messkonzept
ANALYTICAL TECHNOLOGY

SetApp 3.0: Laboratory Software
Operating Manual

Version 1.000 © Messkonzept GmbH

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Contents

Thank you for using SetApp 3.0 from Messkonzept.

The product described in this manual and products for use with it are subject to continuous developments and improvement. All information of technical nature and particulars of the product and its use (including the information in this manual) are given by Messkonzept in good faith. However, it is acknowledged that there may be errors or omissions in this manual. For the latest revisions to this manual contact Messkonzept or visit www.messkonzept.de.

Messkonzept welcomes comments and suggestions relating to the product and this manual.

Note!
The design of this software is subject to continuous development and improvement. Consequently, this software may incorporate minor changes in detail from information contained in this manual.

Important!
In correspondence concerning this software, please specify the version of SetApp 3.0. You can find the version number in the **Help** drop-down menu choosing the **About** option.

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This manual applies to: SetApp 3.0
Software Version: 1.000

Part I

Operator Safety

This section provides information and warnings which must be followed to ensure safe operation and retain the instrument in safe condition. Read this section carefully before installing and using the software.

1 Notes on Safety Conventions and Icons

Warning!
"**Warning!**" draws attention to application errors or actions that can lead to safety risks, including injury to persons or malfunctions - possibly even destruction of the device.
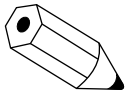
Note!
"**Note!**" indicates an additional function or hint.
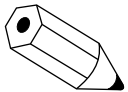
2 Warning Notices

Warning!
The manufacturer does not assume liability for inappropriate handling of the software. Malfunctions caused by inappropriate handling may lead to hazards.

3 Safety Instructions

Warning!
For safe operation of the device please pay attention to all instructions and warnings in this manual.

Note!
Software changes may only be done by Messkonzept.

Part II

Download and Installation

1   Requirements

SetApp 3.0 runs on PCs with Windows 8, Windows 10 or Windows 11.

2   Compatible Devices

Setapp 3.0 is compatible with the following Messkonzept devices:

- FTC150

- FTC320

- FTC400

It is not compatible with the FTC300 and FTC130 series.

3   Download

You can download the SetApp 3.0 software from www.messkonzept.de. To speed up the installation, it is strongly advised to extract the files to the computer before starting the installation.

4   Installation

Execute the .exe-file in the extracted folder. This will start the install wizard. Please read and accept the license agreements and choose an installation directory.

Part III

Connecting the Device to PC via SetApp 3.0

1   Connecting the Device to RS-232

Set up the RS-232 connection as described in the manual of the device.

2   COM-Connection

After the device is mounted and the electrical connection to your PC (e.g. using a RS232 to USB converter) is established, you may start SetApp 3.0. Upon launch, a connection with the device will need to be established. To do this, click on the list of available COM-ports shown in Figure 1, choose the COM-port to which your device is connected, then click connect. When the connection is successful, the connection indicator on the upper right side turns green and the app shows the device information next to the Messkonzept logo.
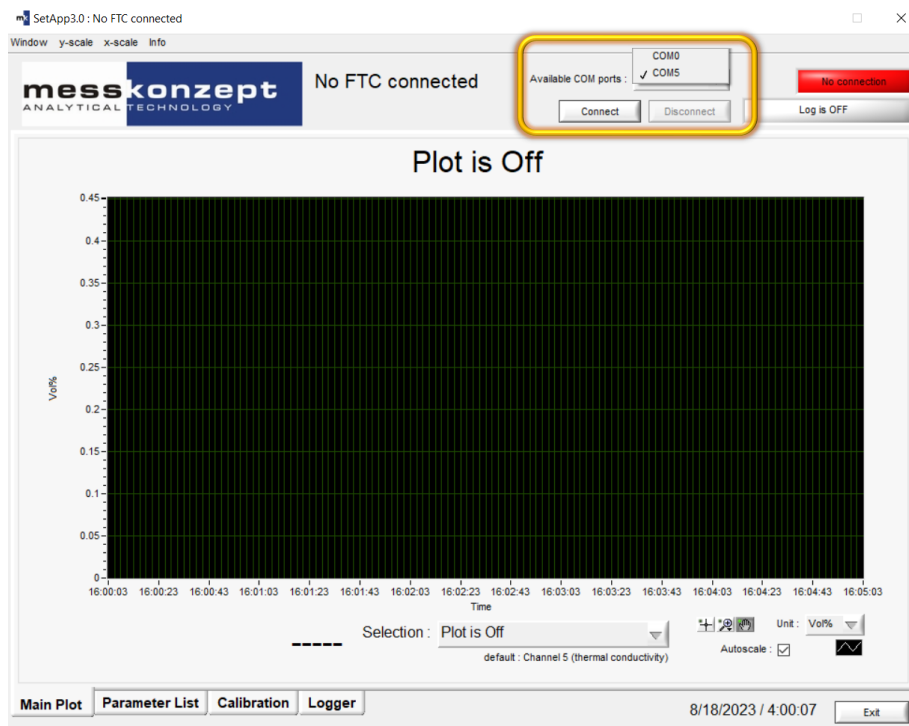

Figure 1: Choosing a COM-port to establish connection with.

