

HYDAC

INTERNATIONAL

FluidMonitoring Software

FluMoS

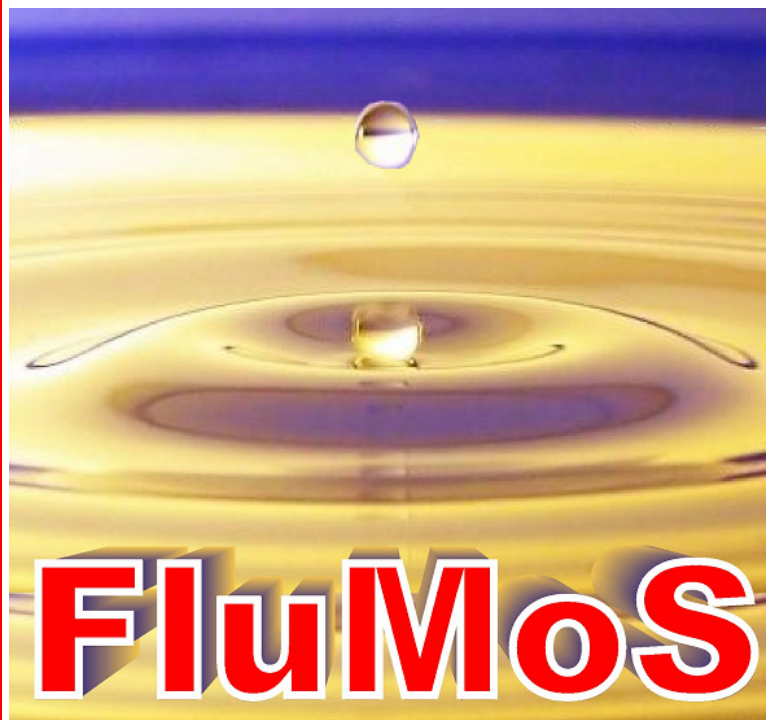
Version 1.4x and higher

For:

- ContaminationSensor CS 1000 / 2000
- AquaSensor AS 1000
- FluidControl Unit FCU 1000 / 2000 / 8000
- MetallicContamination Sensor MCS 1000
- SensorMonitoring Unit SMU 1000

Software Manual

Document-no.: 3363034b



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Introduction / Software description

General

With the **FluidMonitoring Software** (henceforth only referred to as FluMoS), the following devices can be conveniently monitored:

- ContaminationSensor CS1000 / CS2000
- FluidControl Unit FCU1000 / FCU2000 / FCU8000
- AquaSensor AS1000
- SensorMonitoring Unit SMU1000
- MetallicContamination Sensor MCS1000



With FluMoS Light, you can read out 3 devices/sensors at a time.

To read up to 16 units/sensors, you can use FluMoS Professional.

Special features offered by FluMoS:

- While a measurement is being conducted, all measurement values can be displayed online on the computer screen in tabular and graphical formats, and can be saved to your hard disk as a log file.
- Log files stored on your hard disk or a floppy disk can be rendered and printed out in graph and table format.
- Saved log files can be made available for processing with other programs (e.g. MS Excel).

Used together with different Hydac sensors, **FluMoS** is an efficient tool for the continuous monitoring of fluid purity during commissioning, maintenance and servicing work on hydraulic and lubrication systems.

About these operating Instructions

FluMoS Light can also be downloaded from our web site www.hydac.com free of charge.

You can purchase **FluMoS Professional** under p/no. 3371637.

In order to keep the instructions simple, the software is explained using examples with the CS1000 sensor.

In this manual, we assume that the user has a working knowledge of Windows, as well as how Windows programs are structured and installed.

Explanation of Symbols and Warnings

The following designations and symbols are used in this manual:



Important **information** is summarized under this symbol.



This symbol designates **tips for use** and other particularly useful information.



This symbol provides important **tips** for the proper handling and operation of the product. The non-observance of these instructions can lead to false use or malfunction of the product.

For any questions or queries regarding FluMoS, please contact our technical sales department.

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System requirements for PC

The following hardware and software components are required to run FluMoS:

- Processor Pentium \geq 200 MHz
- RAM \geq 64 MB
- Graph VGA graphic card, minimum resolution 800x600
- Hard drive \geq 15 MB free memory.
- Interface 1 free serial or USB interface which is not being used by any other program (e.g. terminal, modem or network software).
- Operating system WINDOWS 2000, WINDOWS XP, WINDOWS Vista, WINDOWS 7(32bit)
- Internet Explorer \geq 4.0
- Access rights Administrator or software installation rights

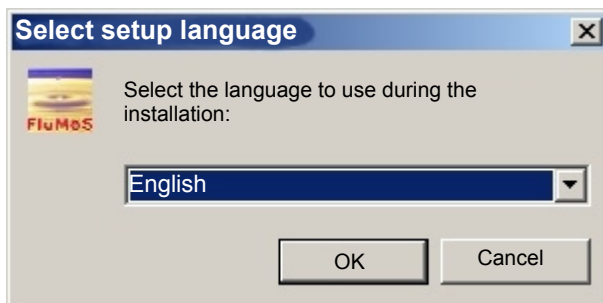
Installing FluMoS

We recommend that you uninstall older versions of **FluMoS** so as to ensure that the software functions properly.

Read the README file. This document contains up-to-date additional information that supplements this manual. We advise you to read the entire file before using **FluMoS**. The README file is located on the installation CD or in the unzipped file downloaded from our website.

To begin the installation of FluMoS, start the program SETUP_FLUMOS_xxx.EXE on the CD or in the unzipped file download.

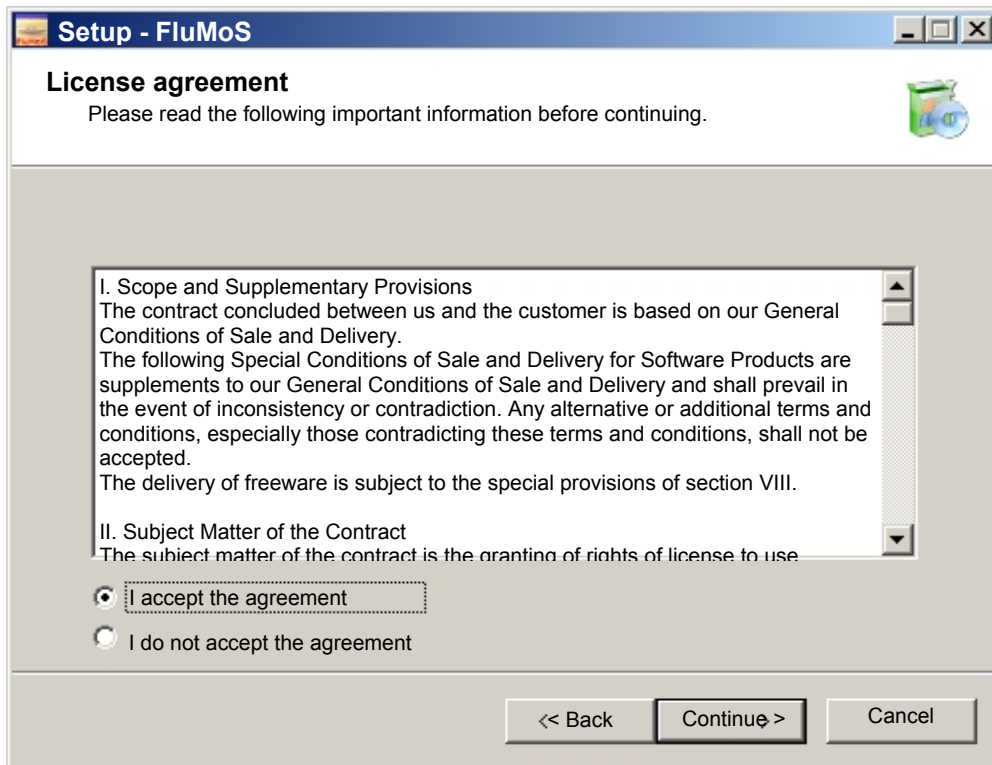
Select the language for the setup wizard.



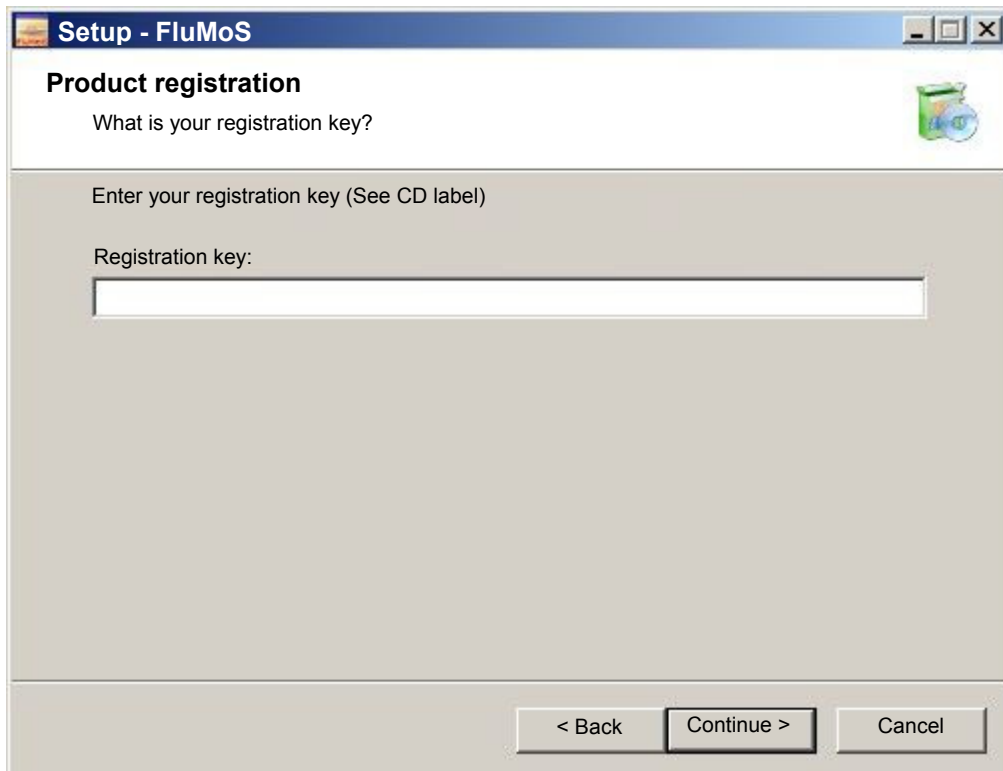
The setup wizard will guide you through the installation process. To continue, click on "Continue".



