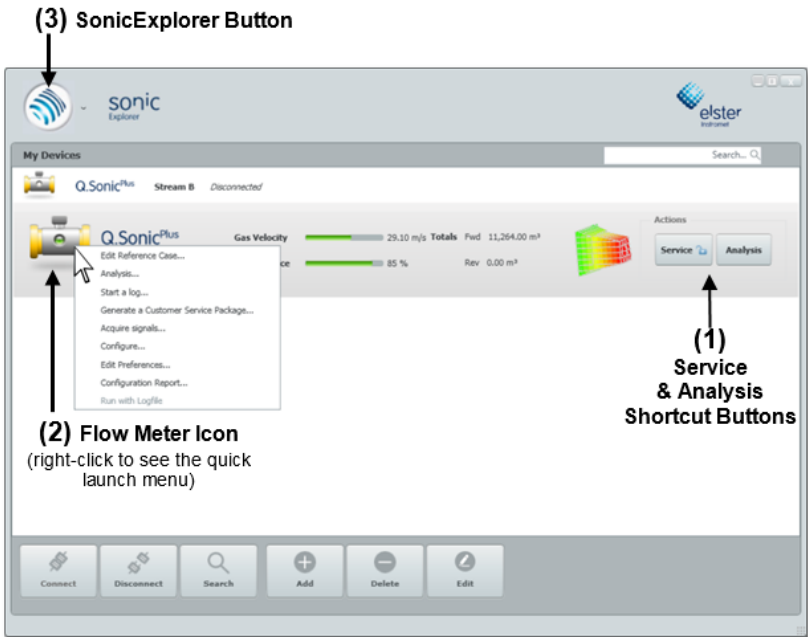


Figure 9-1 Main navigation methods in SonicExplorer

- (1) The two main functions; **Service** and **Analysis**, are available as shortcuts on the right-hand side of the screen. ⇒ See Chapters 10 and 11, respectively, for more detailed information.
- (2) Right-clicking on the **Flow Meter Icon** will bring up the quick launch menu. Each menu option is described by function in subsequent chapters.
- (3) Clicking on the **SonicExplorer Button** shows a drop-down menu. ⇒ See Chapter 20 [Additional Functions from the SonicExplorer Button](#) (p.72) for a description of these functions.

## 9.1 Home Screen & Functionality

This section will provide a brief overview of the central navigation features in SonicExplorer, aimed at giving the user a general understanding of the terminology and available functions.

Figure 9-2 shows the home screen of SonicExplorer. The square buttons along the bottom panel allow you to connect or disconnect a meter, search for a meter using a specified IP address, or add, delete, and edit your collection of meters.

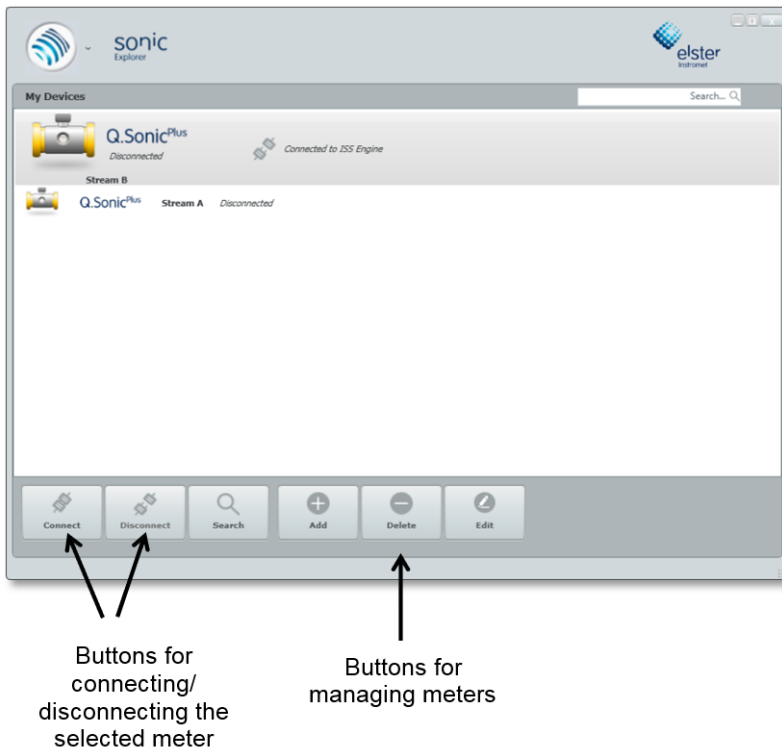


Figure 9-2 Home Screen of SonicExplorer



### 9.1.1 Search by IP Address for Available Devices to Connect/Add

The search function along the bottom panel enables you to scan for available meters using a specific IP Address. When there is more than one meter available with the same IP Address, the meters are distinguished internally by serial number. If there is a match with serial number and IP address within your already added meters, that meter will automatically connect. Please Note: If a meter does not already exist in your devices, but is available to connect with, SonicExplorer will create a new one with the name "0" and connect to that meter.

- ▶ Press the magnifying glass **Search** button.
- ▶ Enter the IP Address you are searching for, and click **OK**.
- ✓ The search will run in the background. Please be patient as the search may take a few minutes.
- ✓ If the search is successful, your meter will be found and added.



### 9.1.2 Search within your Meters

Along the top of the home screen there is a search function to locate a meter within your collection of meters.

- ▶ Type the full exact name or IP Address of the meter into the search field. The search is not case sensitive and you do not need to press enter.
- ✓ The meter you are searching for will be highlighted and selected on the home screen.



Figure 9-3 Search within meters

## 9.2 Data Sources Navigation Tab

Many of the central functions in SonicExplorer require navigation from the **Data Sources** tab, which is located on the left hand side of the **Service** window. (Please see Figure 9-4).

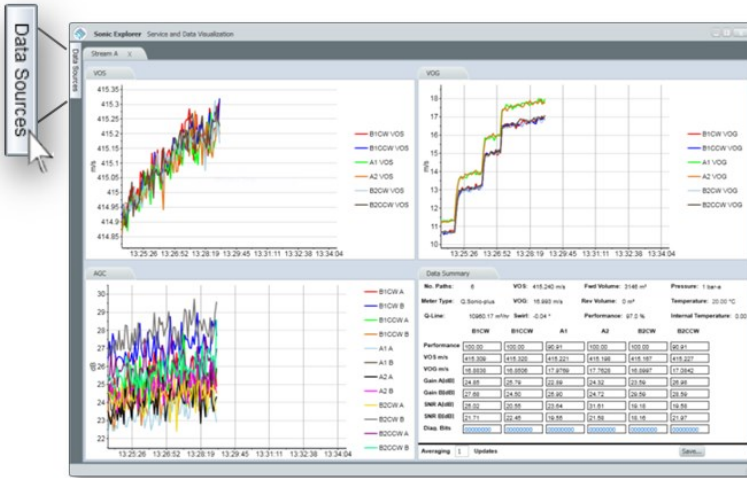


Figure 9-4 Service / Data Sources tab

When the **Data Sources** tab is opened, the window shows an overview of all added meters (connected or disconnected) in a tree format, as well as an opportunity to utilize most SonicExplorer functions from this window. (See Figure 9-5)

By clicking on a specific meter, you are able to see an outline of all functions or related information for that specific meter. Click on the blue plus **+** or minus **-** boxes to open more or less navigation options, respectively.

There are also buttons underneath the navigation tree for commonly used functions. These buttons will change depending on your selection in the navigation tree.

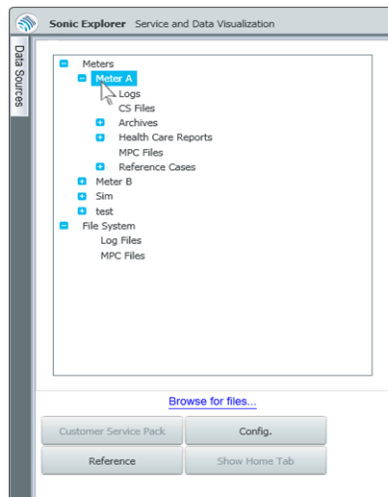


Figure 9-5 Data Sources window

## 10 Meter Monitoring (Service)

- ▶ Press the **Service** button from the home screen to begin detailed monitoring of the meter.
- ✓ Three graphs are created; showing the **Velocity of Sound (VoS)**, **Velocity of Gas (VoG)**, and the **Automatic Gain Control (AGC)** ratio for each path (see Figure 10-1).

In the bottom right-hand quarter of the window all relevant data and measurements are summarized in a chart for each of the six paths. By default, the chart will show “Averaging 1 Updates”, which is not an average, but rather the live results updated every two seconds. If you wish to adjust this and see an average of 5, 10, etc. updates, type the desired number in the averaging updates box. For example, “Averaging 5 Updates” will show the average of the results of the past 10 seconds. Please see Figure 10-2 for a closer view.



Figure 10-1 Service function

Please note: All connected meters will be displayed in tabs. Ensure that you are viewing the appropriate data.

**Tip!**

Right-click on any of the three charts to adjust the scale of the graph, reset the zoom, or adjust between absolute and relative values.



## 10.1 Save Summarized Logfile Data

This function is similar to creating a logfile, however, as opposed to creating a logfile, this function will only save data for your chosen “snapshot” in time. By default the data is updated every two seconds.

Therefore, when saving a file, if you choose **Averaging [5] Updates** it will save the results over a period of ten seconds. Please see Figure 10-2.

Steps to save the file:

- ▶ Press the **Service** button on the home screen.
- ▶ In the **Data Summary** tab, in the **Averaging Updates** field, type the number of averaged updates you would like to view in your saved file.
- ▶ Press the **Save** button in the bottom right-hand corner of the data summary window. (Figure 10-2)

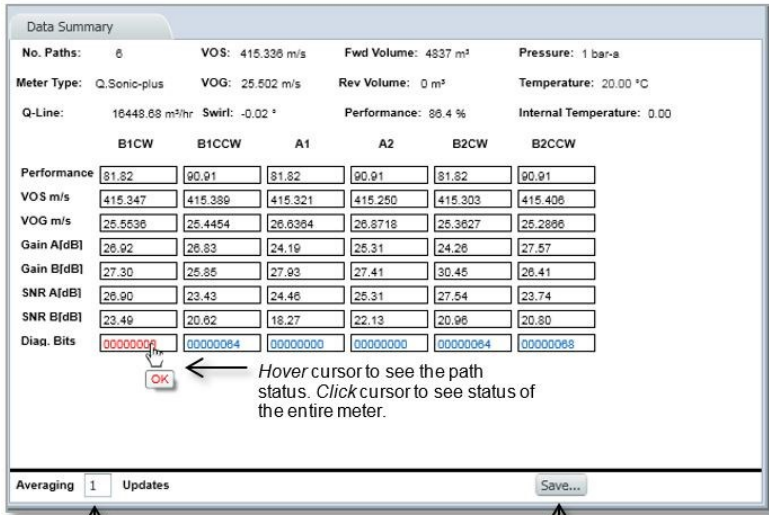


Figure 10-2 Data summary

Type here to adjust number of averaged updates to view and save

Export the summarized data in a .csv file (view in Excel)

- ▶ Choose a filename and a location to save the files.
- ✓ The summarized data will be saved in two .csv files in the location of your choice. One file will be saved as the file name you choose; the second containing the parameter files will be named <filename>\_config.