If you encounter trouble connecting the device, please check that:

- SUB-D and/or USB cables are connected properly.

- The device is connected to a power supply.

- The device is compatible with SetApp 3.0 (see section 2 of Part I).

Part IV

Settings

1 Startup Screen

The main screen of SetApp 3.0 is structured in the following way:

1. **The menu bar:** enables you to switch between the tabs or open plot windows, as well as adjust the scaling of the x- and y-axes.

2. **The status banner:** Once a device is connected to SetApp, the following information appears in the banner (see Figure 2):

   - The device's model, serial number, and the COM-Port to which it is connected to appear in the banner next to the Messkonzept logo.

   - The status of the connection is displayed in the upper right corner in green if connected, and in red when not connected.

   - The logging status appears below that of the connection.

3. **The tabs:** There are 4 tabs found at the bottom left corner of the window: **Main Plot**, **Parameter List**, **Calibration** and the **Logger**. Their functions will be explained in sections 2, 3, 4, and 5.
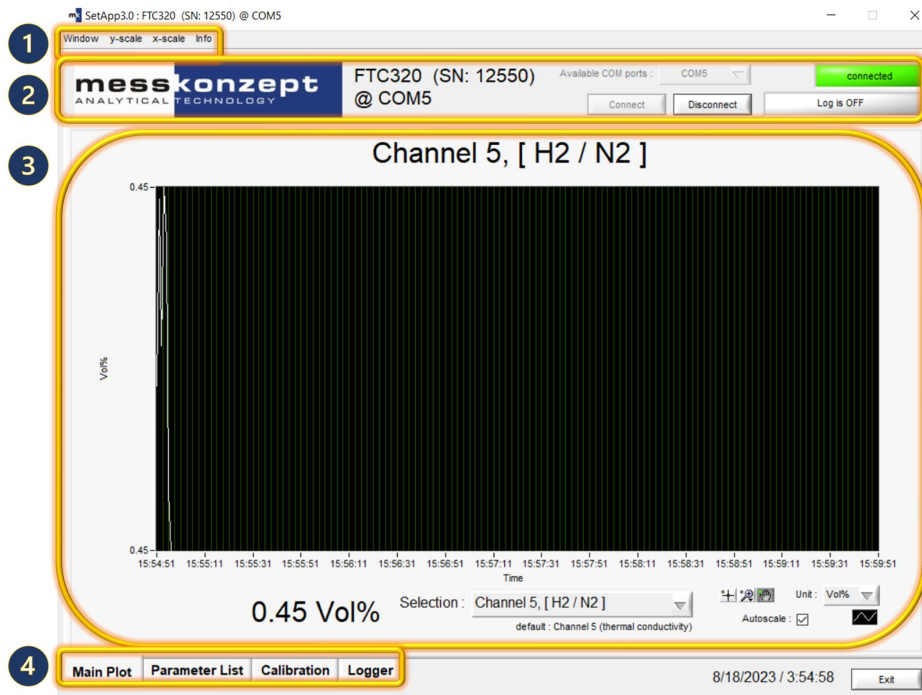

Figure 2: The basic interface.

2   Main Plot

The tab *Main Plot* contains the tools to monitor the measured parameters.

2.1   Channel Selection

From the channel list in Figure 3, one can choose from the available 5 measurement channels. This is relevant for devices that use more than one measuring method[1]. Active channels, ones that transmit measurements to SetApp 3.0, can be identified by the measured gas pair displayed in brackets after the channel number, while inactive ones display empty brackets. Upon choosing one, the channel number and the measured gas pair are displayed on top of the plot, the measurement is plotted, and the current measurement is shown next to the channel menu (see Figure 3).

Below is the customary allocation of each channel[2]:

Channel	Measurand
1	AUX (e.g. Oxygen or pressure sensor)
2	Infrared 1
3	Infrared 2
4	Infrared 3
5	Thermal conductivity