To continue the installation, carefully read through the licence agreement in the next window and then click "I accept the agreement."

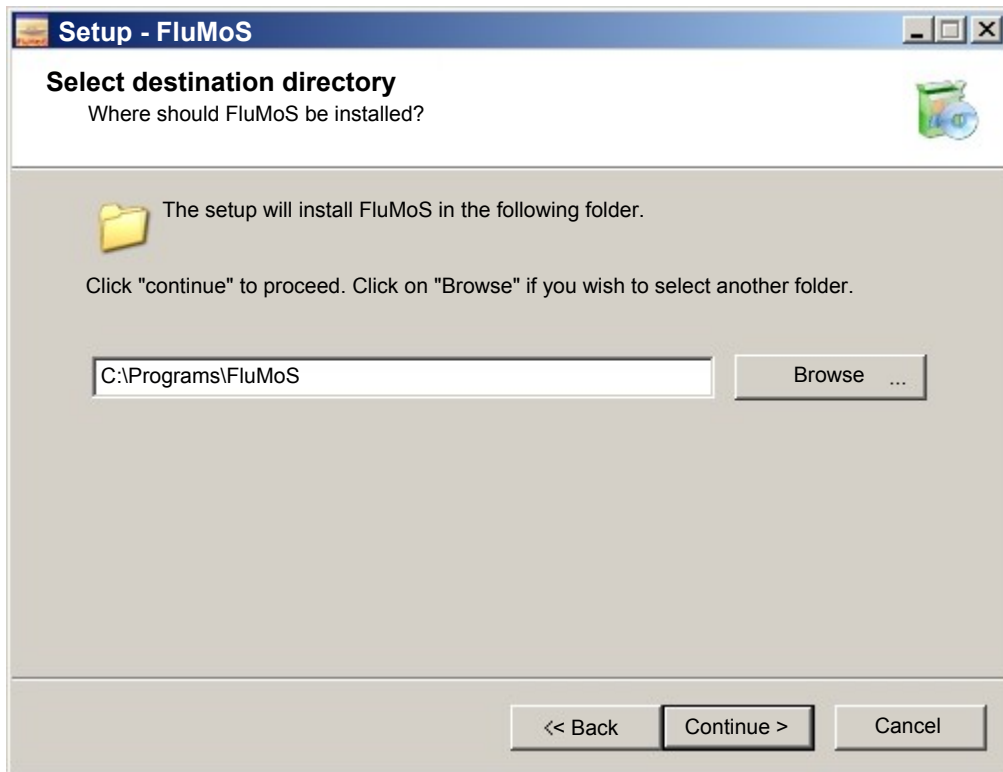


To activate FluMoS Professional, enter your registration key from the CD in the following screen. This step is not necessary when installing FluMoS Light.

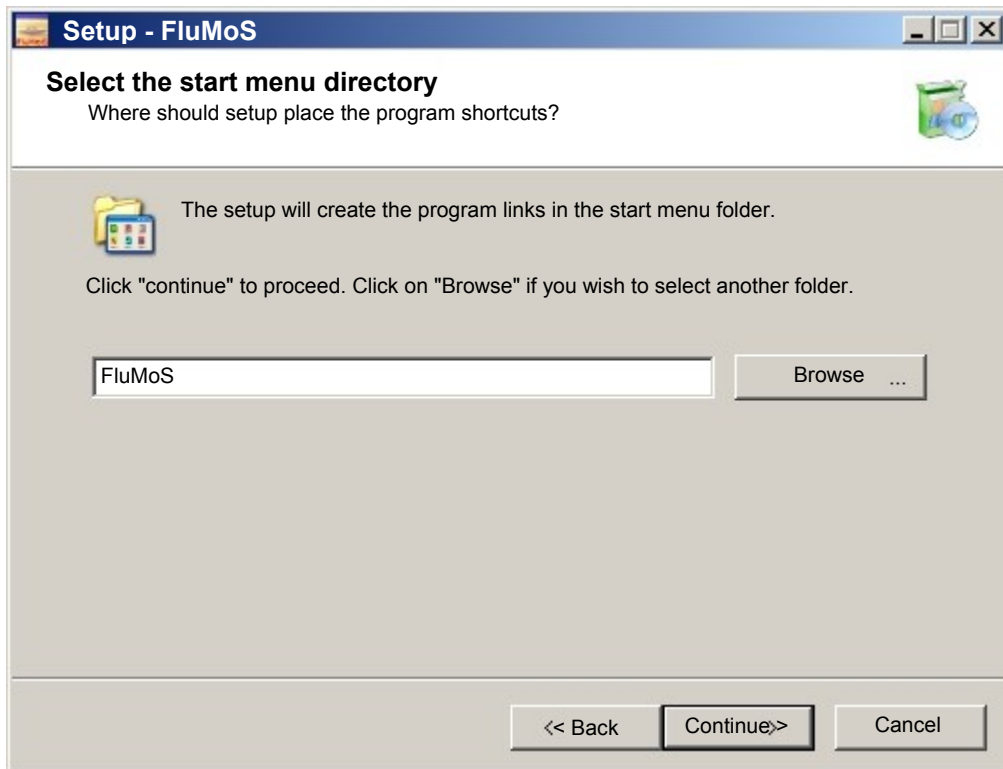


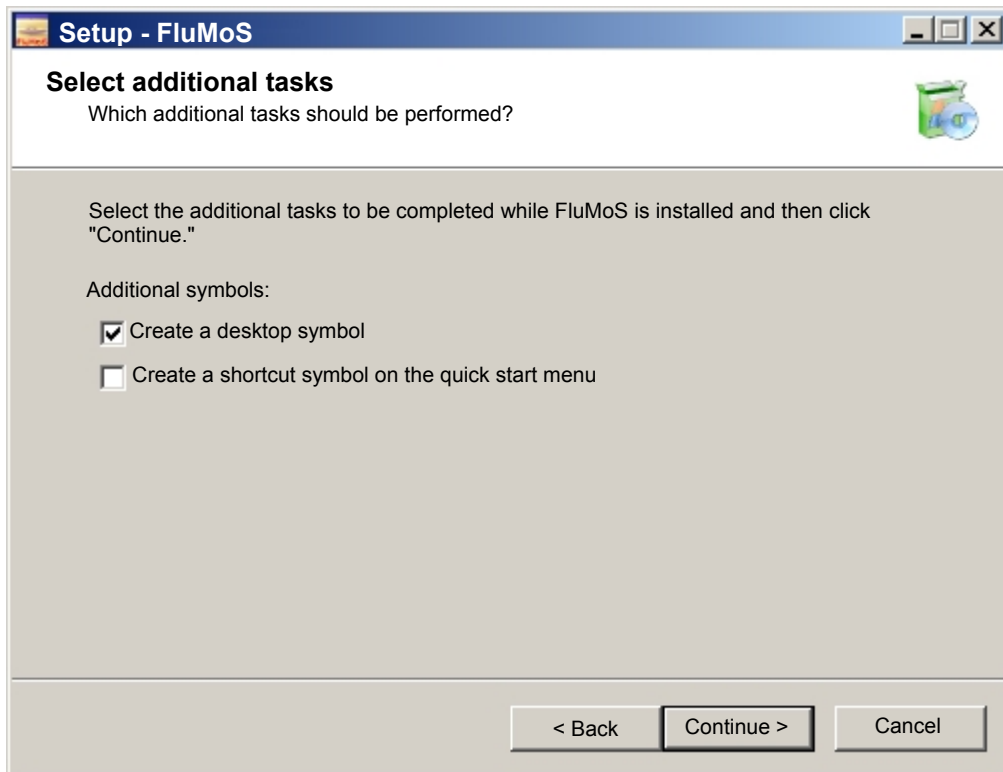
During installation only the program files are copied to the installation directory. In the next step, the installation directory is defined.

If the installation directory already exists, you will be asked if you wish to overwrite the path.

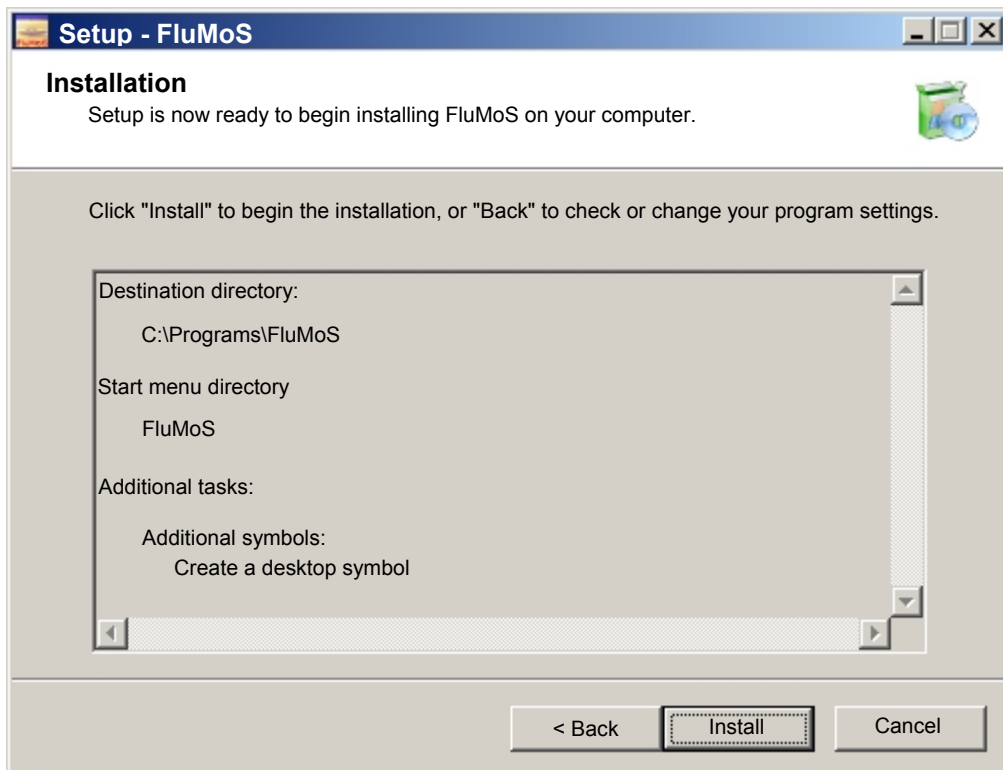


Then a start menu directory will be created.