**Tip!**

Hover the cursor over the blue **Diag. Bits** (Diagnostic Bits) field to see a quick status update. (The red **OK** in Figure 10-2)

Click on the **Diag. Bits** field and another window will open displaying a quick status report for the meter.

⇒ See Chapter 11.3 Perform a Quick Check of the Meter Status (p.40) for more information.

## 11 Healthcare (Data Analysis)

The **Analysis** function in SonicExplorer focuses on providing intuitive and detailed data that can be used to make informed decisions with respect to maintenance and recalibration.

SonicExplorer enables you to make live healthcare reports on the status of your Series 6 flow meter. It is recommended to make such a healthcare report for each flow meter on a regular basis, for example; monthly reports. With these regular healthcare reports, it is possible to detect certain malfunctions before they develop into problems as well as monitor the longterm stability of the meter.

To run analysis on your data:

- ▶ Press the **Analysis** button on the home screen.
- ✓ SonicExplorer will open a new window showing the **Process Conditions**. Please see Figure 11-1.
  
- ▶ Fill in the appropriate **Pressure, Temperature, and Gas Composition**.
- ✓ Once all process conditions are filled in, three gas parameters are calculated: **Line Compressibility, Line Density and Velocity of Sound**. These are shown in the left hand side of Figure 11-1, under the heading **Calculated Results**.

Depending on the application conditions, it is possible that the original test limits may not be sufficient. If required, they can be adjusted.

This process is described in ⇒ Chapter 17 [Edit Reference Cases \(Setting Healthcare Limits\)](#) (p.51).

As seen in Figure 11-1 There are four actions available related to the gas composition: **Normalize, Save, Import, and Clear**. These functions allow you to adjust which gas file you would like to use to run the analysis.

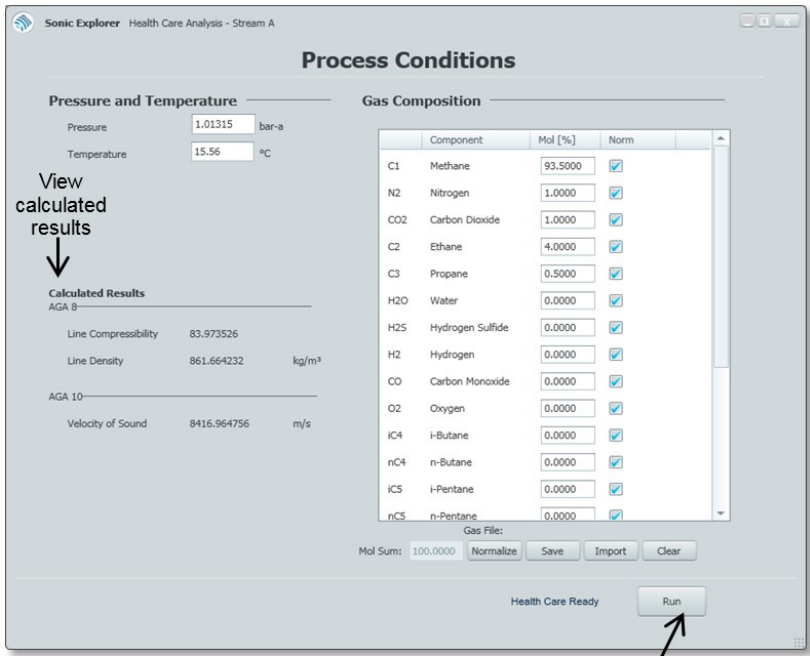


Figure 11-1 Process Conditions

Click to begin running healthcare report

- **Normalize** will adjust the molecular sum to 100, normalizing the molecular sum of the unbalanced gas. Only the gases with a blue checkmark  will be altered.
- **Save** will save an excel version of the gas composition in the appropriate file folder. The file path is as follows:

```
C:\Users\<UserName>\Documents\Elster\SonicExplorer\Devices\<MeterName>\Data\GCFiles
```

- **Import** allows you to import previously saved gas compositions (when loading please ensure that the loaded data is correct).
- **Clear** will erase all **Gas Composition** values and reset them to zero.

## 11.1 Generate a Healthcare Report

- ▶ Press **Analysis** on the home screen.
- ▶ Fill in or import the gas composition, line temperature, and pressure in the **Process Conditions** window. For more information on this please see the previous section.
- ▶ Press **Run** (as seen in Figure 11-1).



When performing a healthcare check, ensure the desired reference case is active.

- ✓ Another window with several tabs will open, as seen in Figure 11-2 will display five tabs, each with a variety of charts visualising essential analysis of the meter performance. On these graphs the limits are shown in yellow and warning values are shown in red.
- ✓ A green checkmark or red 'x' on the tab gives the user a quick update of the test status of each section. Click on each tab to get more details of the test results.
- ▶ Press **View Report** to generate the report.
- ✓ The report will open in a new window, allowing you to print, email, or export as a pdf, word document, or excel spreadsheet.

By default the file is saved with the following file path:

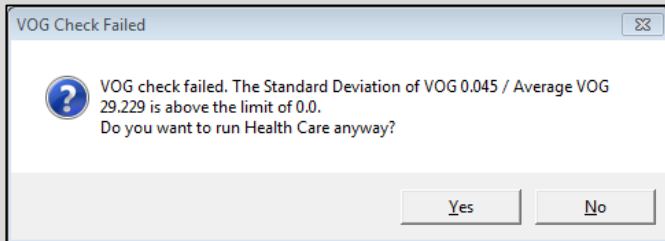
```
C:\Users\<UserName>\Documents\Elster\SonicExplorer\  
Devices\<MeterName>\Data\Reports
```





### Be Aware

If you have an unusually low flow rate when you press **Run**, a warning message will pop up, as pictured below.



A healthcare check is still possible. However, please keep in mind that some flow-profile-related criteria (e.g. Path Velocity Ratios) may exceed normal limit values.

For a reliable Velocity of Sound check the exact gas composition, temperature and pressure must be known. If not, this check at the end of the report can be ignored.

## 11.2 Reading Healthcare Analysis Results

A detailed description of each tab in the healthcare analysis report is explained in the following sections. All chart limits are taken from the active reference case, and may be easily altered.



### Tip!

Right-click on any of the graphs to adjust the scale of the graph.

### 11.2.1 Tab 1: Velocity and Performance

This tab contains 4 graphs, as seen in Figure 11-2.

- VoS Check:** Overall VoS compared to the calculated VoS using the AGA10 Method. This ratio is only relevant if the exact gas composition, pressure, and temperature is known.
- Performance:** Ratio of valid samples compared to received samples. The performance typically decreases with higher gas velocities. When path performance drops below a predefined limit (20% by default) it will be rejected.

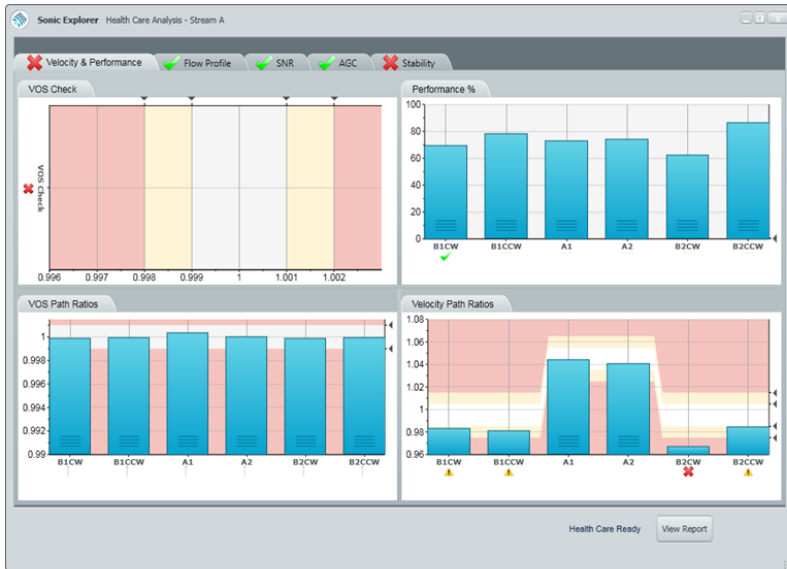


Figure 11-2 Healthcare Velocity & Performance

- VoS Path Ratios:** Velocity of Sound of each individual path compared to the average of the six paths.
- Velocity of Gas Path Ratios:** Velocity of Gas of each individual path compared to the average of the six paths. With ideal flow profiles the axial paths will have a slightly higher ratio (around 4%).

## 11.2.2 Tab 2: Flow Profile

This tab contains 3 graphs. Please see Figure 11-3.

- Profile Factor - Axial/Swirl:** Velocity of Gas of the axial paths compared to the Velocity of Gas of the swirl paths (or vice versa – choose the selection above the graph). With an ideal flow profile the axial paths are around 4% higher than the swirl paths.

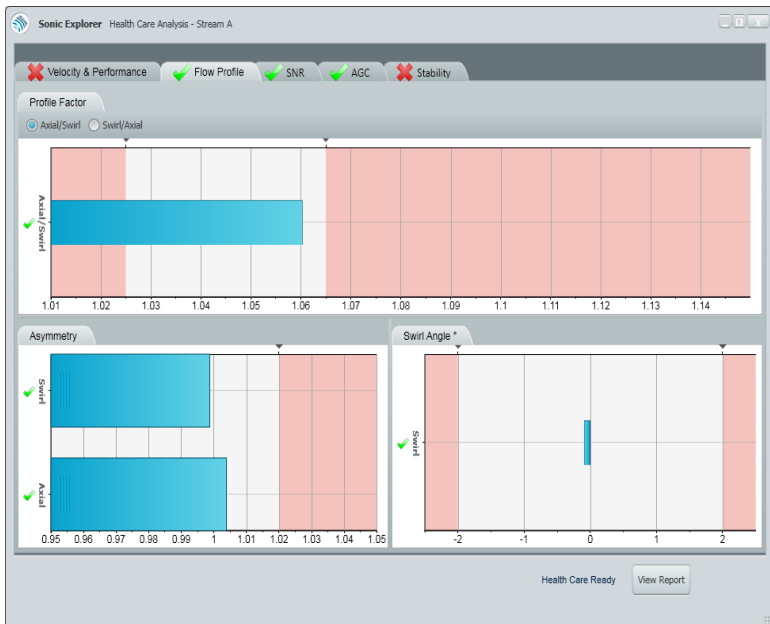


Figure 11-3 Flow Profile

- Asymmetry:** Asymmetry in the flow profile can be detected by comparing:
  - Both axial paths
  - Both swirl pairs

Flow profile results will depend on the type of meter in use.