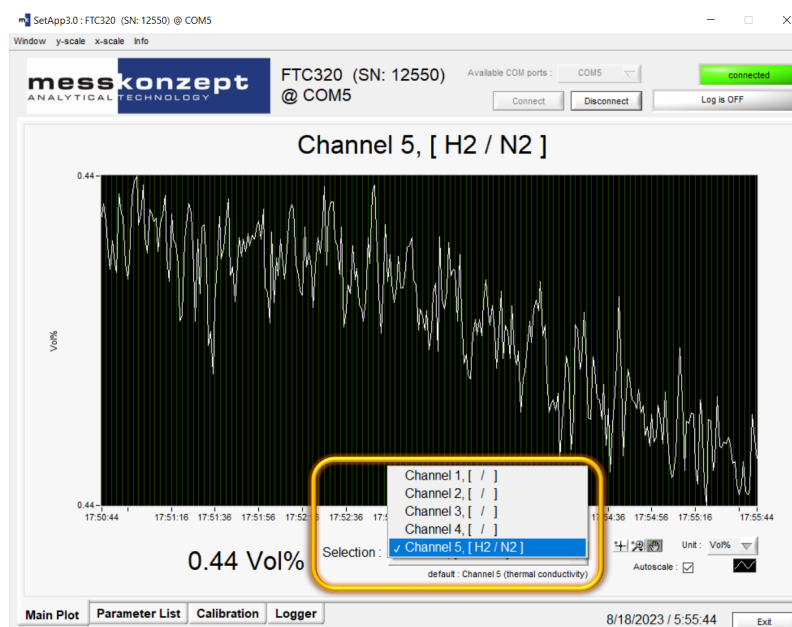Table 1: The measured parameter of each channel.

Figure 3: Changing the measurement channel.

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[1]Not to be confused with devices with Multigas-Mode, wherein different gas pairs are measured. This will be handled in section 3.7

[2]The table shows the general allocation, which may not fully correspond to your device's settings. If questions arise, do not hesitate to contact us.

2.2 The Plot

The plot displays a time series of these measurements, with the y-axis displaying the measurements against the corresponding time on the x-axis. New measurement values are read from the connected FTC device once every second.

2.3 The Menu Bar

The menu bar contains some settings that are accessible from every tab. The **Window** menu allows you to navigate between open SetApp 3.0 windows and tabs, while the **Info** menu provides information about the device and the SetApp 3.0 version currently in use.

The **x-** and **y-scale** menus contain a wide range of scaling options for the axes. For instance, the y-axis can be scaled to a certain percentage of the parameter's signal or to a specific range in Vol% or ppm (see figure 4). In the x-scale menu, the x-axis can be scaled to a specific period of time, e.g. 1 hour.
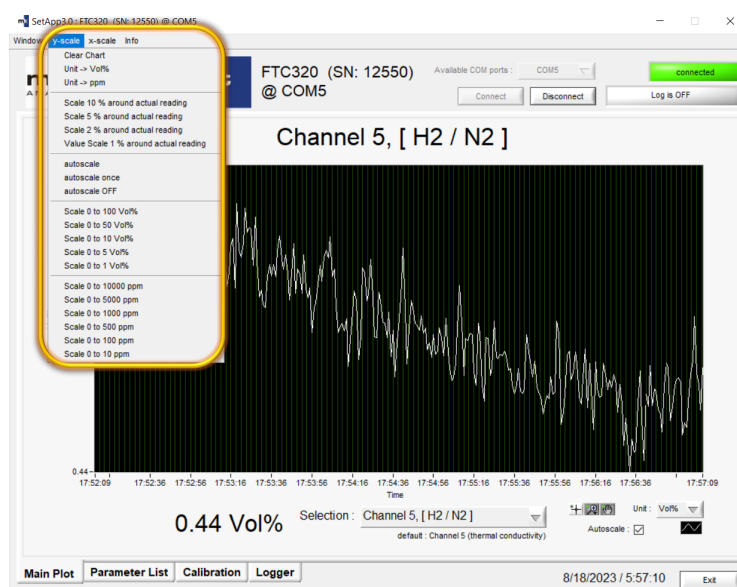

Figure 4: Changing the measurement channel.

2.4 Zoom and Scale Settings

By default, the option **Autoscale** is selected (see the small checkbox next to the channel selection). The autoscale feature updates the scaling of the y-axis in such a way, that all values recorded over the time-frame given by the x-axis can be seen in one plot view. Please take note of the possibly changing scale on the y-axis. The autoscale has no effect on the x-axis.

Custom zooming and scaling options are found at the bottom right of the **Plot** tab. The zooming and scaling button 🔍 below the plot has 6 options:

1. 🔍 : Zoom into a selected area of the plot.

2. [icon] : Zoom into the range of x-axis determined by the start and end values of x at the borders of the selection. The scaling of the y-axis remains unchanged.

3. [icon] : Zoom into the range of y-axis determined by the start and end values of y at the borders of the selection. The scaling of the x-axis remains unchanged.

4. [icon] : Zooms out to show all the measured values from the point of connecting the device to the current time.