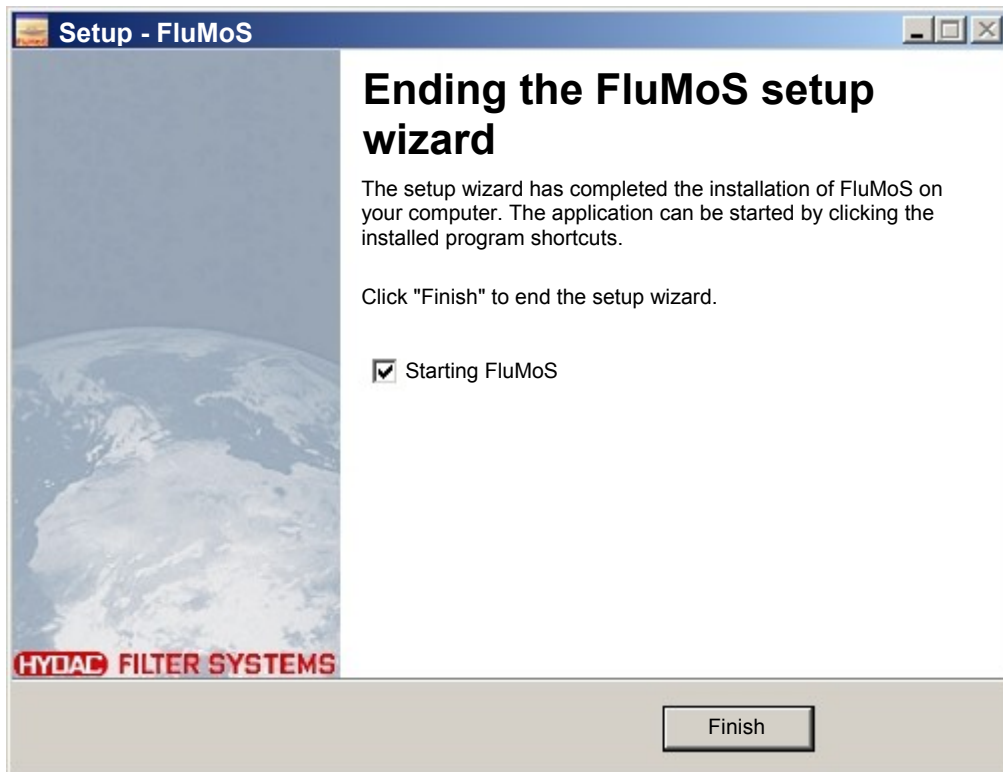




Confirming (pressing the Install button) causes the installation process to be started.

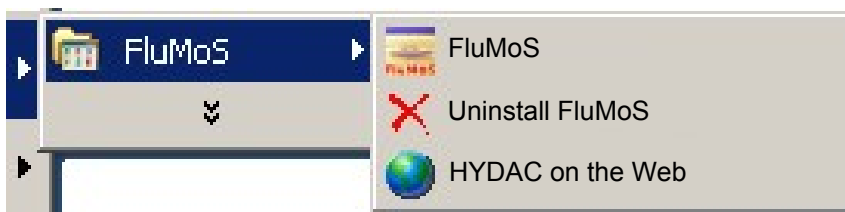


Click the "Finish" button to close the setup wizard.



Uninstall FluMoS

To uninstall **FluMoS**, run the UNINS000.EXE file located in the installation directory or launch uninstall from the "Start" menu:



The DATA directory cannot be deleted for data backup reasons.

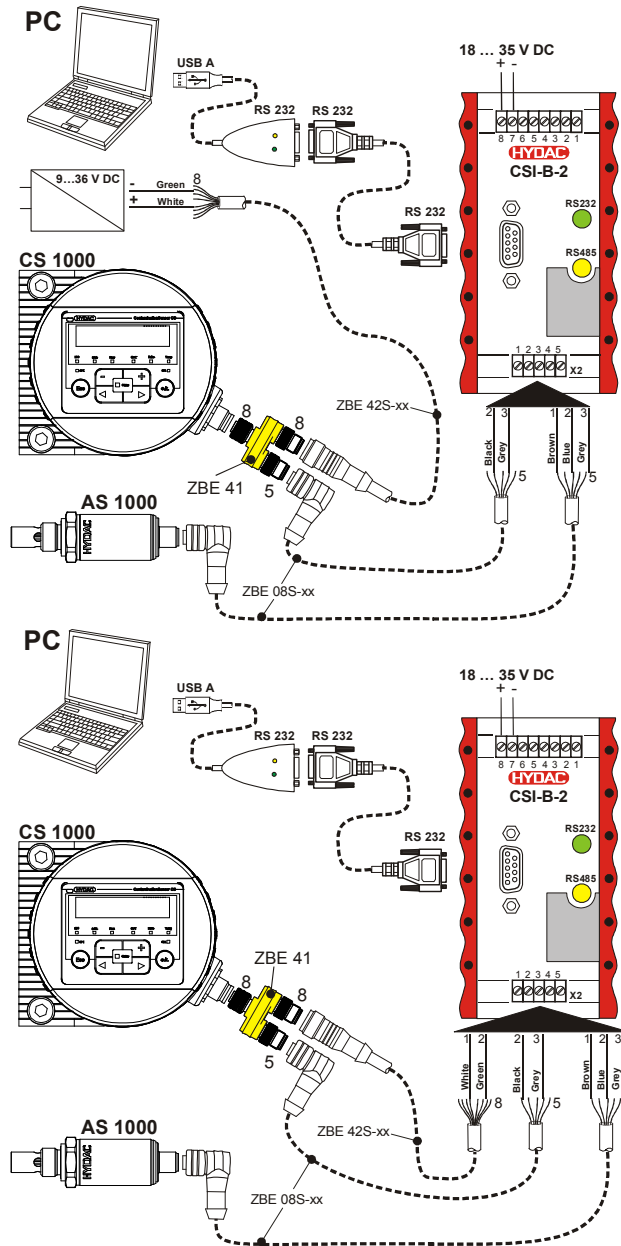
Connecting the device / sensor

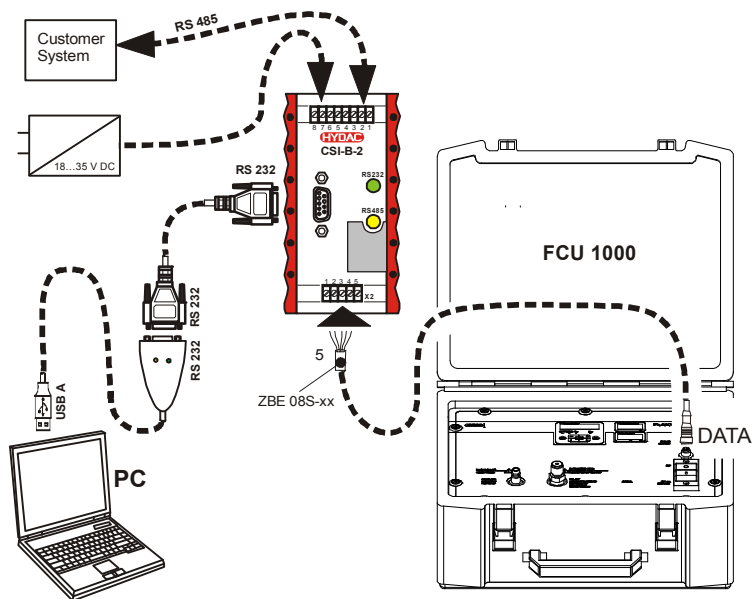
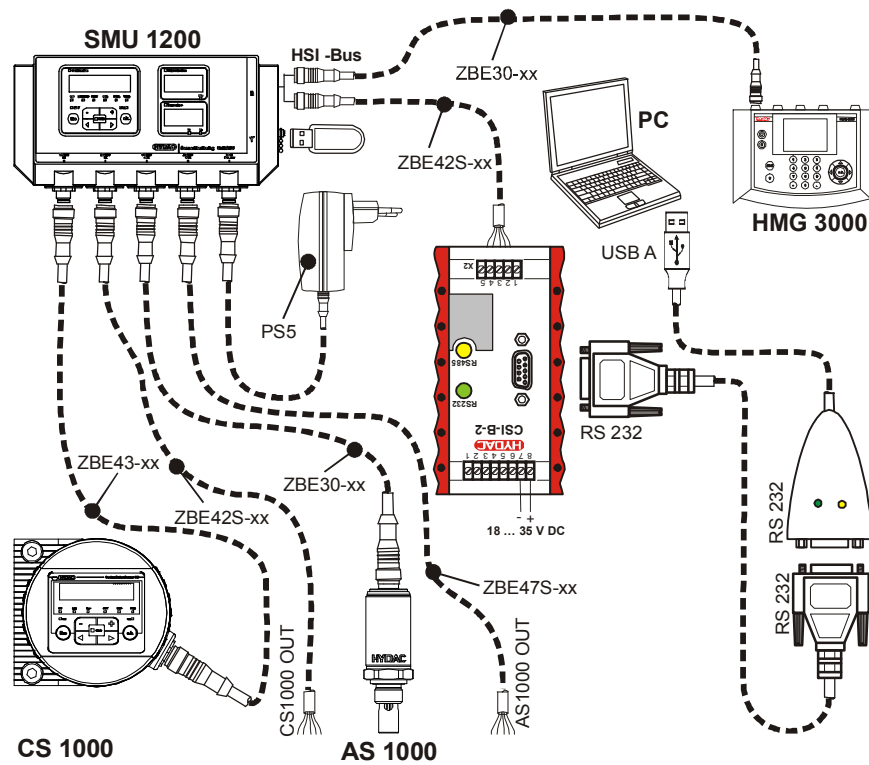
Connect the devices / sensors to any serial interface on the PC. It may be necessary to use a separate interface converter.