**Tip!**

The asymmetry graph range should be set between 0.95 to 1.05.

- ▶ Right-click on the graph to change the high range; press OK.
- ▶ Repeat for the low range.
- ✓ Asymmetry graph will adjust to the new range.

- **Swirl Angle:** Swirl Angle is the numerical expression of the rotational movement of the gas in the flow profile. It is calculated by comparing the swirl paths of each pair of transducers.

### 11.2.3 Tab 3: SNR (Signal to Noise Ratio)

This tab contains 3 graphs. Please see Figure 11-4.

- **Elevated AGC dB:** This test verifies that the individual AGC (Automatic Gain Control) level of each path is not above a maximum level (80 dB by default).
- **SNR dB:** The predetermined AGC limit of each transducer compared to the AGC value of that specific transducer. This will decrease with higher gas velocities. When the value has dropped to 5, measuring will become more difficult (a warning will pop-up). At a value of 2, SonicExplorer will show an error message. These limits are set by default and are freely configurable.
- **AGC Ratio:** For each path the AGC level of transducer A (transmitter) is compared to the AGC level of transducer B (receiver). This ratio should be as close to 1 as possible.

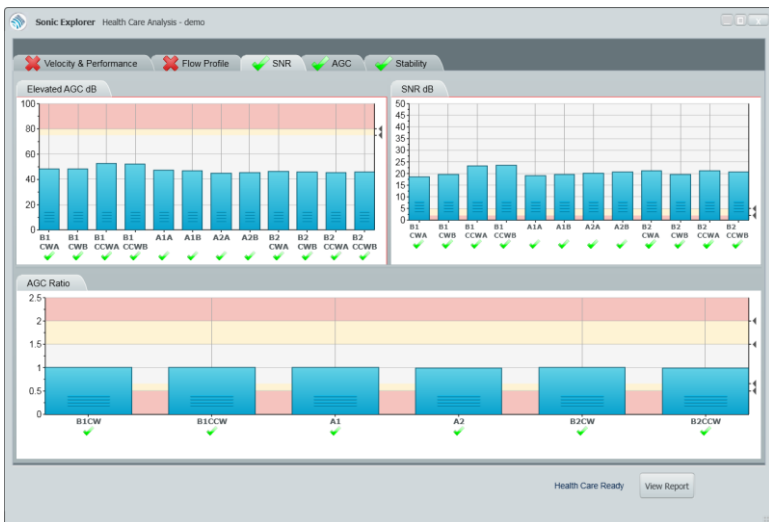


Figure 11-4 SNR

### 11.2.4 Tab 4: AGC (Automatic Gain Control)

AGC limits and levels are presented in decibels (dB).

The AGC ratio (AGC-limit / AGC-level) depends on the meter size and on the application (operating pressure, amount of CO<sub>2</sub>, control valve nearby, etc.). It is preferred to have a high AGC ratio.

The change of the AGC ratio over time is a very useful parameter to predict the performance of the meter in the future.

This tab contains 2 graphs. See Figure 11-5.

- **Axial AGC Ratios:** The comparison of the AGC ratios of the axial paths. This value should be close to 1.
- **Swirl AGC Ratios:** The comparison of the AGC ratios of the swirl paths. This value should also be close to 1.

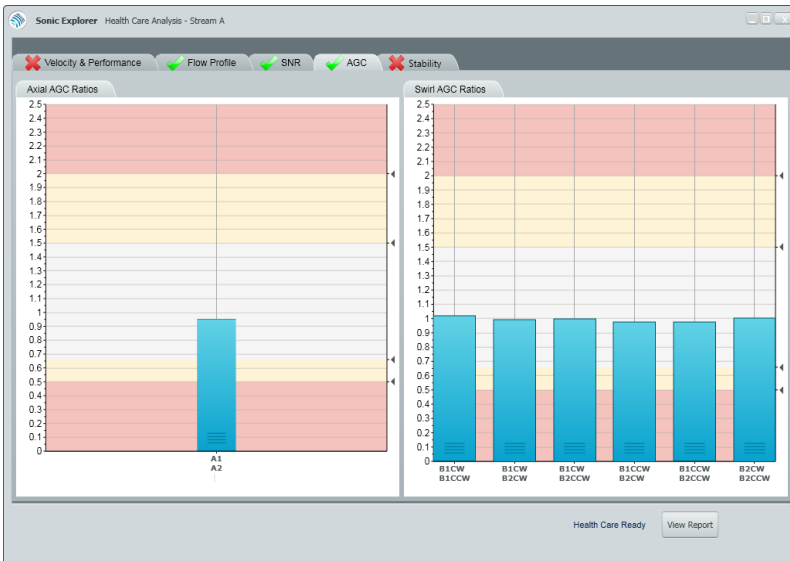


Figure 11-5 AGC

### 11.2.5 Tab 5: Stability

This tab contains 2 graphs, as described below and seen in Figure 11-6.

- Relative Timing Difference  $\mu\text{s}$ :** This test checks the RTd (Relative Timing difference) between paths of different lengths. The RTd value is calculated for all path combinations where the path lengths are significantly different. The RTd is denominated in microseconds ( $\mu\text{s}$ ).
- Turbulence:** The turbulence test is used to check the relative stability of the velocity reading for each individual path. The stability of the individual Velocity of Gas (VoG) of each path gives an indication of the reliability of that path's VoG. The turbulence will increase with lower flow velocities.



#### Tip!

The turbulence graph range should be set between 0 and 5%.

- ▶ Right-click on the graph to change the high range; press OK.
- ▶ Repeat for the low range.
- ✓ Turbulence graph will adjust to the new range.



Figure 11-6 Stability

### 11.3 Perform a Quick Check of the Meter Status

It is possible to do a very quick and basic status check of the flow meter.

- ▶ Click (left click) on the **Flow Meter Icon** on the home screen.
- ✓ Another window will open showing the Meter Status. Please see Figure 11-7.



#### Tip!

This is the same meter status check that can be viewed from the **Service** function and by clicking on the Diagnostic Bits fields. (Please see Figure 10-2)

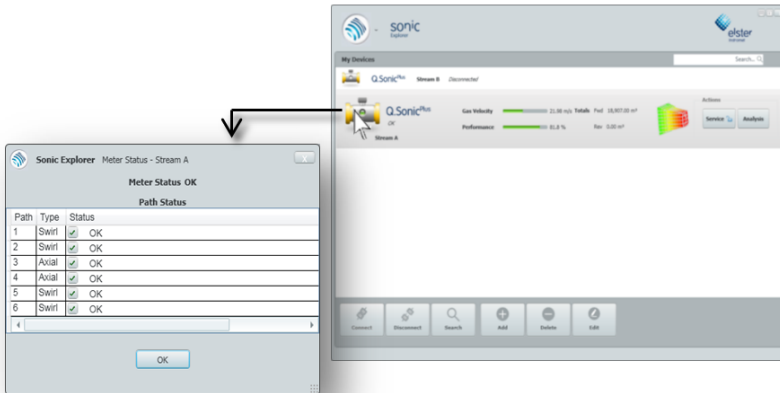


Figure 11-7 Quick Check of the Meter Status



## 12 Start a Log

A default log will run in the background the entire time you are connected to a meter in SonicExplorer. This logfile is saved with the filename:

```
DefaultLog_<MeterName>_<ddmmyyyy_hh_mm_ss>
```

where `ddmmyy` is the date format (day, month, year) and `hh_mm_ss` is the time format (hours, minutes, seconds).

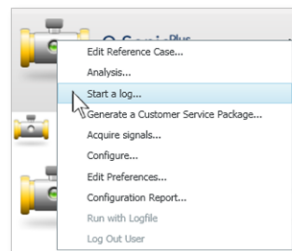
These files are located in the following folder:

```
C:\Users\<UserName>\Documents\Elster\SonicExplorer\  
Devices\<MeterName>\Data\Log Files
```

You may run additional logfiles, and they will run in the background of SonicExplorer while you continue operating. Two encrypted files will be stored with this data; one containing the flow measurements and the second containing configuration settings. These files are saved in the same folder as above, only the filename does not contain `DefaultLog`.

To start running a log:

- ▶ Right-click on the **Flow Meter Icon**
- ▶ Click on **Start a log** in the quick launch menu
- ▶ You will be prompted to save your log
- ✓ A log will begin running in the background.





### Tip!

You may also start a logfile from the **Data Sources** tab by pressing the **Acquire** button.

⇒ See Chapter [13.2 Viewing Acquired Pulses](#) (p.44) for the steps to open this window.

## 12.1 View Logs

To view logs:

- ▶ Click the **Service** button on the home screen.
- ▶ Click on the **Data Sources** tab at the left hand side of the service screen.
- ▶ Go to: **Meters** → **<Meter Name>** → **Logs**. At the bottom left you have four action buttons. (**New**, **Pause**, **Stop**, and **Export**). Please see [Figure 12-1](#).

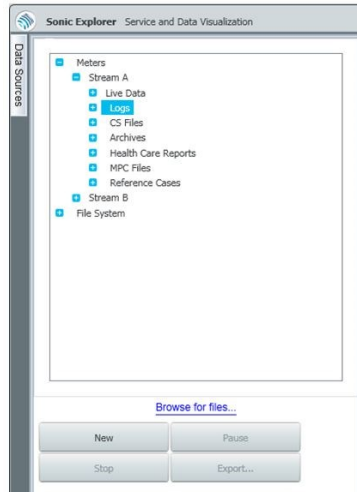


Figure 12-1 View logs

Please note: the **Pause** and **Stop** buttons will only be available when you have selected a log which you have created. You cannot pause or stop the default log.

## 12.2 Chart or Graph your Logs

You have the opportunity to view your Logfile data in precise graphs or charts.

- ▶ Click the **Service** button from the home screen.
- ▶ Click the **Data Sources** tab.  
Proceed with: **Meters** → **<Meter Name>** → **Logs** → **<Log Name>** → **Log Data**
- ▶ Choose desired output (ex: **VOS**).
- ▶ Right-click on **All Paths** or on an individual path. Choose **New Chart** or **New Grid**.
- ✓ Desired chart or grid will open.