5. [icon] : Zoom the plot in.
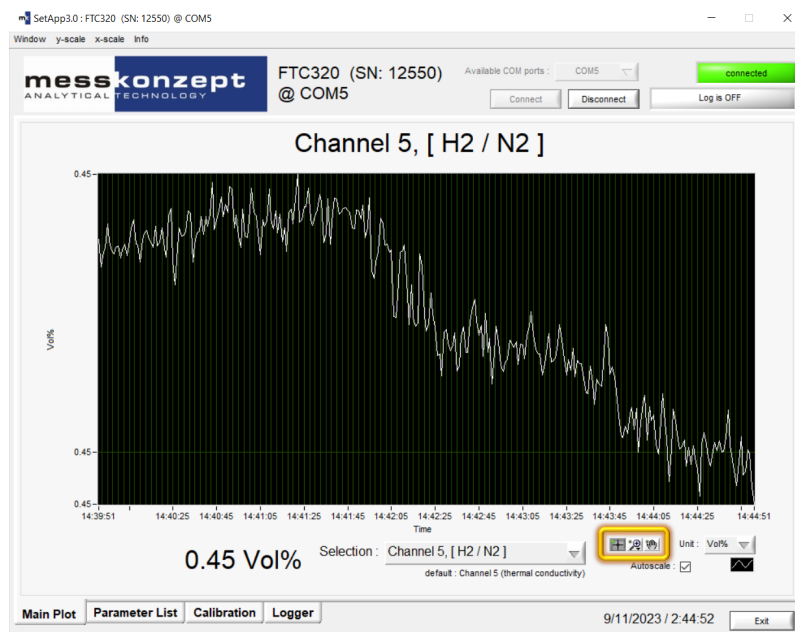
6. [icon] : Zoom the plot out.

Figure 5: The zoom and scale buttons.

2.5   Display Settings

The button [icon] contains detailed display settings (see Figure 6). The plot type, colors, line style can all be adjusted in their respective sub-menus. **A very useful function found in this menu is the data export which allows to export the plot data to excel or to the clipboard.**

8
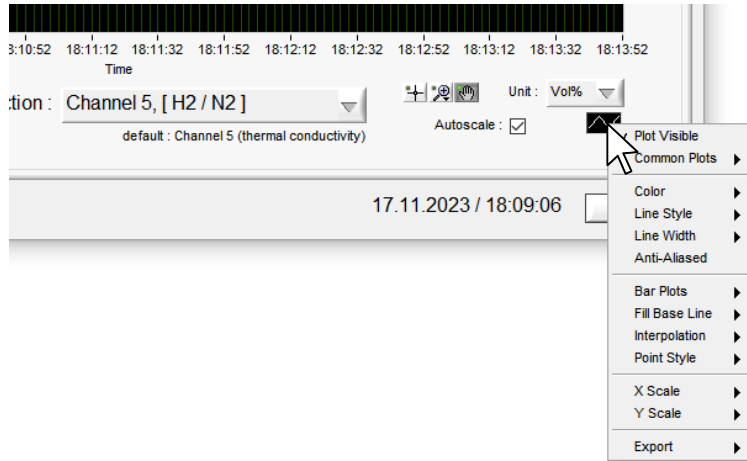
Figure 6: Display settings.

2.6 The Context Menu

Right clicking the plot will open the context menu, which offers some valuable tools for data monitoring. Beside further display settings, it enables you to copy or export the data and the plot itself into different file formats. The settings of the latter, including the title, description, and legend, can be changed from the menu item **Description and Tip...** and the sub-menu **Visible Items**.

Figure 7: The context menu of the main plot.

2.7 The Measuring Units

The unit in which the measurements are given is displayed on the bottom right of the window (Figure 8). Clicking on the units' drop-down menu allows you to choose between 2 options: **Vol%** or **ppm** (parts per million).
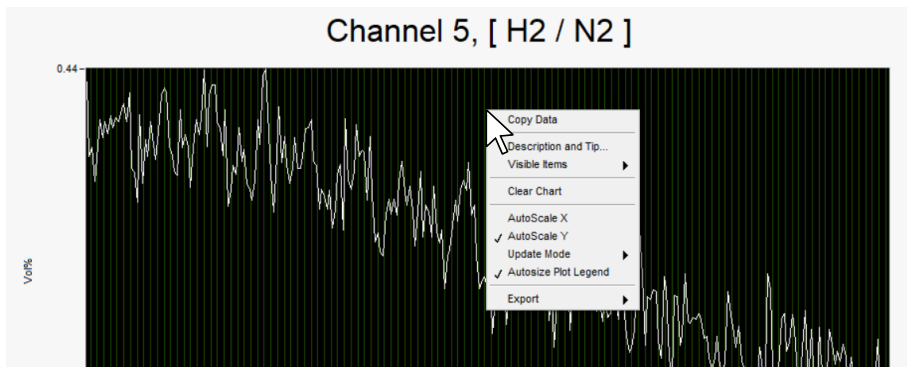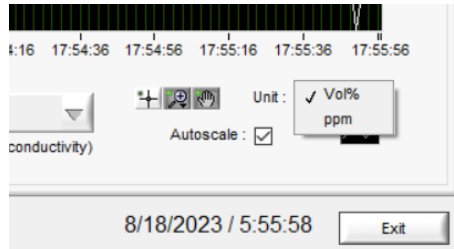

Figure 8: The measurement units, Vol% or ppm.