To communicate with FluMoS, all of the devices / sensors must be connected to a power source and must be switched on.

CSI-B-2 Connection overview

HYDAC devices / sensors are connected to the PC as shown in the following illustration.

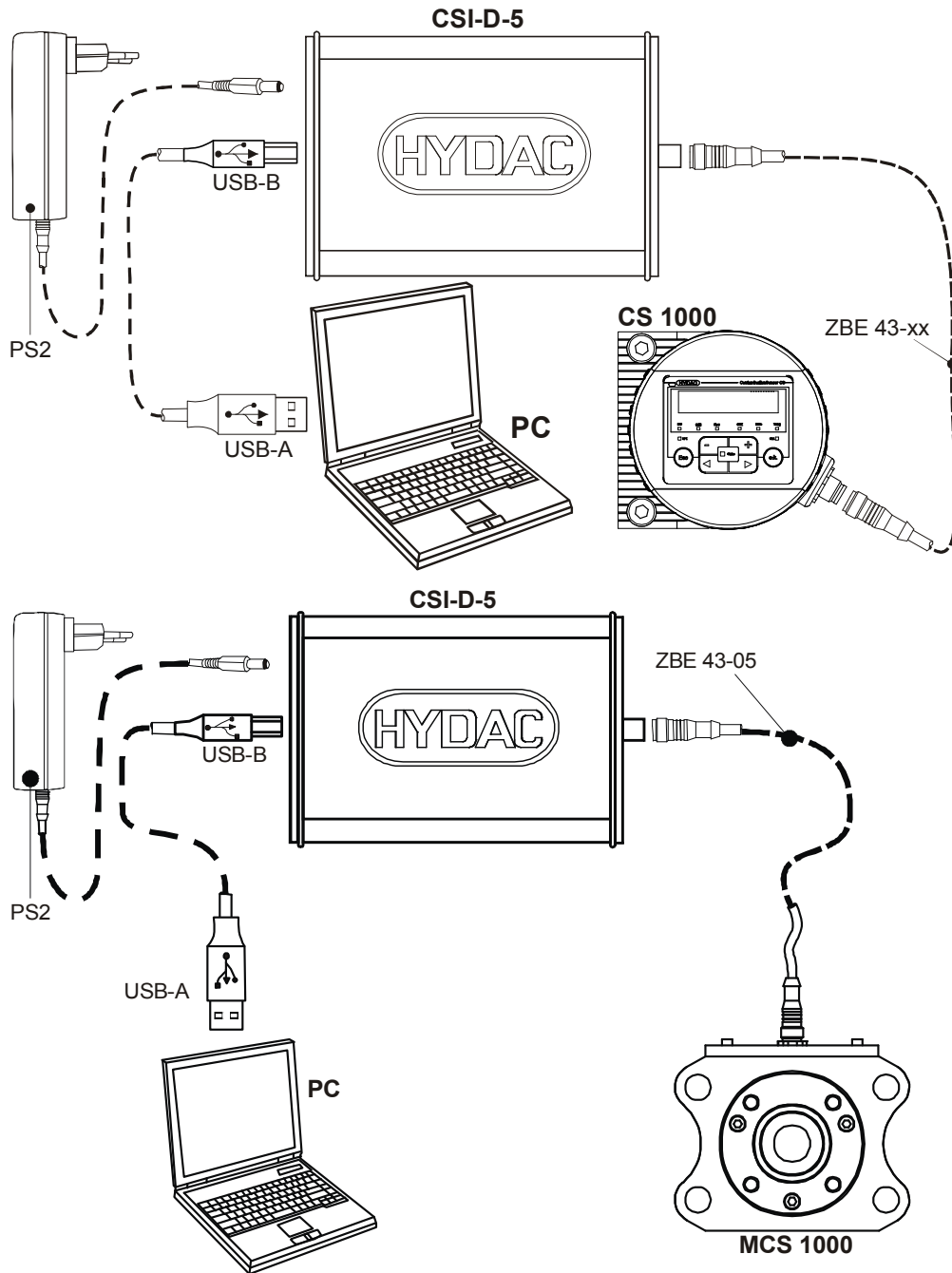




More detailed information on the connection options can be found in the operating instructions for the devices / sensors being used.

CSI-D-5 Connection Overview

Connect a CS 1000 / MCS 1000 as shown in the following diagram.



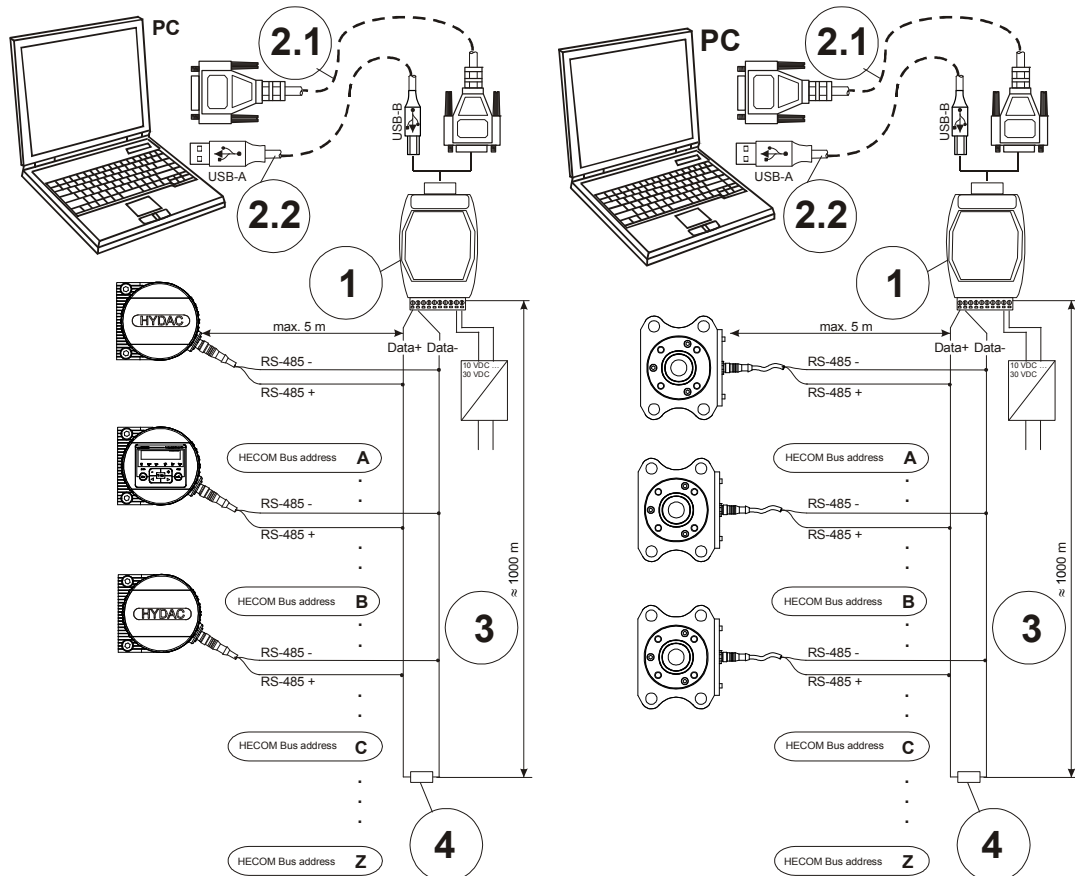
CS1000 / MCS1000 on the RS-485 bus

The CS 1000 / MCS1000 has an RS-485 interface which is to be used as a two-wire interface in half-duplex mode.

The number of sensors per RS-485 bus is limited to 26. The HECOM bus addresses use the letters A to Z.

The length of the bus line and the size of the terminating resistance depend on the quality of cable used.

The following diagram shows the connection between several sensors via the RS-485 interface to a PC.



Item	Designation	
1	Converter	RS232 <-> RS485
1	Converter	USB <-> RS485
2.1	Connection Cable	RS232, 9-pole
2.2	Connection Cable	USB (A) <-> USB (B)
3	Cable	We recommend twisted pairs
4	Terminator	≈ 120 Ω

Starting FluMoS

Once the program has been installed in the suggested path, it can be found in the "Start" menu under "**Programs** -> **HYDAC** -> **FluMoS xxx**". To launch the program, click on "**Start FluMoS xxx**".

Scanning for units

Once you have started FluMoS you will be taken to a window in which the following options will be available:

Start search	The scan will start and devices / sensors will be located
Main window	You will go directly to the main FluMoS window without a scan.

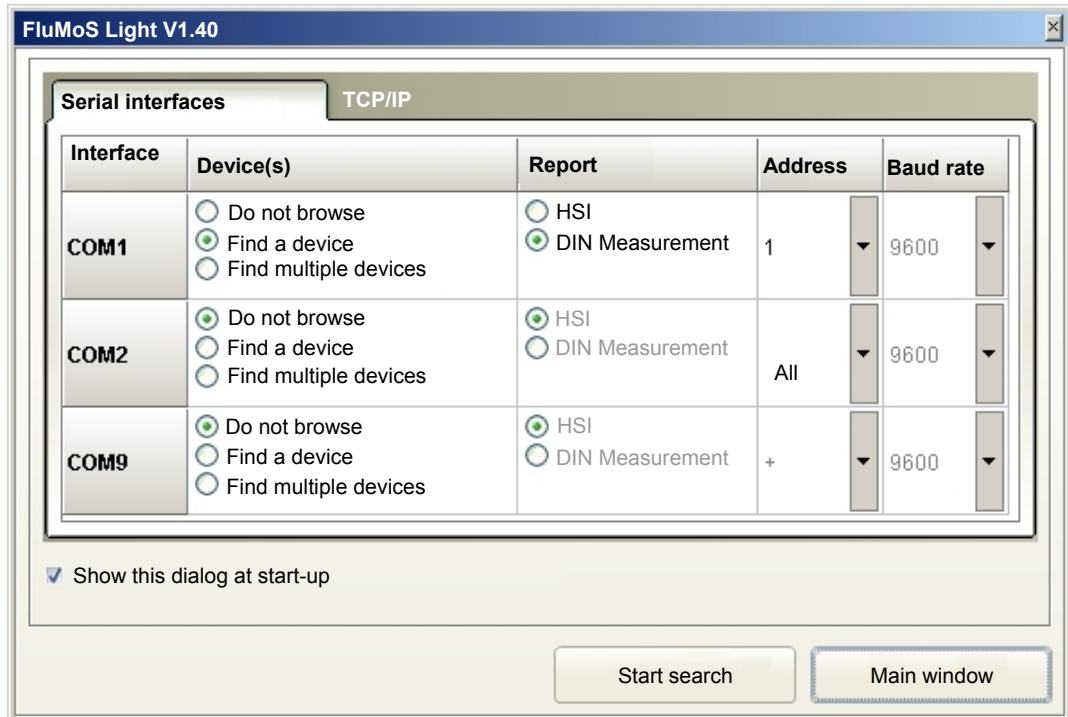
For devices / sensors to communicate with the PC you must define certain search criteria.