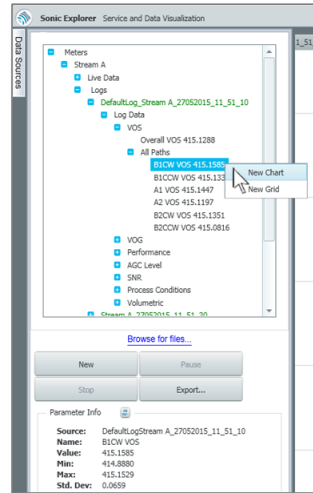


Figure 12-2 Chart logs

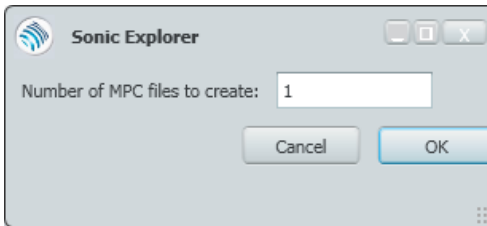
## 13 Acquire Pulse Signals

This function enables you to record and visualize a pulse taken by each of the twelve transducers along the six paths of sound travelling through the flow meter. By graphing this information, you can visualize the amplitude of the signal between transducers A and B (sender and receiver) compared with the distance travelled for each of the six paths.

You may record one or more pulse signals, called **Multiple Pulse Collection (MPC)** files. For example; if you choose to create two MPC files, your exported data will show a total of 24 records: 12 transducer measurements x 2 pulses.

## 13.1 Taking Transducer Pulse Signals

- ▶ Right-click on the **Flow Meter Icon** from the home screen.
- ▶ Choose **Acquire signals** in the quick launch menu.
- ✓ Sonic Explorer will ask you for the number of **Multiple Pulse Collection (MPC)** files to create.



- ▶ Enter the number of pulses that you would like to record. It is preferred to set this to a value of 2 or 3.
- ✓ Acquiring of the pulses will begin. This process may take several minutes.

## 13.2 Viewing Acquired Pulses

- ▶ Click on the **Service** button from the home screen followed by the **Data Sources** tab.
- ▶ Next, choose **Meters** → **<Meter Name>** → **MPC Files** → **<MPC File>**
- ▶ Right-click on your desired MPC File and select **New Chart**. See Figure 13-1.
- ✓ The pulse chart will be opened in a new tab.

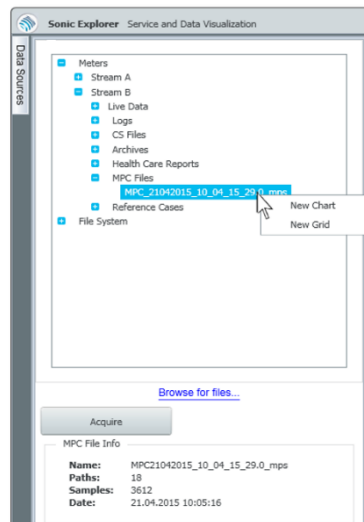


Figure 13-1 View MPC Files

The pulse chart is shown below in Figure 13-2:

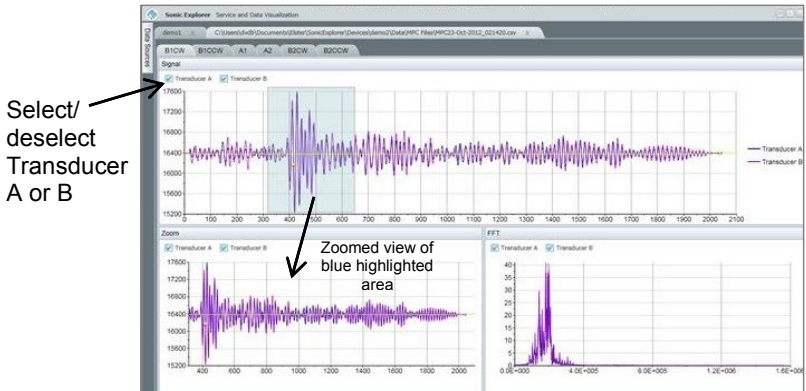


Figure 13-2 Pulse Chart

Each of the 6 tabs displayed above the graph represent a transducer path. The two axial paths are labeled A1 and A2, while the four swirl paths are labeled B1CW (clockwise), B1CCW (counter-clockwise), B2CW, and B2CCW.

For each path the sending and receiving transducers are labelled A and B, respectively. You may view one or both transducers in the graphed data by checking or unchecking the boxes above the **Signal** graph.

The second graph, labeled **Zoom**, shows a zoomed in view of the blue highlighted area in the **Signal** graph. You can adjust this zoomed view by dragging the edges of the blue box or dragging the whole selection.

The third graph, labeled **FFT**, visualizes the **Fast Fourier Transform** calculation.

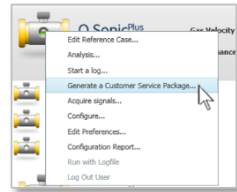
## 14 Generate a Customer Service Package

If you have any questions or concerns about the performance of a meter, a service package can be generated through SonicExplorer.

With this function SonicExplorer performs a healthcare check and logs samples of the transducer (pulse) signals. The results are zipped into a file and prepared in a pre-addressed email to the Elster Service department. In the email you can briefly explain any doubts or concerns about the meter. When sent to Elster, this information package provides an adequate basis for Elster to analyze the meter and quickly troubleshoot any issues.

Steps for generating a Customer Service Package:

- ▶ Right-click on a **Flow Meter Icon** and press **Generate a Customer Service Package** in the quick launch menu. Please note: this is the same window that appears as when you press the **Analysis** button.
- ▶ Fill in or import the gas composition, temperature, and pressure in the **Process Conditions** window. ⇨ Please see [Chapter 11 Healthcare \(Data Analysis\)](#) (p.30) for more information.
- ▶ Press **Run** to begin the healthcare check. When the process is complete, SonicExplorer will request that you log in (if you have not already done so in your current session). The username and password can be obtained from Elster.
- ✓ SonicExplorer will begin taking samples of the transducer (pulse) signals. Another pop-up window will appear, warning that flow measurement will briefly stop for this meter. The output will remain on the last value. Taking the pulses may take several minutes.
- ✓ SonicExplorer will put all the data in a zip-file and save it with the following file path:



```
C:\Users\<UserName>\Documents\Elster\SonicExplorer\
Devices\<MeterName>\Data\Customer Service Packages
```

- ✓ A window will pop-up asking if you would like to send an email of the customer service package.
- ▶ Choose **Yes** to enable SonicExplorer to prepare a new email message directed to the Elster help desk. As previously mentioned, please provide a message explaining any doubts regarding the meter's performance.
- ✓ Your email will be sent to Elster for analysis.

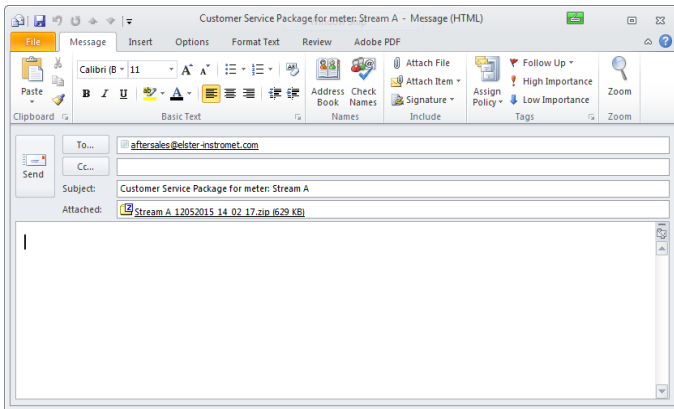


Figure 14-1 Customer service package email

The **Customer Service Package** contains the following documents:

- **Chart Images** – images captured during the healthcare check in .png file format.
- **Configuration Report** – a .pdf report with configuration information about the meter. ⇒ See Chapter [15 Run a System Configuration Report](#) (p.48) on how to run this report outside of the customer service package.
- **Parameter File** – contains parameter information in .par format.
- **Sample Data Configuration** – meter parameters in excel format.
- **Sample Data** – data results for a 40 second log in excel format.
- **Healthcare Report** - .pdf healthcare report ⇒ See Chapter [11.1 Generate a Healthcare Report](#) (p.32)

Please see Figure 14-2 below for a screenshot of the zipped package of documents attached in the pre-addressed customer service email.

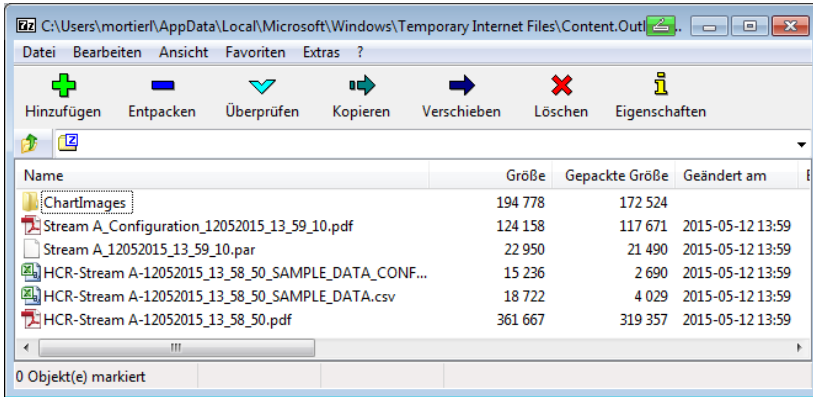
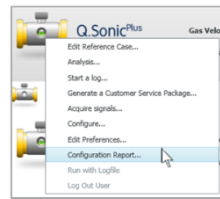


Figure 14-2 .Zip Customer Service Package

## 15 Run a System Configuration Report

A system configuration report gives a summary of all parameters for a selected meter. This report can be used to verify parameters and results with the initial calibration report, or recalibration reports when applicable.

- ▶ Right-click on a **Flow Meter Icon**
- ▶ Choose **Configuration Report** in the quick launch menu.
- ✓ A .pdf file is generated with an overview of all parameters. It may take a few moments to load and open.



## 16 View Archives

The archive viewing function is primarily for meter logging. It is only available with connected meters (e.g. running archives with a log file is not possible).



## 16.1 Load Archives

- ▶ Click the **Service** button from the home screen
- ▶ Click on the **Data Sources** tab
- ▶ Select **Meters** → **<Meter Name> Archives** → **Archives**
- ▶ Click on the **Get Archives** button on the bottom of the window.
- ✓ A new window will open as seen below in Figure 16-2.
- ▶ Select your desired Archive ex: **Logbook**.

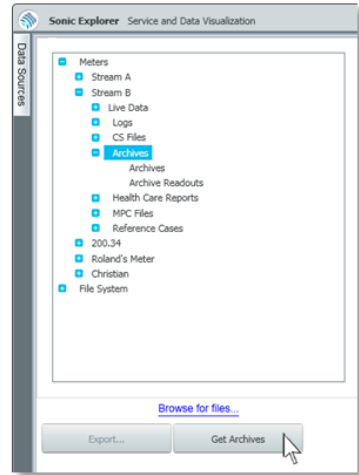


Figure 16-1 Archives navigation

- ▶ For a complete view of all history choose **Complete**, for a view of a certain number of archives, choose **Latest Entries** and enter the number of entries you would like to view.