3 Parameter List

The *Parameter List* tab provides the data behind all the device's parameters. The columns of the list show the properties of any given parameter, such as name, value, maximum and minimum… etc. The following is a breakdown of the elements of the list.

3.1 Parameter Groups

To find specific parameters more easily, the parameter list is divided into *Parameter Groups* (see Figure 9). Select a parameter group to only view a subsection of the complete parameter list.

Figure 9: The parameter groups.

3.2 Expert Mode

The parameter values are, by default, not modifiable. This prevents accidental or unwanted changes to the parameter list as they might cause fatal errors to the device. To be able to modify the values of the parameters, the **Expert Mode** has to be enabled by checking the box next to it (see Figure 10).
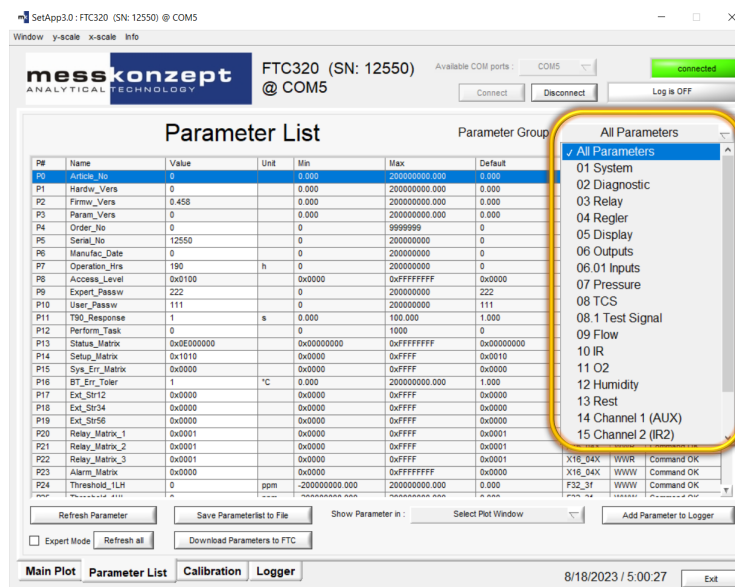

Figure 10: Activation of Expert Mode.

Warning!

Modifications to the parameter values should only be done by an expert! Changes to the wrong parameters may lead to faulty measurement indication of the device or even cause permanent damage to the device hardware. Contact Messkonzept if in doubt!

3.3 Read & Write Parameters

3.3.1 Read parameters

The parameter list is filled with the parameter values which were read from the device after RS232 connection or of the last manual refresh by the user. Please note that the parameter list is not automatically updated to the current parameter state.

To update the list to the latest parameter values, click **Refresh all** as shown in Figure 11. This will halt logging and reset plots of previous data. Alternatively, single parameters can be refreshed by selecting one parameter in the list, then clicking **Refresh Parameter**.
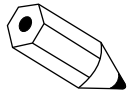
Note!

Refreshing the entire **Parameter List** will erase all current logs and plots, so it is recommended to either do it before starting logging the data or to export any valuable data that will be erased as described in section 2.5, 2.6, and 5 before refreshing the parameters.

Figure 11: Refreshing the parameter list.