Serial interfaces

For a serial interface, you can choose between the following parameters for the search mode:

- Do not browse
- Find a device
- Find multiple devices

See the operating instructions for the device / sensor concerned for the requisite communications protocols, bus addresses and Baud rate.



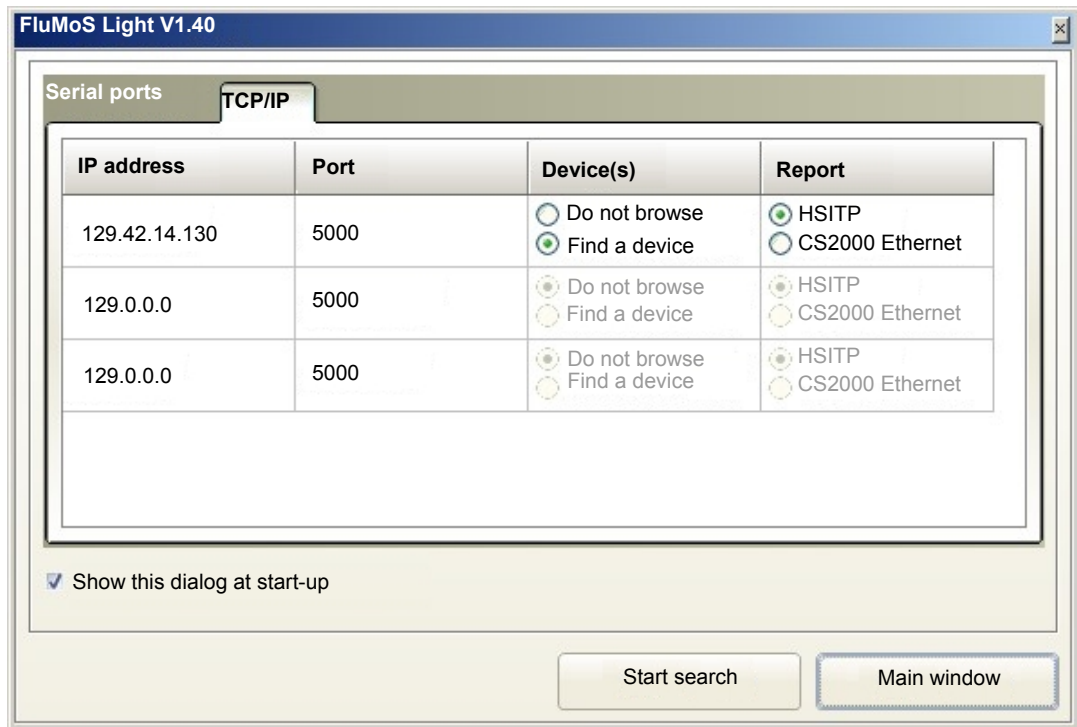
If you selected "All" as the bus address, FluMoS will check all of the possible bus addresses for the protocol concerned. This can be a very time-consuming process so we do recommend that you configure a particular bus address.

TCP / IP

On the "TCP / IP" tab you can configure the search criteria for the Ethernet units.

First enter the IP address and the port for the device / sensor. Then define the protocol.

Once you made made all of the necessary settings, the scan can begin.



Note that is only possible to start a scan when both of the table columns headed "Device(s)" at least one "Scan for device" is selected.

If the scan has already been done once, then the search criteria (COM ports, IP addresses etc.) will have been saved.

The scan can be interrupted at any time with the "Cancel" button. The search criteria will still be retained.



Connect all of the required devices / sensors to the PC before starting FluMoS on the PC.



Note that FluMoS Light can only read a maximum of 3 devices / sensors, and FluMoS Professional a maximum of 16 devices / sensors.

If too many devices / sensors are found, the following selection window will appear:

	SensorID	Serial number	Port	Address
<input checked="" type="checkbox"/>	CS2230 V5.00	123A123456	COM1	1
<input checked="" type="checkbox"/>	CS1220 V02.41	4711	COM9	+
<input checked="" type="checkbox"/>	CMU1000 V00.21	831B207	5000	129.42.14.130
<input type="checkbox"/>	CS2230 V5.00	124A124457	49322	129.42.14.110

Select the maximum permissible number of devices / sensors and then confirm your selection by clicking the OK button.

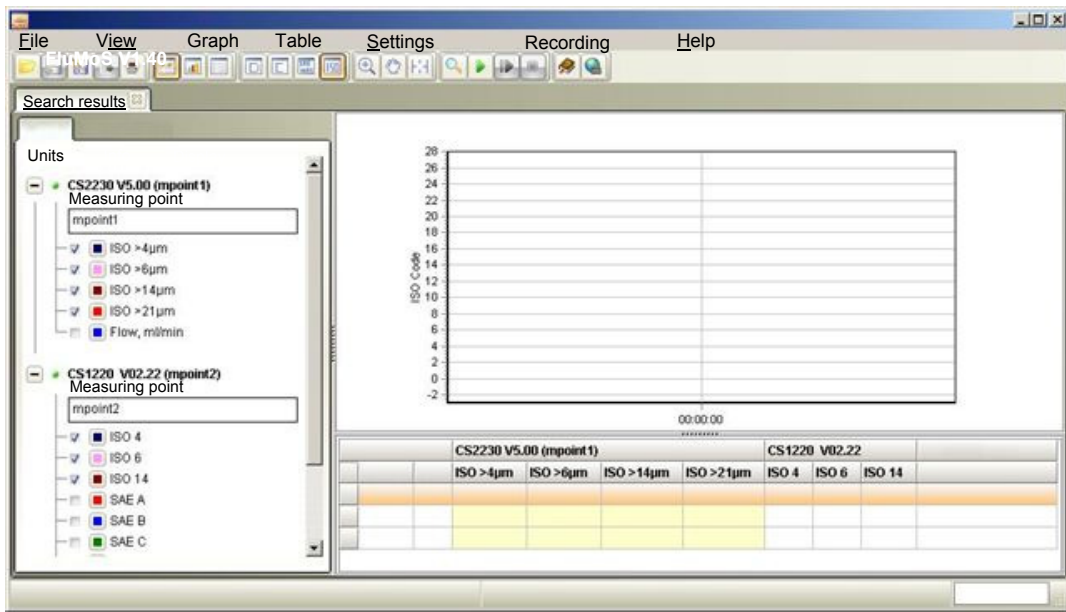
Press the cancel button to abort the scan. There is no device / sensor available.

Main FluMoS window

If a connection can be successfully established to one or more devices / sensors then you will be presented with the main FluMoS window.




The main FluMoS window is divided into three areas: tools, graphs and tables.

If not all devices/sensors could be found, you can repeat the scan using the tool bar button "Find devices" or via the menu "**Recording -> Find devices**".



In the left area you can see a device tree. There you can select the various measurement channels to be displayed. The recording of the measured values is independent of the channels displayed, and contains all devices, including all measurement channels.

The program has 3 views for measurement data:

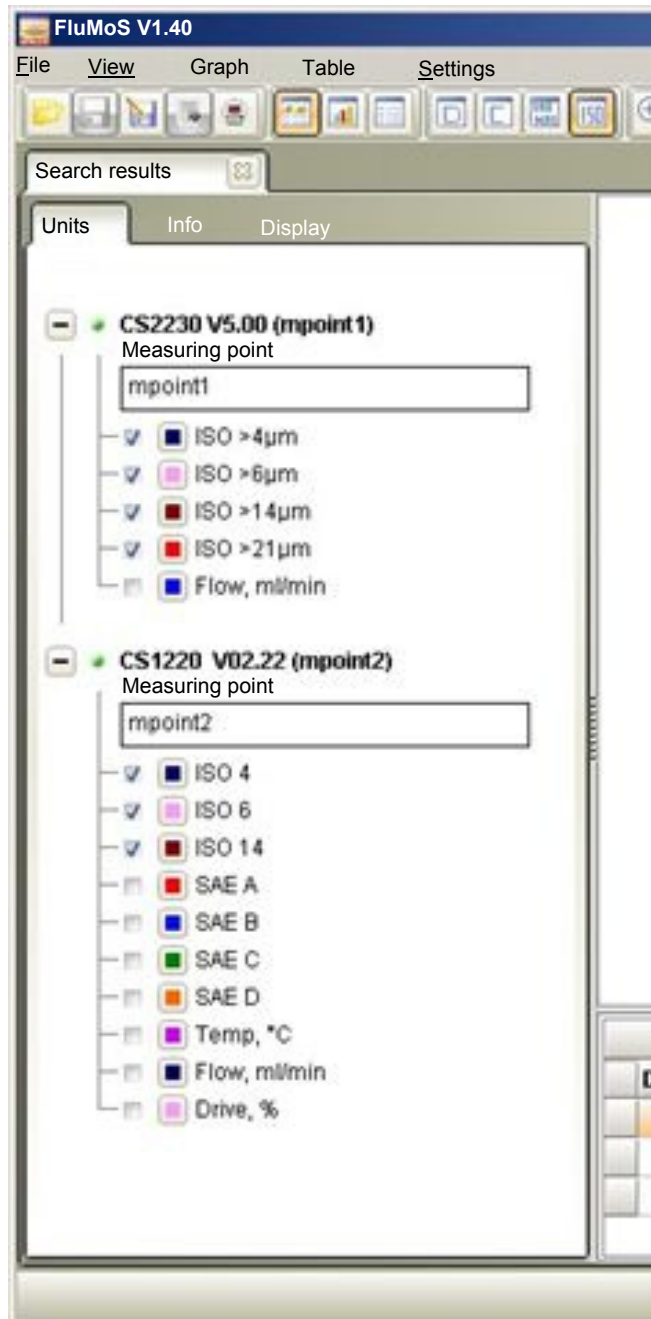
-  tabular and graphical displays
-  graphical display
-  tabular display

The tool area

The left side of the main window contains the tool area. There, you will find the "Devices", "Info" and "Display" tabs.