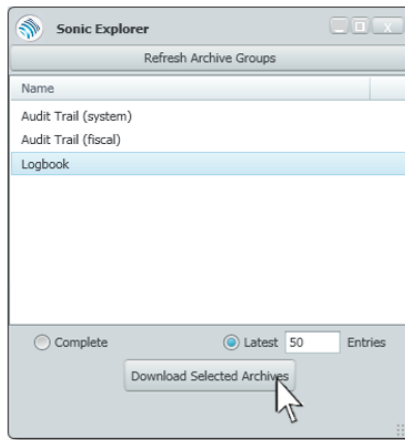


Figure 16-2 Archives window

- ▶ Press **Download Selected Archives**. (Figure 16-2)

- ✓ The archives will be saved with the file path:

C:\Users\*<UserName>*\Documents\Elster\SonicExplorer\  
Devices\*<MeterName>*\Data\Archives\Archives

## 16.2 Chart or Graph Archives

- ▶ Click the **Service** button from the home screen.
- ▶ Click on the **Data Sources** tab.
- ▶ Select **Meters** → *<Meter Name>* → **Archives** → **Archives**
- ▶ Right-click on the desired archive group or specific result and choose **New Chart** or **New Grid**.

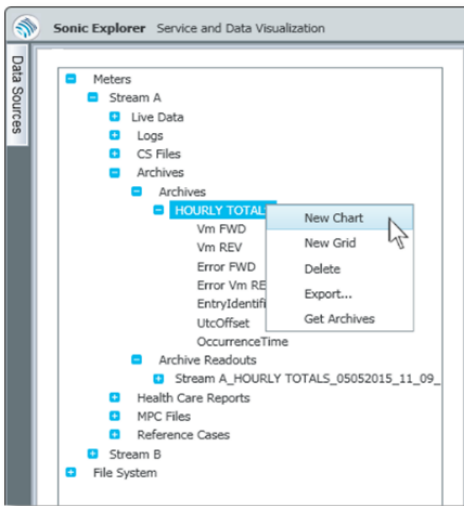


Figure 16-3 Graph or chart archives

- ✓ The chart or grid will open in a new tab.

## 17 Edit Reference Cases (Setting Healthcare Limits)

When performing a healthcare check, SonicExplorer uses a reference case for setting the allowed limits of your results. These are intended to warn (in yellow) and alarm (in red).

The operating conditions and station layout can have a significant impact on the flow profile in the meter. Therefore it is important to use the correct reference case when performing a healthcare check. It is possible to adjust the limits for each reference case. Elster strongly recommends doing this only after consultation with Elster. In addition to adjusting the limits, entirely new reference cases can also be created.

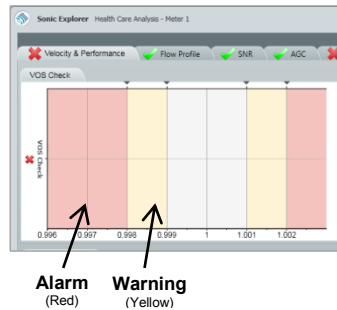


Figure 17-1 Healthcare limits

Elster also provides default reference cases which can quickly be imported into SonicExplorer. Please see the following page on how to do this.

A brief overview of the available functions in this section include how to:

- ⇒ [Activate a Reference Case](#) (p.53)
- ⇒ [Change Limits in a Reference Case](#) (p.55)
- ⇒ [Create a New Reference Case](#) (p.56).

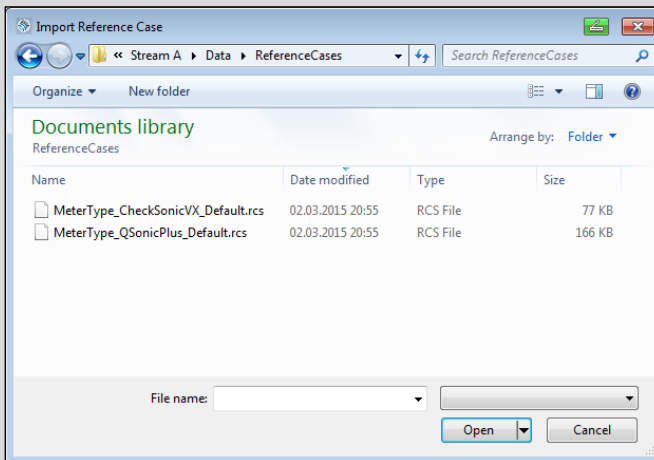
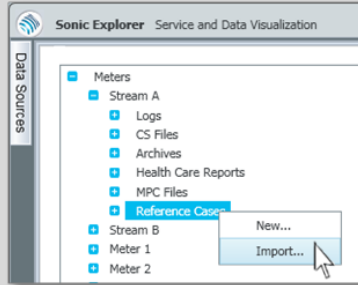
Each function will be discussed in detail.



## Tip!

**Default Reference Case templates** for typical Q.Sonic<sup>plus</sup> and CheckSonic<sup>VX</sup> meters are provided by Elster and may be easily imported into SonicExplorer.

- ▶ Click the **Service** button from the home screen
- ▶ Click on the **Data Sources** tab
- ▶ Select **Meters** → **<Meter Name>** → **Reference Cases**
- ▶ Right-click on **Reference Cases** and choose **Import...**
- ✓ A new window will open:



- ▶ Navigate to the following filepath:  
C:\Users\*<UserName>*\Documents\Elster\SonicExplorer\Devices\*<DeviceName>*\Data\ReferenceCases
- ▶ Choose the appropriate default reference case. Please ensure you are viewing all types of files.
- ✓ The default reference case will be added.

## 17.1 Activate a Reference Case

- ▶ Right-click on a **Flow Meter Icon** (connected or offline)
- ▶ Click **Edit Reference Case** in the quick launch menu.
- ✓ A new window will open titled **Service and Data Visualization**. If the meter is connected, then two tabs will be shown:
  - a reference tab (labelled as **Stream A – Reference** in Figure 17-2 ) which contains two further tabs: **Data Collection** and **Reference Cases**.
  - a detailed monitoring tab (labelled as **Stream A** in Figure 17-2). This is the identical window that appears by clicking on the **Service** button from the home screen. ⇒ Please see Chapter 10 [Meter Monitoring \(Service\)](#) (p.27) for more information on this tab. Please note: if the meter is not connected, this tab will not open.

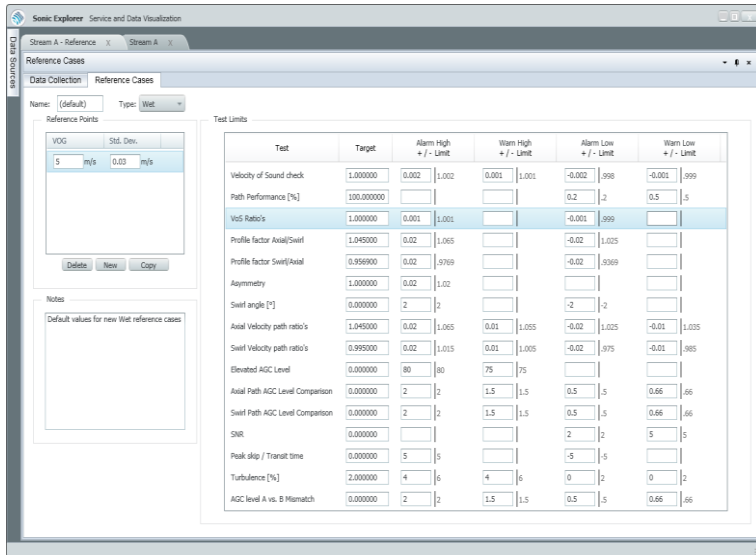
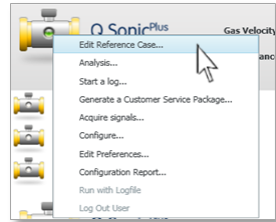


Figure 17-2 Reference cases window

The **Reference Cases** tab will open by default.

- ▶ Click on the **Data Sources** tab followed by **Meters** and proceed to open the desired meter.
  - ▶ Click **Reference Cases** and right-click on the desired reference case (**wet, dry, site**, etc.). A menu will be opened, as seen in Figure 17-3.
  - ▶ By choosing **Make Active** the reference case is enabled. Once enabled, the reference case will turn green. Only one reference case can be active at a time.
- ✓ You have now activated your desired reference case.

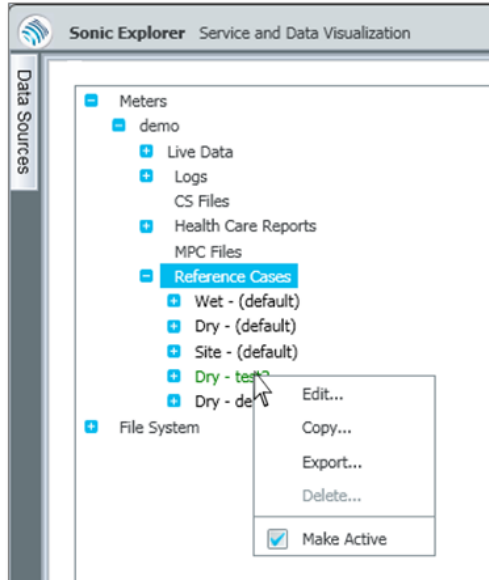


Figure 17-3 Editing a reference case



### Tip!

By clicking on **Edit** in the small drop down menu (seen in Figure 17-3) you can check the limits of that specific reference case which is described in ⇒ section [17.2 Change Limits in a Reference Case](#) (p.55). If there are currently no reference cases suitable for your needs, it is possible to create a new one with live data from the meter. This process will be described in ⇒ section [17.3 Create a New Reference Case](#) (p.56).

## 17.2 Change Limits in a Reference Case

When running a healthcare check and errors pop-up in the report, please contact Elster. If the errors are not caused by faulty measurement of the meter but are instead triggered by a less than ideal flow profile, it is possible that Elster will recommend altering your limits.

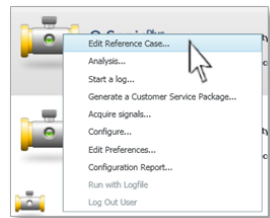


### Caution!

It is strongly recommended to only alter the limits after consultation with Elster.

To change limits in the reference case:

- ▶ Right-click on a **Flow Meter Icon**
- ▶ Click **Edit Reference Case** in the quick launch menu
- ▶ Click on the **Data Sources** tab, followed by **Meters → Reference Cases → <desired case>** and **Edit**. (See Figure 17-3)
- ✓ SonicExplorer will display a window as seen in Figure 17-4. On the left hand side there is a table with all reference points listed.
- ▶ Choose one reference point to view the test limits in the table on the right-hand side. Each reference point has its own test limits table. Therefore, altering the limits should be done separately for each reference point.