3.3.2 Write/Modify parameters

In order to modify the value of a parameter, the **Expert Mode** has to be enabled, as mentioned in section 3.2. The parameter values can be modified by clicking the value field (in the third column) and entering a new value followed by the *Enter* key. Some parameters are read-only and cannot be modified even in **Expert Mode**, such as firmware version and the block temperature.
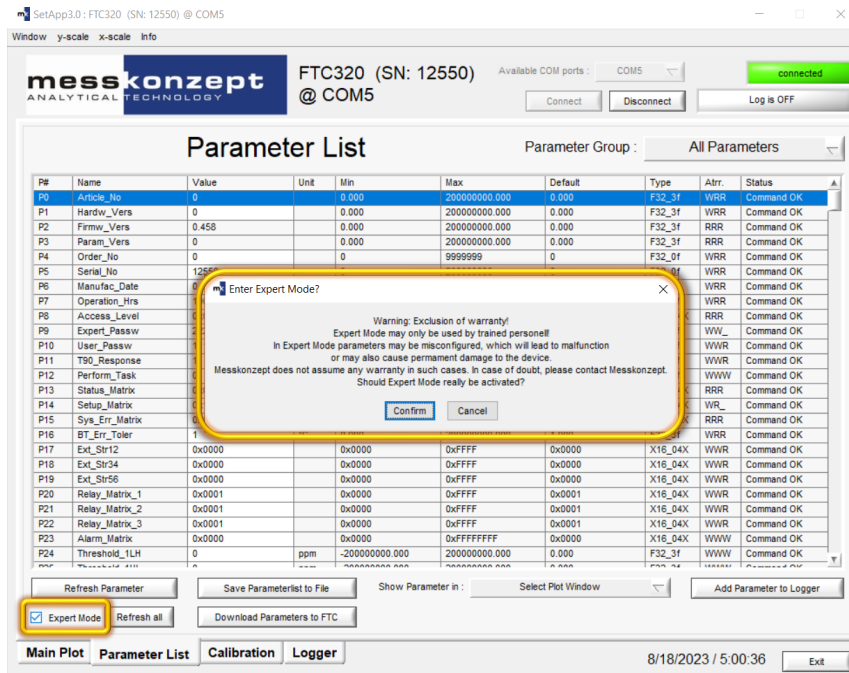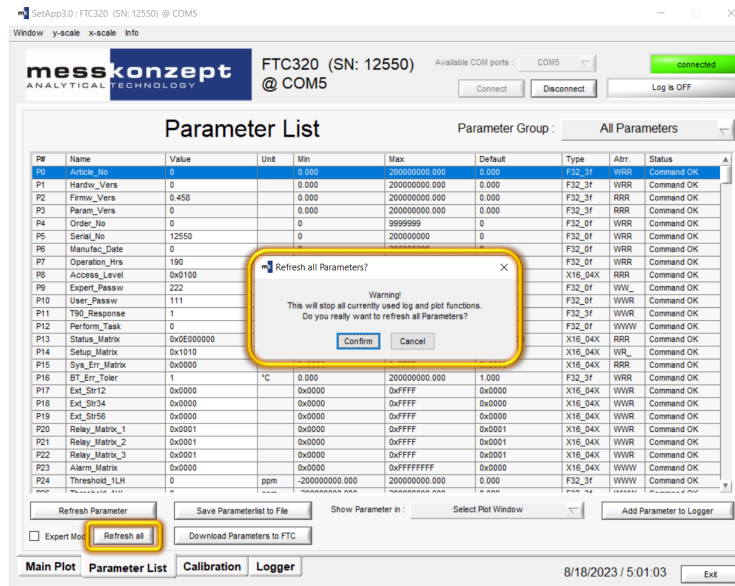
Warning!

Modifications to the parameter values should only be done by an expert! Changes to the wrong parameters may lead to faulty measurement indication of the device or even cause permanent damage to the device hardware. Contact Messkonzept if in doubt!

3.4 Adding Parameters to the Logger

To start logging a parameter in the logger, select it and click on **Add parameter to logger**. Section 5 explains the functionality of the **Logger**.

3.5   Plotting Parameters

To plot the values of a parameter, select it, then open the menu ***Show parameter in:*** menu (see figure 12). From the menu, choose the window where the parameter will be plotted.
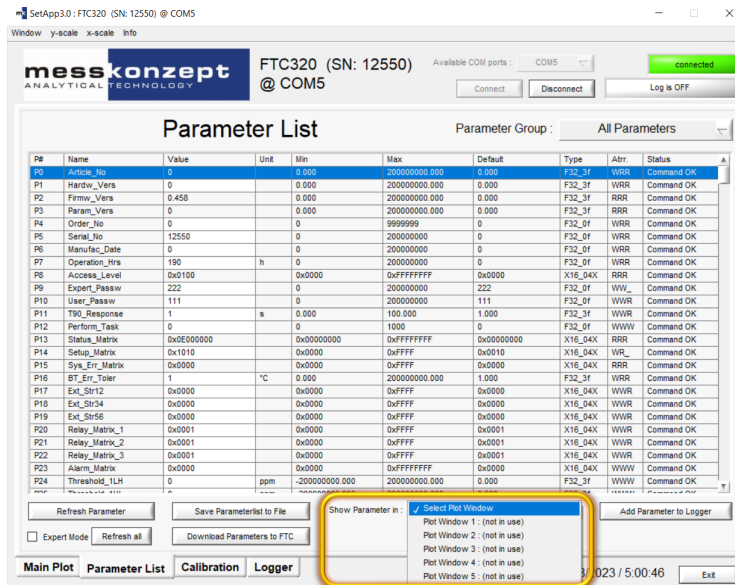

Figure 12: Plotting a parameter in a plot window.

3.6   Save parameters to file & Download parameters to FTC

The parameter list can be imported and exported to and from the device by clicking the respective buttons at the bottom of the window. This feature is key to the remote maintenance and repair procedures offered by Messkonzept. This feature cannot be used if the device has Multigas-Mode! Please contact Messkonzept if you require assistance.

Warning!
Importing lists overwrites the current device settings and may cause permanent damage. If working with multiple devices, make sure to import the parameter list of the correct device!

3.7   Multigas Mode in TC Measurement

Your device has the *Multigas-Mode* if it has been configured to measure more than one gas pair using thermal conductivity. Switching between the gas pairs using SetApp 3.0 can be done as follows:

1. Choose the parameter group ***Channel 5 (TC)***.

2. Find the parameter ***MultiGas_Select***, which determines gas pair to be measured.

3. The code of the gas pairs can be found in your device's protocol that was sent by Messkonzept upon delivering the device. In the section *Specifications*, a list of gas pairs

and their ranges is provided, along with a checkbox for each. The checked boxes are the measurable gas pairs of your device. Find the desired gas pair and note the index of it.