The "Devices" tab

On the "Devices" tab you will find all of the sensors found so far.



With the "+" button you can see additional details such as all of the channels for a sensor.

The connection status is to the right of this:

- Connection established to the sensor
- ✘ Connection interrupted

The SensorID appears next to the connection status. The SensorID consists of the sensor name and the version of the firmware.

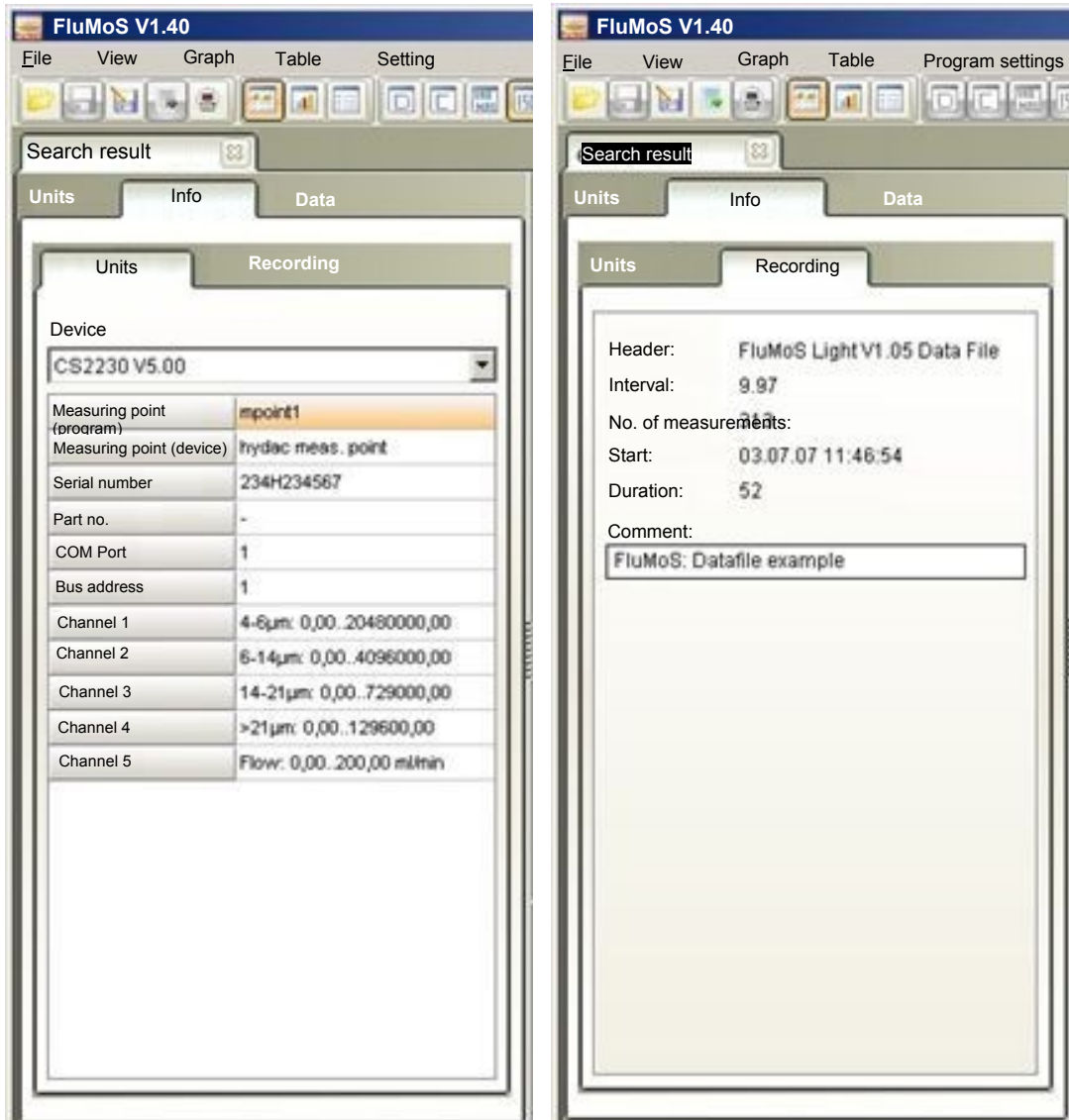
This is then followed by the name of the measurement location. This name helps to differentiate between two devices of the same type (for instance).

The name of the measurement location covers all of the sensor's channels. With the help of the check boxes you can hide or show the individual channels in the diagram or the table.

Displaying or hiding individual channels only refers to the display. All of the channels continue to be recorded. You can change the colors used to display the measurements here.

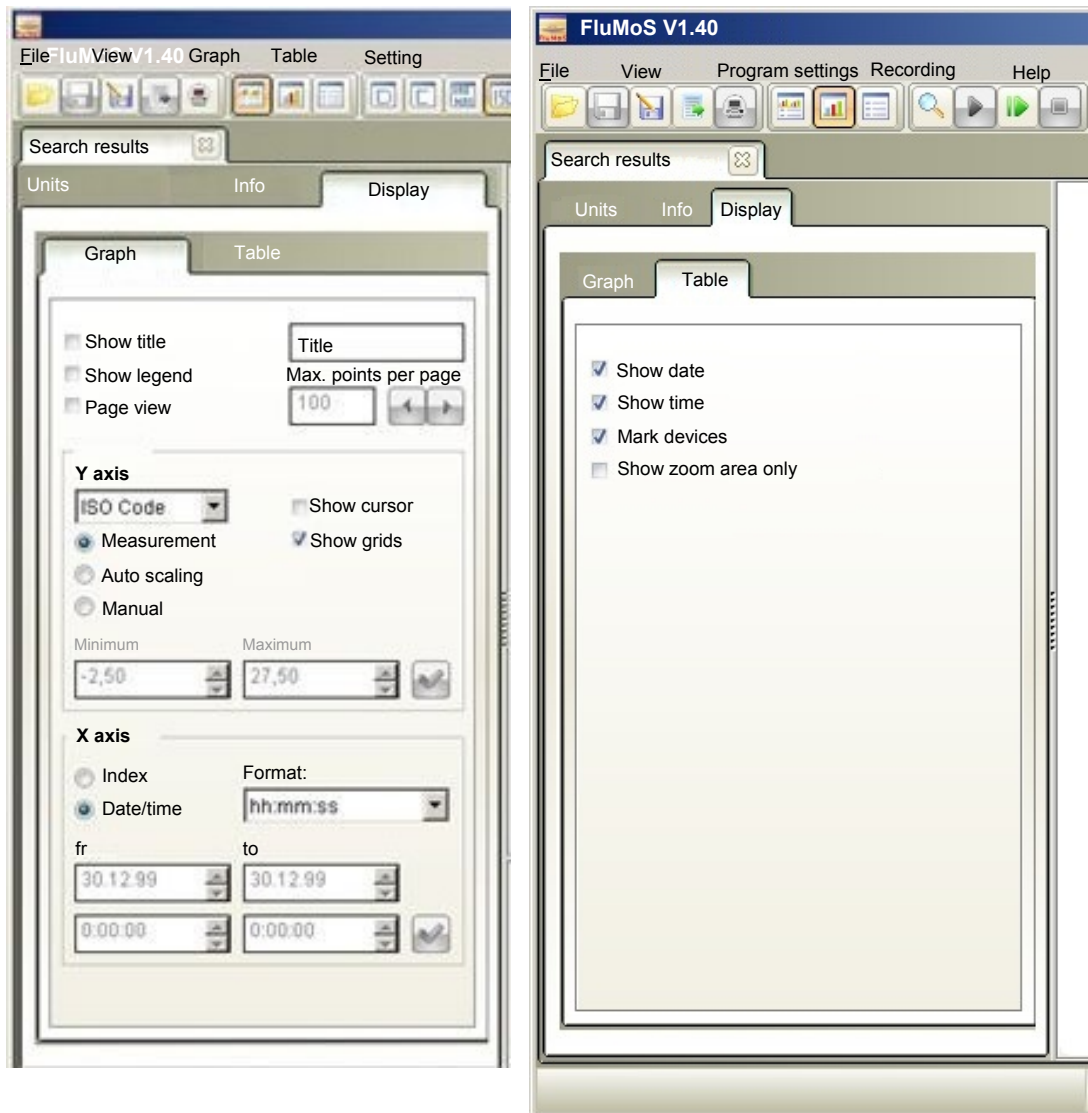
The "Info" tab

The "Info" tab shows detailed information about the individual devices / sensors and the values currently measured as well as the recording.



The "Display" tab

On the "Display" tab you can edit both the graphical and the tabular view.



The "Graph" tab

Via the parts of the "Graph" tab you can alter the graphical view.

Show title

Via "Show title" you can insert a title into the diagram. To do this, use the adjacent text field.

Show legend

If the check box is active then the device and channel names will be displayed for each curve. You can change the names of the devices/sensors under the "**Settings** -> **FluMoS**" menu.

To do that, you have the following options:

- Display SensorID
- Display SensorID with serial number
- Display SensorID with measurement point (FluMoS)
- Display SensorID with measurement point (from the device)

This setting affects both the tabular as well as the graphical display. For more information, see chapter FluMoS settings.

Page view

This is where you can divide the diagram over several pages. You specify the maximum number of measurements per graphic page to the right there.

Y axis

This is where you modify the view for a particular axis. If the "Display cursor" check box is active, then a single measurement (the cursor position in the graph) is shown as a comment.

Via the "Show grid" check box you can draw a grid over the entire graph.

In this area you can also define the maximum and minimum values for the Y axes.

When "Auto scaling" is activated, FluMoS displays the measurement value characteristics for the entire duration of the measurements.



All of these settings only apply for the axis selected in the combo box.

X axis

This is where you define the format for the X values and the manual zoom range for the X axis. During a recording you can't define the manual zoom range for the X axis.