- Type in the desired test limits. Only the values in the boxes may be altered. (Figure 17-4)

Table of Reference Points      Test Limits for each individual Reference Point

The screenshot shows the 'Reference Cases' window in Sonic Explorer. On the left, the 'Reference Points' table lists VOC and Std. Dev. values. On the right, the 'Test Limits' table lists various tests and their corresponding limits. A mouse cursor is pointing at the 'Target' cell for 'Velocity of Sound check'.

Test	Target	Alarm High +/- Limit	Warn High +/- Limit	Alarm Low +/- Limit	Warn Low +/- Limit
Velocity of Sound check	0.049324	0.002	0.001	-0.002	-0.001
Path Performance	100.000000			0.2	0.5
Vof Ratio's	1.000000	0.001		-0.001	0.999
Profile factor Axial/Swirl	1.057825	0.02	1.077825	-0.02	1.037825
Profile factor Swirl/Axial	0.945336	0.02	0.965336	-0.02	0.925336
Asymmetry	0.992342	0.02	1.012342		
Swirl angle	0.000000	2	2	-2	-2
Axial Velocity path ratio's	1.037821	0.02	1.057821	0.01	1.047821
Swirl Velocity path ratio's	0.981089	0.02	1.001089	0.01	0.991089
Elevated AGC Level	23.963333	80	80	75	75
Axial Path AGC Level Comparison	0.982669	2	2	1.5	1.5
Swirl Path AGC Level Comparison	1.002885	2	2	1.5	1.5
SNR	21.688598			2	23.688598
Peak skip / Transit time	-0.648475	5	4.351525		-5
Turbulence	1.275642	4	5.275642	4	1.275642
AGC level A vs. B Mismatch	0.993502	2	2	1.5	1.5

Figure 17-4 Change Limits in Reference Case

## 17.3 Create a New Reference Case

When creating a reference case, SonicExplorer should preferably use a logfile with several gas velocities. At each gas velocity SonicExplorer will analyze the data and create a reference point. A reference point contains the most optimal limit setting for a reliable healthcare check. Between the reference points the limit settings are interpolated.

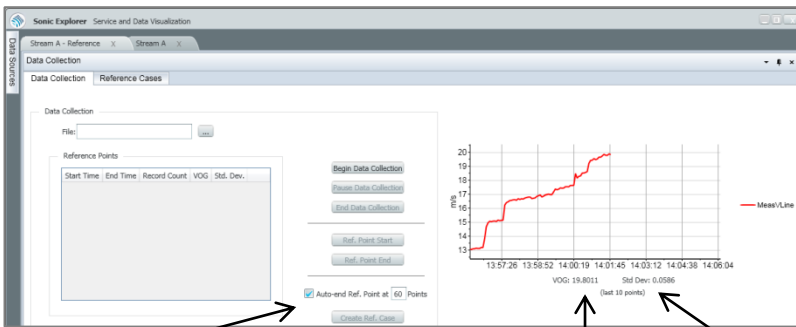
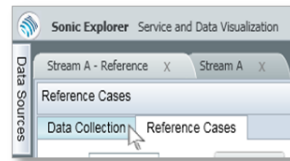
A reference case is typically created during:

- calibration: with each calibration point as reference point
- commissioning: with reference points starting from slightly below  $Q_{min\ operating}$  increasing until slightly above  $Q_{max\ operating}$ .



To create a new reference case:

- ▶ When SonicExplorer is connected to the appropriate meter, right-click on the **Flow Meter Icon** and choose **Edit Reference Case** from the quick start menu.
- ✓ The **Reference Cases** window will open, showing targeted figures and limits. This window is used to edit the targets and limits, as described in the previous chapter.
- ▶ Click the **Data Collection** tab.
- ▶ In the **Data Collection** window you have the opportunity to create a new reference case, as seen in Figure 17-5. There are two ways to collect the data – by manually creating start and end points or by selecting the “Auto-end Ref. point” at a certain number of points.
- ▶ Click on **Begin Data Collection** (Marked as 1 in Figure 17-6)
- ✓ A menu will pop up asking you to save the logfile. Enter your desired filename.



Toggle **Auto-end Ref. Points** On/Off

**VOG**

**Std. Dev.**

Figure 17-5 Data collection for reference points

- ✓ The graph on the right-hand side will display the gas velocity (**VOG**) flowing through the meter for the last 10 points. The standard deviation (**Std Dev.**) is also shown.

When the desired velocity is reached, it is possible to make a reference point. As previously mentioned, this can be done in two different ways:

1) With **Auto-end Ref. Point** enabled  for a certain number of points: (60 by default)

- ▶ Press the **Ref. Point Start** button. (Marked as **2** in Figure 17-6.) SonicExplorer will ask for some process conditions. For information on process conditions ⇒ see Chapter [10 Meter Monitoring \(Service\)](#) (p.27). Meanwhile, SonicExplorer will start making a reference point for the number of desired points.
- ✓ When all points are collected, the new reference point will automatically be completed in the table on the left hand side.

2) With **Auto-end Cal. Point** disabled:

- ▶ Press **Ref. Point Start**; (marked as **2** in Figure 17-6) SonicExplorer will again ask for some process conditions. ⇒ See Chapter [10 Meter Monitoring \(Service\)](#) (p.27) for more information on process conditions. Meanwhile SonicExplorer will begin making a reference point.
- ▶ SonicExplorer will only stop recording the reference point when **Ref. Point End** is pressed. (Marked as **2** in Figure 17-6.)
- ✓ The new reference point will be completed in the table on the left hand side.
  
- ▶ Repeat one of the two processes above until the desired number of reference points are taken.

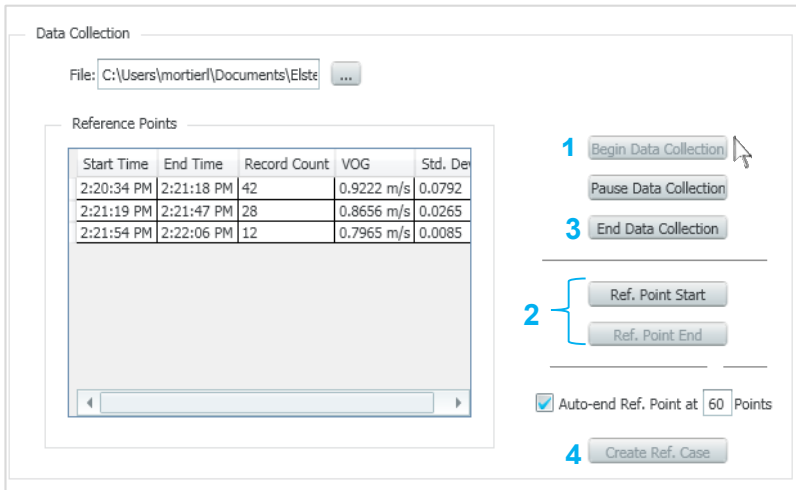


Figure 17-6 Steps for creating a new reference case

- ▶ When all reference points are taken, press **End Data Collection**. (Marked as **3** in Figure 17-6.) Sonic Explorer will stop logging the data.
- ▶ Click on the **Create Ref. Case** button. (Marked as **4** in Figure 17-6.) A menu will pop-up for naming the reference case. Please fill in as desired.
- ✓ All reference points will be shown in the **Data Collection** table, labeled as **Reference Points** as seen in the left hand side of Figure 17-6.



If the flow is not stable, Sonic Explorer will generate a warning.

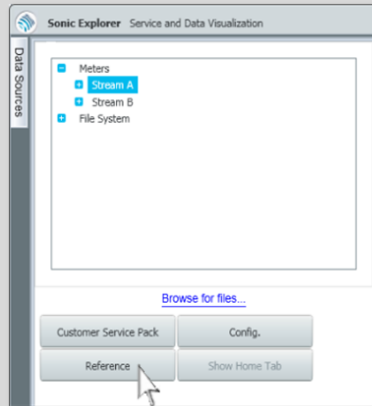


Ensure your desired reference case is active when making a healthcare check.



### Tip!

Another way to create a new reference case is through the **Service** button → **Data Sources** tab → **Meters** → **<Meter Name>** → **Reference** button along the bottom.



## 18 View and Chart External/Historical Files

The SonicExplorer file viewer system enables you to load and view all current saved and historical meter:

- Log Files (\*.dat)
- Multiple Pulse Collection (MPC) Files (\*.csv)

The file viewer imports your information allowing you to graph, chart or further export the information.

Steps for loading the files:

- ▶ Click the **Service** button from the home screen.
- ▶ Click on the **Data Sources** tab.
- ▶ Click on: [Browse for files...](#) (see Figure 18-1).
- ✓ A new window will open, allowing you to select the files you would like to view. Please see Figure 18-2.

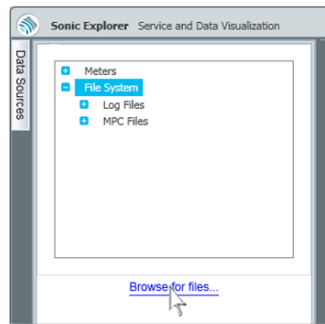


Figure 18-1 File system

- ✓ Navigate to the appropriate file location:

C:\Users\*<UserName>*\Documents\Elster\SonicExplorer\  
Devices\*<MeterName>*\Data

- ▶ Choose the folder called **MPC Files** or **Log Files**.
- ▶ Open your desired Log or MPC file.
- ✓ The imported file will appear in SonicExplorer **Data Sources** tab under the heading **File System**.

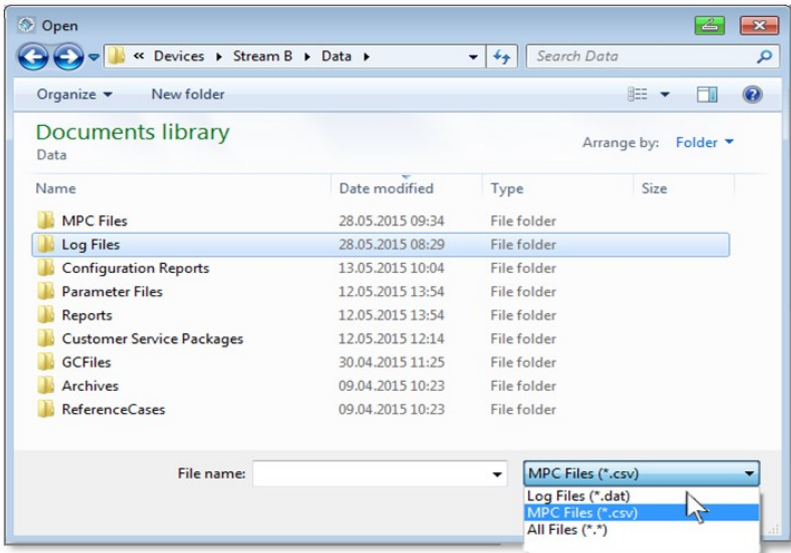


Figure 18-2 Log and MPC file formats



### Please Note!

Log Files are formatted as (\*.dat).

MPC Files are formatted as (\*.csv).

You must select the correct file format in the drop down menu, as shown in Figure 18-2.