4. In SetApp, enter the code of the gas pair as the value of the parameter **MultiGas_Select** and press *Enter* (Expert Mode must be enabled, see section 3.2).

4   Calibration

Upon switching to the **Calibration** tab, a prompt window appears that offers the instructions for calibrating the device (see figure 13). The instructions can also be accessed any time through the button **Instructions** in the Calibration window. It is highly recommended to read and follow them carefully to ensure an accurate calibration.
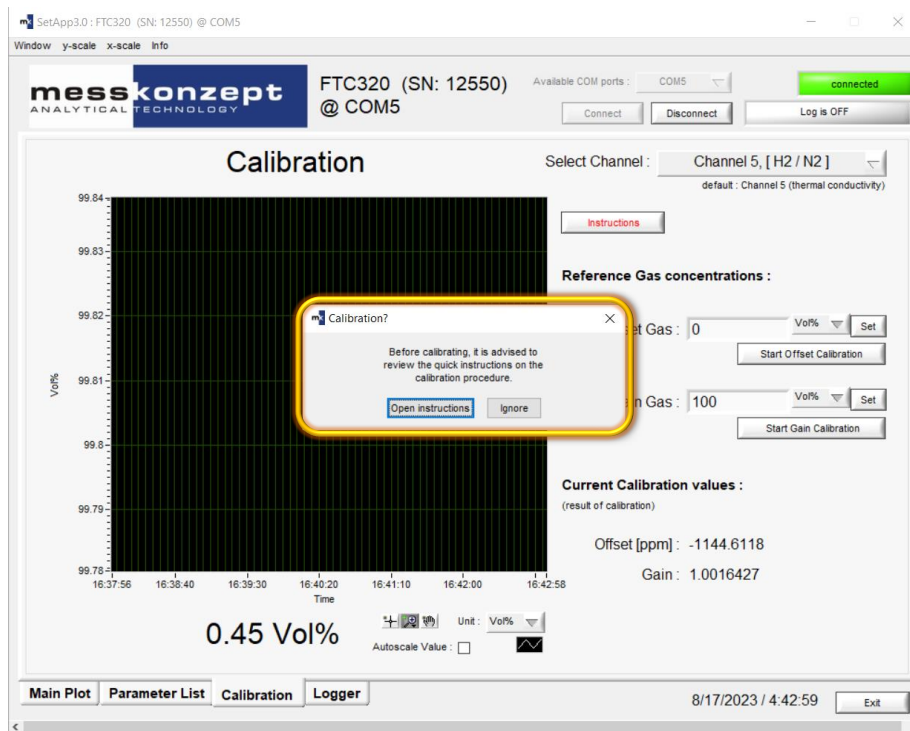

Figure 13: The calibration instructions prompt upon opening the Calibration tab.

First, choose the channel to be calibrated from the drop-down menu at top right of the window (see figure 14). Enter the offset value (the reference gas concentration value to which the measurement will be adjusted by calibration) and choose the unit (Vol% or ppm).

Apply the test gas used for offset calibration and wait for the measurement to stabilize (watch the plot on the left). The time for stabilization depends strongly on the dead volume in the gas duct leading to the device. To observe the value with high precision, change the unit to ppm (selection below the plot window). When the measurement has stabilized, click on **Start Offset Calibration**. The sampling takes 10 seconds. After that, the measurement indication should show equal the reference gas concentration.

For thermal conductivity measurement, a single point (offset) calibration is typically sufficient.

If you wish to also calibrate the gain, please do so AFTER prior offset-calibration.

The suggested procedure is different for measurement of O2 with an external electrochemical sensor (typically routed over channel 1). This sensor should only be gain-calibrated (without prior offset-calibration). Typically this is done with air (20.95 Vol.% O2 in dry air) at the same flow rate that is used in typical operation in your process.