Zooming & shifting a graph



Zoom by dragging the mouse while holding down the mouse button in the required area.



Use the mouse button to move the graph within the section.



You can undo the change to the display by pressing this button or double-clicking on the graph area.

The "Table" tab

Via the parts of the "Table" tab you can alter the tabular view.

Display date / time

Here you can have the date / time for every measurement displayed in the table.

Mark devices

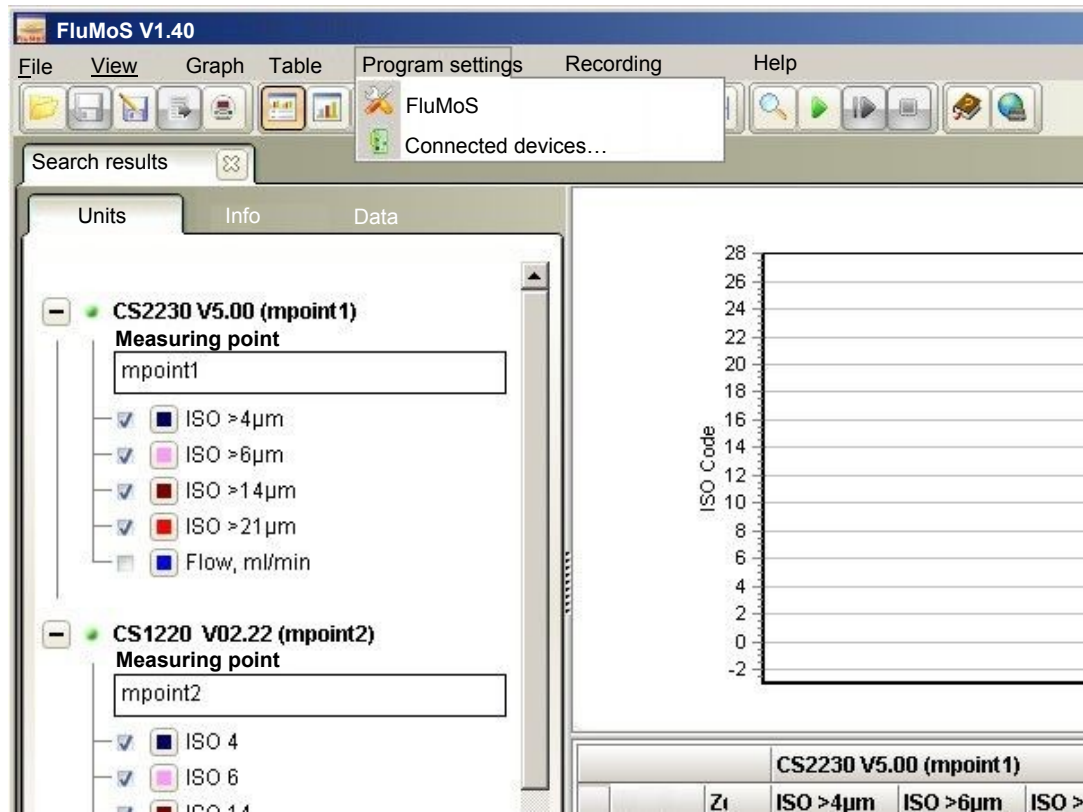
Here you can add a colored highlight to the column in the table which belongs to a device.

Show zoom area only

Here you can have the measurements for the current zoom area of the graph displayed in the table.

This check box cannot be selected during a recording.

FluMoS settings



You can change the following settings in FluMoS:

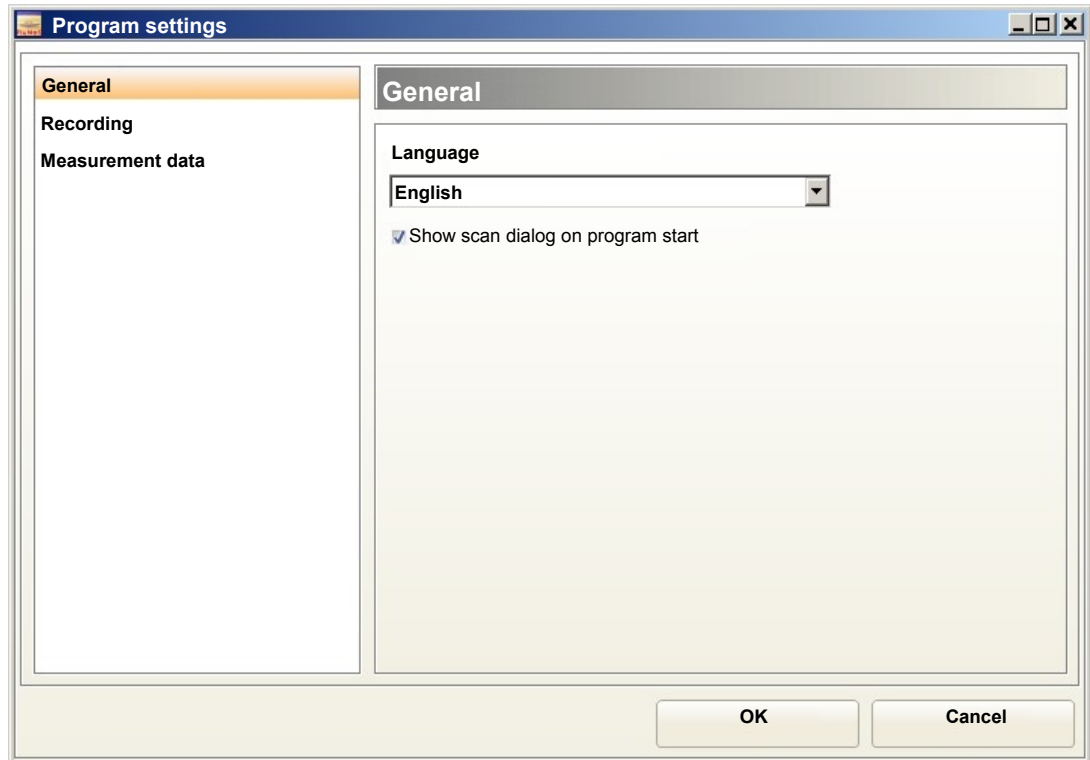
- General
- Recording
- Measurement data

Changes to the settings are only accepted after pressing the "OK" button.

General settings

In the "General" area you can set the language to be used in FluMoS.

Via the "Show the scan dialog on program start" check box you can define whether the scan dialog is shown every time that FluMoS is started.



Recording settings

The "Recording" area contains all of the settings relevant to recording.

The **recording duration** is defined as the time between the starting and cancelation of a recording process.



Theoretically, FluMoS can record indefinitely.

Do note however that the capacity of your storage medium (e.g. the disk of your PC) is limited.

A [FluMoS – Protokolldatei](#) can contain a maximum of 65535 records. This quantity is exceeded, the program will automatically create a new file.

Following installation the setting for the recording duration is set to "Cancel by user". You can change this setting here.

The **recording interval** is defined as the time between two consecutive cycles where a measurement is called up and saved. Do not confuse this interval with the measurement interval of the sensor / device. The minimum interval is 10 seconds.

If the "Create new file every day" check box is set, then FluMoS will automatically create a new log file at a defined time each day. A log file thus contains the measurements from 24 hours at most.

The **file path** defines the directory where the measurement data are saved.

The screenshot shows the 'Settings' dialog box with the 'Recording' tab selected. The 'Recording duration' is set to 'Canceled by user'. The 'Recording interval' is set to 0 hours, 0 minutes, and 10 seconds. The 'Data' section has 'Create new file every day' checked at 00:00, and the file path is 'D:\FluMoS_Light_V1_30_051109\Data'. The 'Autostart recording' section has 'Begin recording when FluMoS starts' checked. 'OK' and 'Cancel' buttons are at the bottom right.

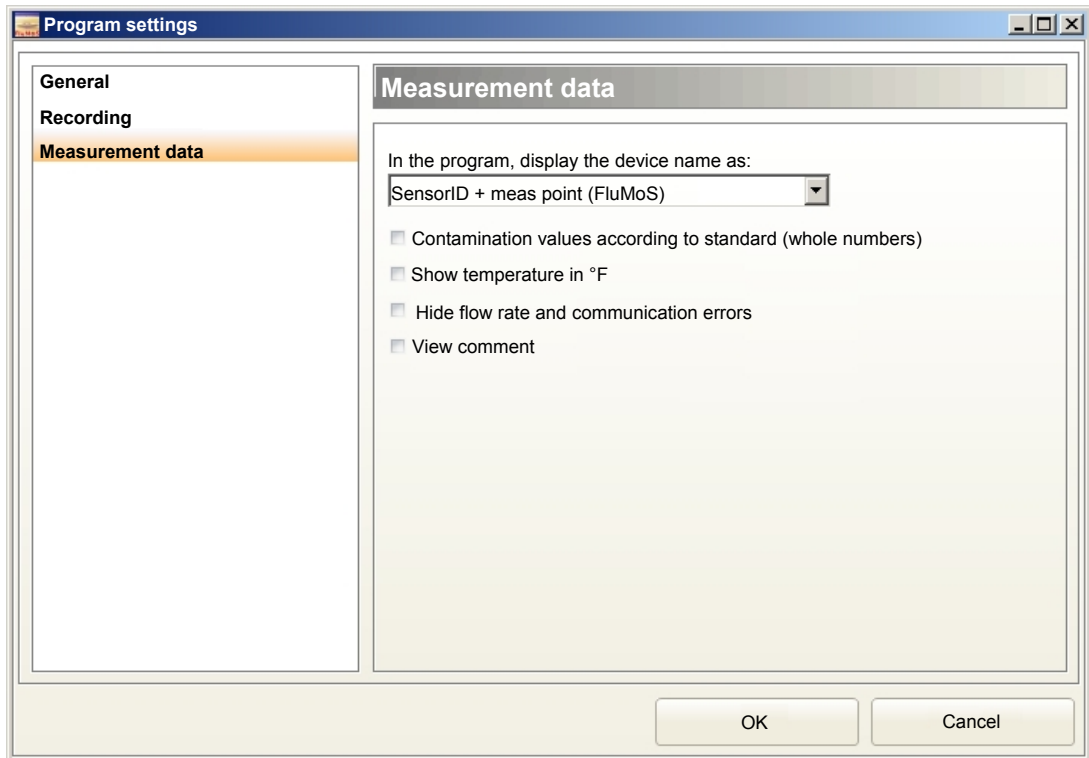
There is also an option to automatically start recording every time that FluMoS is launched. In this case the program will use the last saved search settings to re-establish the connection to the sensors / devices. As soon as at least one device / sensor has been found, recording will start immediately.