- ▶ Right click on the file and choose **New Chart** or **New Grid**.
- ✓ Results will be visualized in a new tab. You may open and chart many files at the same time.

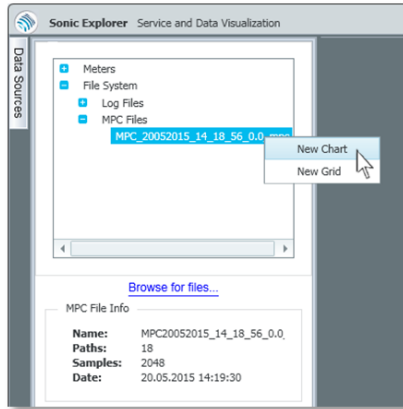


Figure 18-3 Chart Historical Log/MPC files

## 19 Meter Configuration

It is possible to view and edit the parameters of a meter through SonicExplorer. In order to do this you require:

- a) the appropriate user rights (username and password).
  - ⇒ Please see Chapter 7 [User Rights / Login](#) (p.19).
- b) the calibration switch on the flow meter to be disabled.

To see if a meter's calibration switch has been disabled, look at the home screen. A connected meter will show a small image of a lock in the **Service** button. If the lock is unlocked, the calibration switch is open. If the lock is closed, you will not be able to write fiscal parameters. Hover the mouse over the locked/unlocked icon to view a brief explanation of the current status.

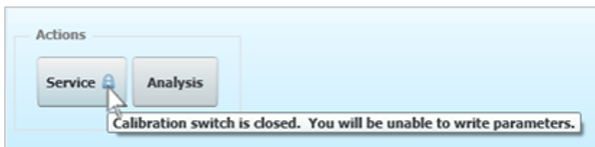


Figure 19-1 Open/Closed Calibration Switch

To view more information on how to disable the calibration switch, please visit the [Docuthek](#) for the UFM Series 6 Operation and Maintenance Manual for your specific meter, also listed in ⇒ [Appendix I – References](#) at the back of this manual.



### Caution!

Fiscal parameters are hardware protected and can only be changed when the security switch is disabled.

Changes in the parameter file can have consequences on the performance of the meter and the validity of the calibration results (if applicable). Therefore Elster strongly insists to only alter parameters after consultation with Elster or your local agent.

If these two requirements are fulfilled, you will be able to open the configuration window:

- ▶ Press **Config.** from the **SonicExplorer button** on the home page
- OR
- ▶ Right-click on a **Flow Meter Icon** and choose **Configure** from the quick launch menu.
- ✓ You will be prompted to enter a username and password. This information can be obtained from Elster.



### Tip!

You may configure parameters offline only after you have connected to the meter once before. Otherwise an error message will appear.

After making any configuration changes, the font colour will change from black to light blue.

## 19.1 General

From the **General** tab you are able to configure the date/time on the meter, as well as import, export, or apply new parameters. Please see Figure 19-2.

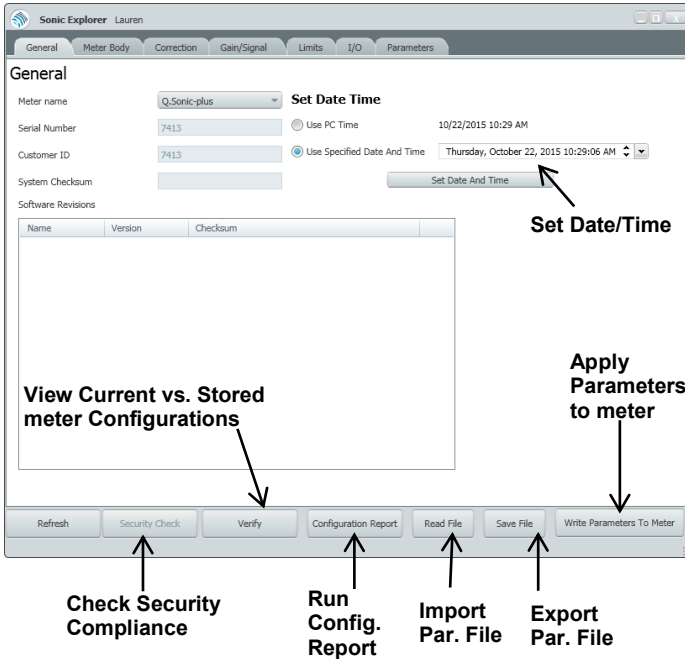


Figure 19-2 General configuration

Basic Functions of the **General** window:

**Refresh** – updates the current information. This button is only available with a connected meter.

**Security Check** – confirms if the meter is currently security compliant (which is most often the case). With a failed security check, SonicExplorer will ask if you would like to make the meter security compliant. If you choose yes, SonicExplorer will send the appropriate files to the meter and restart the meter. Once the meter restarts you can reconnect in SonicExplorer.



**Configuration Report** – runs the system configuration report.

⇒ Please see Chapter [15 Run a System Configuration Report](#) (p.48)

**Read File** – imports a previously saved Parameter file (.par) for configuration. Reading the file will not apply the the parameters to the meter.

**Save File** - exports the current Parameter file, saving it to:

```
C:\Users\<UserName>\Documents\Elster\SonicExplorer\
Devices\<MeterName>\Data\Parameter Files
```

The **Verify** and **Write Parameters to Meter** buttons are explained in the following sections:

### 19.1.1 Compare Parameters in a Report

**Verify** – quickly generates a report comparing the *current meter configurations* against *stored configurations* (.Par Files you have saved). This function is only available with a connected meter.

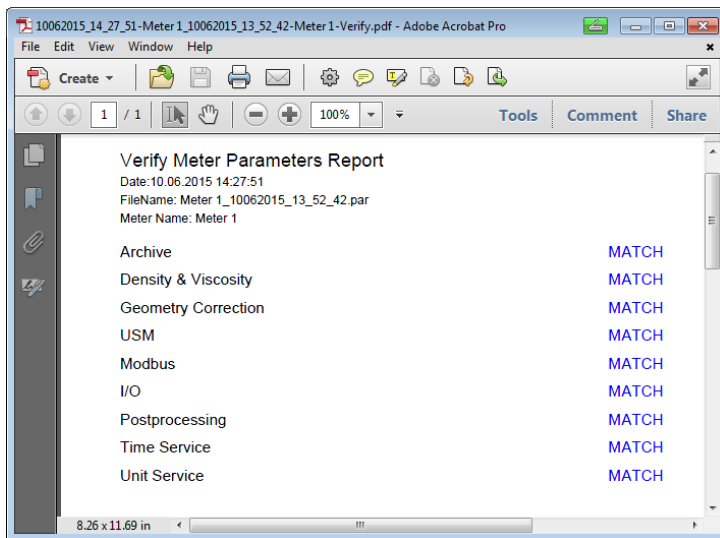


Figure 19-3 Verify Meter Parameters Report

### 19.1.2 Write New Parameters to Meter

**Write Parameters to the Meter** - will apply the currently loaded configurations to the meter. This button is only available with a connected meter. To write new parameters to a meter:

- ▶ Right-click on the desired **Flow Meter Icon** and press **Config.** from the quick launch menu.
- ▶ Click **Read File** to import your desired parameter file.
- ✓ Make any adjustments to the parameters as required.
- ▶ Click **Write Parameters to Meter**.
- ✓ New configurations will be applied to the meter.

## 19.2 Meter Body

**Meter Body**

Number of Paths:

Diameter:

Serial Number:

Path Parameters

Path	Length [m]	Angle [deg]	Rt [ms]
B1CW	1.402800	62.200000	18495
B1CCW	1.402800	62.200000	18277
A1	1.247000	50.000000	20311
A2	1.247000	50.000000	20658
B2CW	1.402800	62.200000	18727
B2CCW	1.402800	62.200000	18645

Buttons: Refresh, Security Check, Verify, Configuration Report, Read File, Save File, Write Parameters To Meter

Figure 19-4 Meter Body Adjustments

In the **Meter Body** tab you are able to view and edit the following:

- Number of Paths (view only)
- Diameter of the Meter
- Serial Number of the Meter
- Length, Angle, and Kt (time correction in nanoseconds) of each path

### 19.3 Correction

In the **Correction** tab, you will notice 6 sub-tabs. Here you can adjust any of the following corrections related to the meter configuration. Please see Figure 19-5 below.

- Density/Viscosity
- Profile
- Adjust/Linearization
- Combination
- Filter
- Geometry

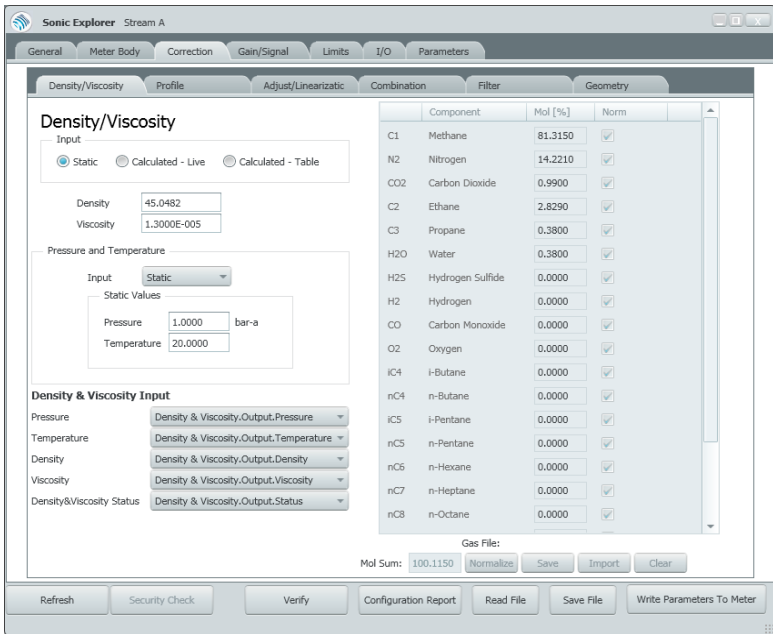


Figure 19-5 Meter Corrections

## 19.4 Gain/Signal

The **Gain/Signal** tab allows you to adjust the gain and signal parameters. Please see Figure 19-6 below.