Warning!
For thermal conductivity measurement (channel 5) calibration of the offset is sufficient in most cases and gain calibration is hardly ever necessary. In the rare cases that a gain calibration is needed, take note, that it should only be performed after the offset calibration!
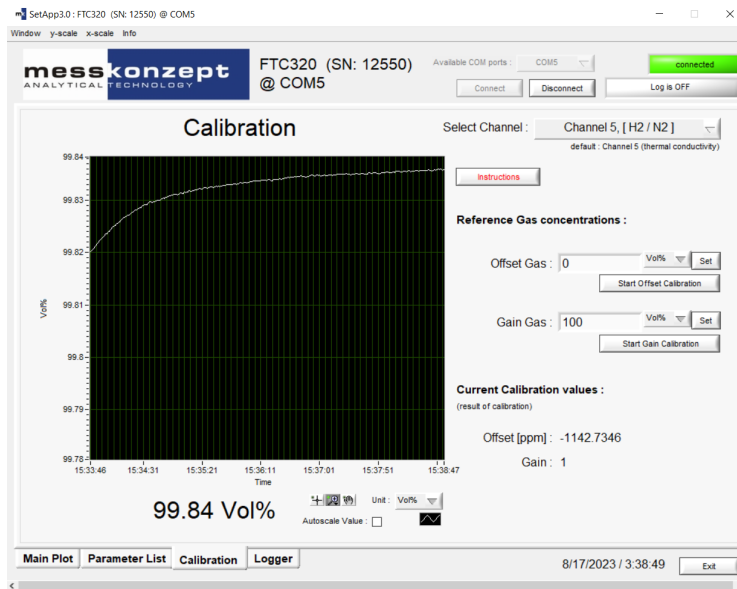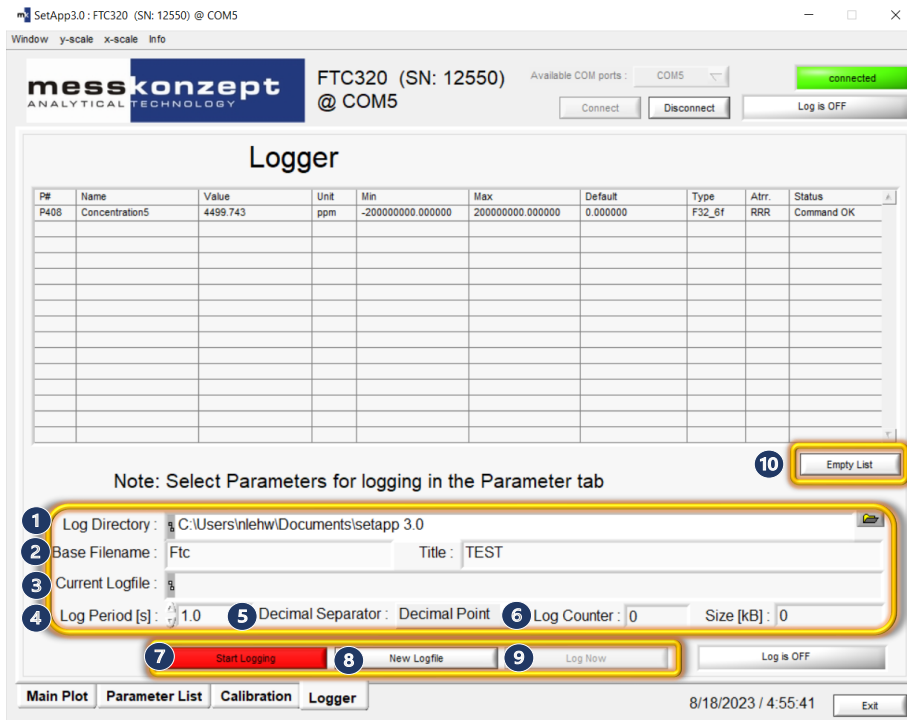

Figure 14: The calibration window.

5 Logger

Figure 15: The Logger tab.

The Logger is the main data recording and exporting tool in SetApp 3.0. The status of the logger can be seen in the banner or at the bottom of the Logger tab. Figure 15 numbers the elements of the window. Below you find a description for each numbered element in the figure:

1. **Log Directory:** Where the log file will be saved.

2. **Base Filename** and **Title:** The base file name is what the log file name starts with, which, at the point of creating the file, is followed by the date and time of the log. The *Title* is an optional field where a short description of the log can be added. The title will appear at the top of the .csv file produced by the logger.

3. **Current Logfile:** Displays the name of the current log file and its directory.

4. **Log Period:** The length of the logging interval can be set in this field by entering the duration in seconds.

5. **Decimal Options:** A comma or dot can be picked from the drop-down menu as a decimal separator for the signal data.

6. **Log Counter:** Displays how many data points have been logged.

7. **Start Logging:** This is the button that start the logging. To be able to click it, a parameter has to be added to the Logger's list. Section 3.4 describes how to add a parameter to the list from the tab *Parameter List*. The button color is red if the Logger is off and green if it is on.

8. **New Logfile:** Once the logging is in progress, clicking this starts logging in a new file.

9. **Log Now:** Manually saves the selected parameters/signals at the instance of clicking it.

10. **Empty List:** Removes the parameters that have been previously added to the Logger list.

6   Data and Backup

SetApp 3.0 automatically backs up all device parameters every time when a connection with a device is established. The backed up files can be imported to the device as described in section 3.6. This is especially useful for situations where something went wrong during calibration, or if the user has accidentally changed settings in the parameter list.

The backup files are saved in SetApp local data directory. For example, the backup directory on Windows is as follows:

`C:\Users\<USER>\AppData\Local\SetApp30\Backup`