**Signal Parameters**

Burst Start Frequency: 223  
 Burst Stop Frequency: 86  
 Burst Number Frequencies: 12  
 Burst Number Transition Frequencies: 0  
 Burst Number CMB Pulses: 48  
 Burst Number SB Pulses: 1  
 Burst Number Repetitions: 1

**Gain**

Path	Mode	db A->B	db B->A
Path 1	Automatic	1.000000	1.000000
Path 2	Automatic	0.000000	0.000000
Path 3	Automatic	7.500000	0.000000
Path 4	Automatic	1.250000	0.000000
Path 5	Automatic	0.000000	0.000000
Path 6	Automatic	0.000000	0.000000
Path 7	Automatic	0.000000	0.000000
Path 8	Automatic	1.000000	0.000000

**Signal Detection**

Path	Method	Threshold [%]	Criteria [%]	Detec. Method	Invert	Zero Cross
B1CW	4 Peak	45	200	QSonics 4	<input type="checkbox"/>	2nd
B1CCW	4 Peak	45	200	QSonics 4	<input type="checkbox"/>	2nd
A1	4 Peak	45	150	QSonics 4	<input type="checkbox"/>	2nd
A2	4 Peak	45	150	QSonics 4	<input type="checkbox"/>	2nd
B2CW	4 Peak	45	200	QSonics 4	<input type="checkbox"/>	2nd
B2CCW	4 Peak	45	200	QSonics 4	<input type="checkbox"/>	2nd

Buttons: Refresh, Security Check, Verify, Configuration Report, Read File, Save File, Write Parameters To Meter

Figure 19-6 Gain/Signal

## 19.5 Change Limits

This section allows you to adjust all limits for:

- VoS high/low
- VoGraw high/low
- SNR Limit
- Measurement Sample Rate
- Transit Time Std. Deviation (high)
- Minimum Performance
- Measurement Cycle

The screenshot shows the 'Limits' configuration window in Sonic Explorer. The window title is 'Sonic Explorer Stream A'. The 'Limits' tab is selected, showing the following configuration:

Parameter	Value	Unit
VoS Low Limit	300.0000096	m/s
VoS High Limit	500.000016	m/s
VoGraw Low Limit	-50.0000016	m/s
VoGraw High Limit	50.0000016	m/s
SNR Limit	5	
Measurement Sample Rate	11	
TransitTime Std. Deviation Hic	19800	
Minimum Performance	10	
Measurement Cycle	6600	

The bottom toolbar contains the following buttons: Refresh, Security Check, Verify, Configuration Report, Read File, Save File, and Write Parameters To Meter.

Figure 19-7 Adjust Meter Limits

To change limits:

- ▶ Right-click on the **Flow Meter Icon**
- ▶ Click on **Configure** in the quick launch menu
- ▶ Click on the **Limits** tab
- ✓ The limits window will be displayed. Please see Figure 19-7.

## 19.6 Input/Output (I/O) Options

In this tab you are able to configure the input/output of the meter for any external devices you choose to connect, such as a flow computer. To adjust Input/Output:

- ▶ Right-click on the **Flow Meter Icon**
- ▶ Click on **Configure** in the quick launch menu
- ▶ Click on the **I/O** tab
- ✓ Input/Output configuration window will be displayed. Please see Figure 19-8 below for a screenshot of the I/O configuration options.

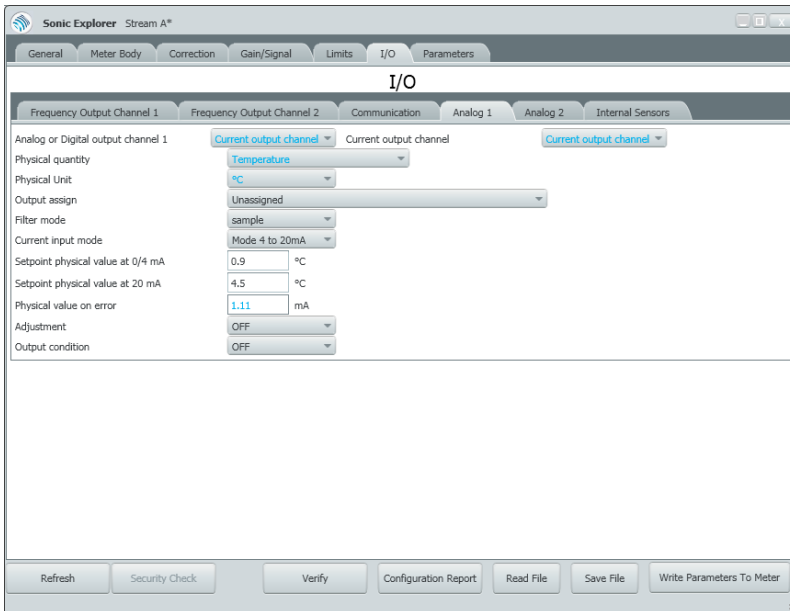


Figure 19-8 Input/Output Configurations

## 19.7 View/Edit using an Overview of all Parameters

In the **Parameters** tab you are able to view a complete overview of all configuration settings. This tab allows you to make nearly all configuration changes that you can also make on the previous tabs.

To view all parameters:

- ▶ Right-click on the **Flow Meter Icon**
- ▶ Click on **Configure** in the quick launch menu
- ▶ Click on the **Parameters Tab**
- ✓ The Parameters tree will be displayed.
- ▶ Navigate using the blue **+** or minus **-** boxes to open more or less configuration options. See Figure 19-9.

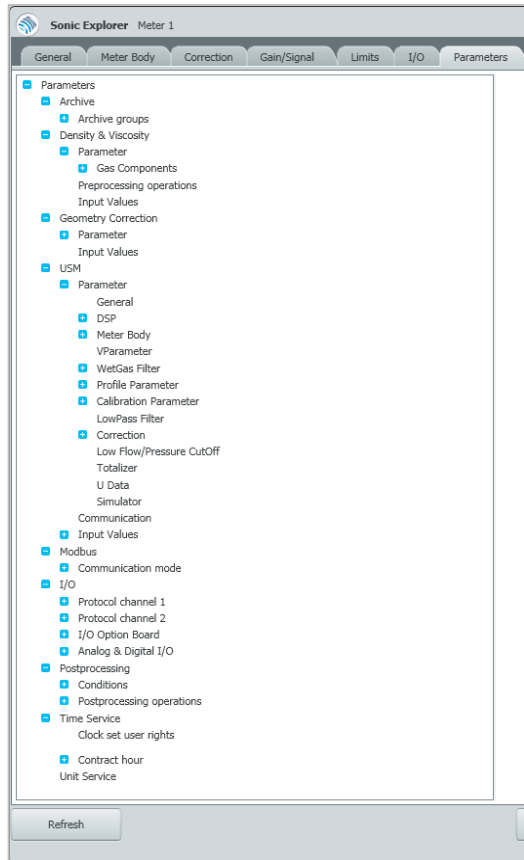


Figure 19-9: Parameters Tab

## 20 Additional Functions from the SonicExplorer Button

Clicking on the **SonicExplorer Button** opens a drop down menu. This drop down menu is available even if there are not any connected meters. The following functions are available:

- Application Information
- Load comm details
- Preferences
- Service
- Config.
- User Logout
- About

Each function will be explained in the subsequent sections.

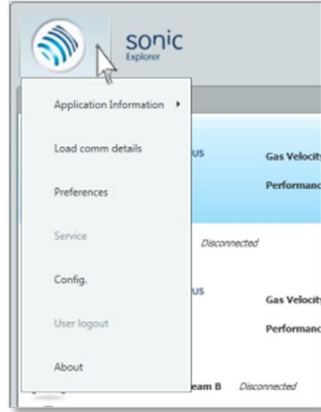


Figure 20-1 Functions from the SonicExplorer Button

### 20.1 Application Information



This function is intended only for use by programmers for debugging purposes. Please contact Elster if you require more information.

By choosing **Application Information**, there are two menu items available:

- **View Application Log** allows you to view a complete log of all actions completed by the program in today's session in a notepad format.
- **Activity Log** shows a log of all actions completed by the user. It is possible to export this information in a .csv file in excel.



## 20.2 Load Comm Details



This function is intended only for use by programmers for debugging purposes. Please contact Elster if you require more information.

This function displays internal communication processes. By clicking on **Load comm details**, two windows will open.

- The first is a live data ticker. By clicking on **Filter** you are able to filter results according to your needs. **Live Data** is a switch to toggle the streaming data on or off.
- The second window is a communication manager.

## 20.3 Preferences

The **Preferences** option opens the edit preferences window as previously described in ⇒ Chapter [6.1 General Preferences](#) (p.15). Please see this section for more information.

## 20.4 Service

The **Service** option opens the service screen as previously described in ⇒ Chapter [10 Meter Monitoring \(Service\)](#) (p.27). Please see this section for more information.

## 20.5 Config.

The **Config.** option opens the configuration screen as previously described in ⇒ Chapter [19 Meter Configuration](#) (p.62). Please see this section for more information.

## 20.6 User logout

**User Logout** will log off the current user, as explained in ⇒ Chapter [6.2 Log Out User](#) (p.18).

## 20.7 About

The **About** section displays important information relating to SonicExplorer, including the version number of the current software.  
⇒ Please see Chapter [6.3 View Software Information](#) (p.19) for more information

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## Appendix I – References

All references listed below can be obtained from Elster. Additionally, most references are available online at: <http://www.docuthek.com/>.

- [1]** UFM Series 6 Q.Sonic<sup>plus</sup> Operation and Maintenance Manual  
SAP Ref.: 73023467  
Doc. No.: 10000050188 (last valid revision)
- [2]** UFM Series 6 CheckSonic Operation and Maintenance Manual  
SAP Ref.: 73023471  
Doc. No.: 10000050192 (last valid revision)
- [3]** UFM Series 6 Q.Sonic<sup>max</sup> Operation and Maintenance Manual  
SAP Ref.: 73023477  
Doc. No.: 10000051506 (last valid revision)
- [4]** UFM Series 6 Wiring Instructions  
SAP Ref.: 73023470  
Doc. No.: 10000050191 (last valid revision)
- [5]** UFM Series 6 Shipping and Storage Manual  
SAP Ref.: 73023469  
Doc. No.: 10000050190 (last valid revision)
- [6]** UFM Series 6 Safety Instructions  
SAP Ref.: 73023465  
Doc. No.: 10000050186 (last valid revision)
- [7]** UFM Series 6 Modbus Protocol  
SAP Ref.: 73023466  
Doc. No.: 10000050187 (last valid revision)

- [8]** UFM Series 6 Transducer Exchange at Atmospheric Conditions  
SAP Ref.: 73023472  
Doc. No.: 03.200.001.001/02/2 (last valid revision)
  
- [9]** Retraction Tool NG Transducers  
SAP Ref.: 73023473  
Doc. No.: 03.203.101.001.02/2 (last valid revision)
  
- [10]** UFM Series 6 Exchanging PCB boards in TIP  
SAP Ref.: 73023474  
Doc. No.: 03.303.101.000.02/2 (last valid revision)
  
- [11]** UFM Series 6 Exchanging Boards at the Rear Compartment of the SPU  
SAP Ref.: 73023475  
Doc. No.: 03.302.101.000.02/2 (last valid revision)
  
- [12]** External VDSL Range Extender User Manual  
SAP Ref.: 73023483  
Doc. No.: 10000050357 (last valid revision)
  
- [13]** UFM Series 6 SonicExplorer Software Application Manual  
SAP Ref.: 73023308  
Doc. No.: 10000050563 (last valid revision)