Settings for the measurements

You can change the name of the sensor/device in FluMoS in the "Display device names in FluMoS as" field.

You have the following options:

- Display SensorID
- Display SensorID with serial number
- Display SensorID with measurement point (FluMoS)
- Display SensorID with measurement point (from the device)



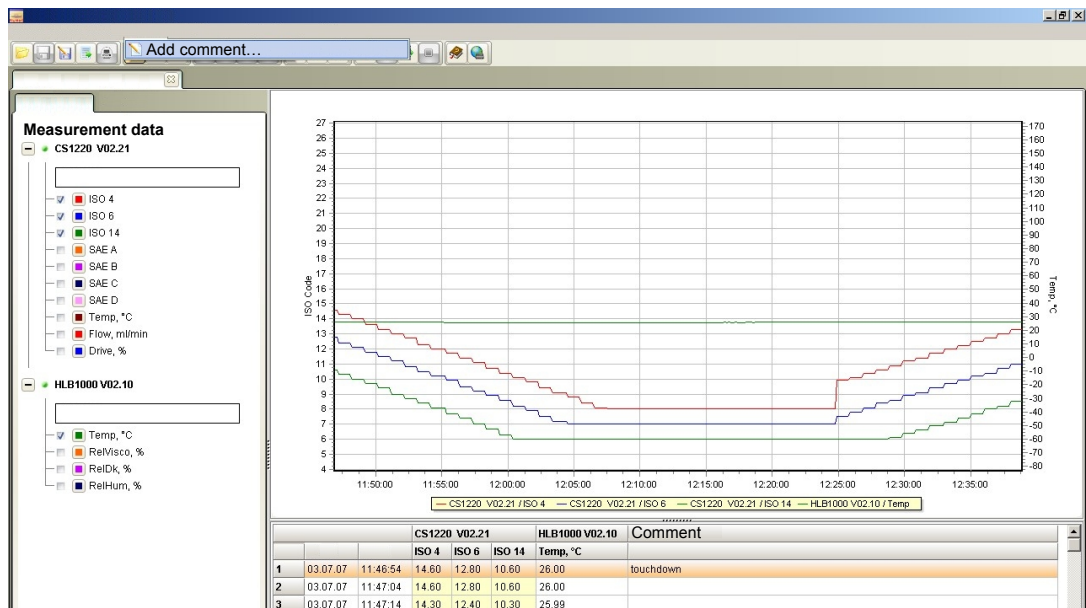
If the "Standardized contamination values" check box is set, then the measurements from the contamination channels will be displayed as whole numbers. The actual measurement values will however still be stored as floating point values.

Activating the "Display temperatures in °F" check box displays all temperature values in Fahrenheit. If the check box is not active, temperatures are displayed in °C.


Checking the "Hide flow rate and communication errors" box hides these kinds of errors from the display. With this setting, FluMoS ignores all measurement records with negative flow values.

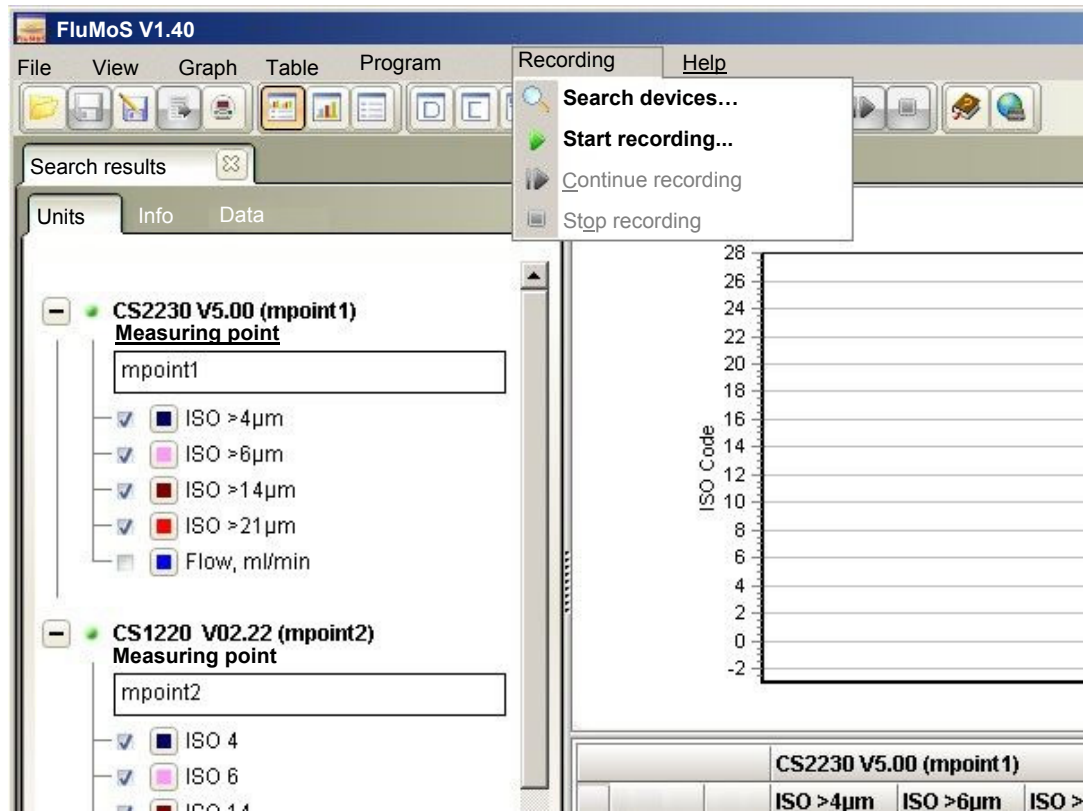
You can comment on any line of measurement data. In order to view the comments, the "Display comments" check box must be active.

To comment on the measurement data, select Table – Add comment from the menu or press the right mouse button inside the menu.



Record measurements

Start the recording of measurements by pressing the  tool bar button or by selecting the menu item "Recording -> Start recording".



The first time that it starts up FluMoS needs the path to store the measurements. This path is then available for all further measurements.




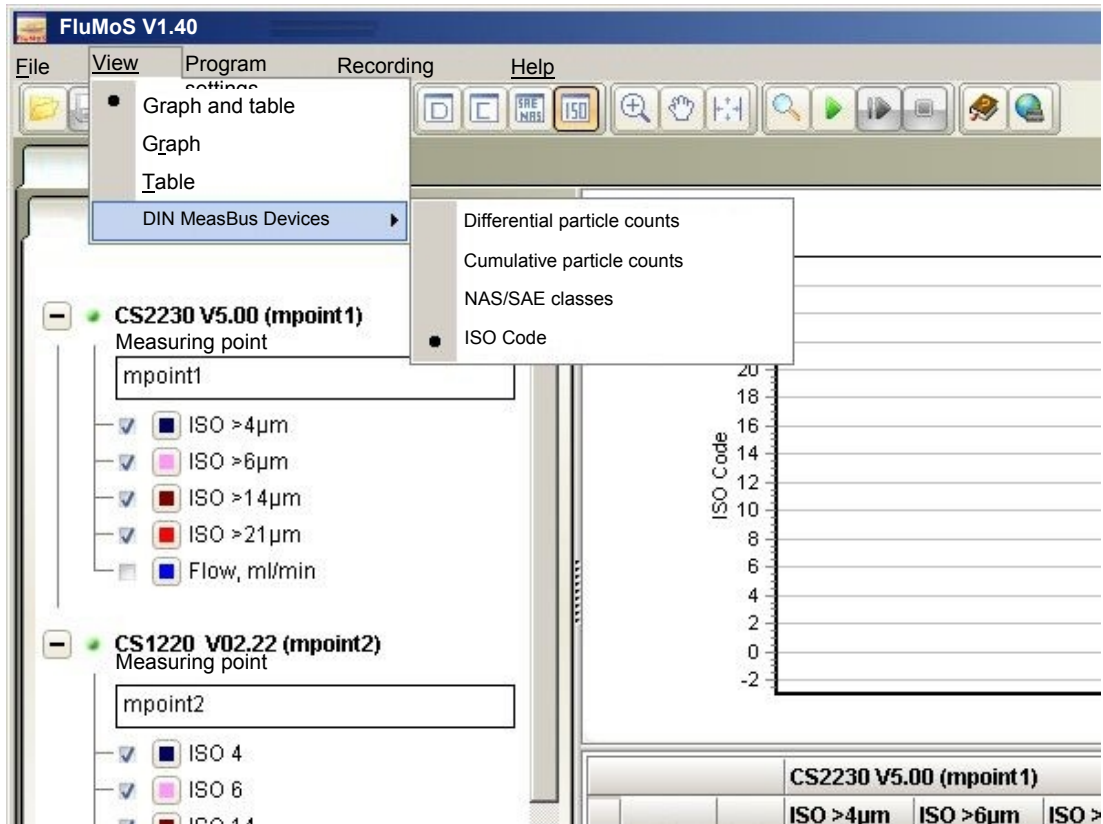
If this path is not within the FluMoS installation directory, then the data will be retained when FluMoS is uninstalled.

You can check or modify this path under the "**Settings -> FluMoS**" menu.

After recording starts, FluMoS will produce a new file with a clear file name and will start to request the data from all of the connected devices and save it in this file.

During recording, the measurements produced by the sensors are collected and immediately saved. If the PC crashes, the measurements up to that point will have been saved. For the format of the data, see chapter Measurement file format.

You can change the view for the measurements via the **"View"** menu or via the tool bar buttons . The most recent measurements are shown in the first row of the table.







Measurements are either recorded for a certain time or until you manually interrupt. Configure the required recording period before starting to record.

You can use the menu item "DIN measurement bus devices" to change the graph and table view. Changing the view does not affect the measurement data.


The view files can be saved or exported via the "File" menu. This does not interrupt any ongoing recording of measurement data.

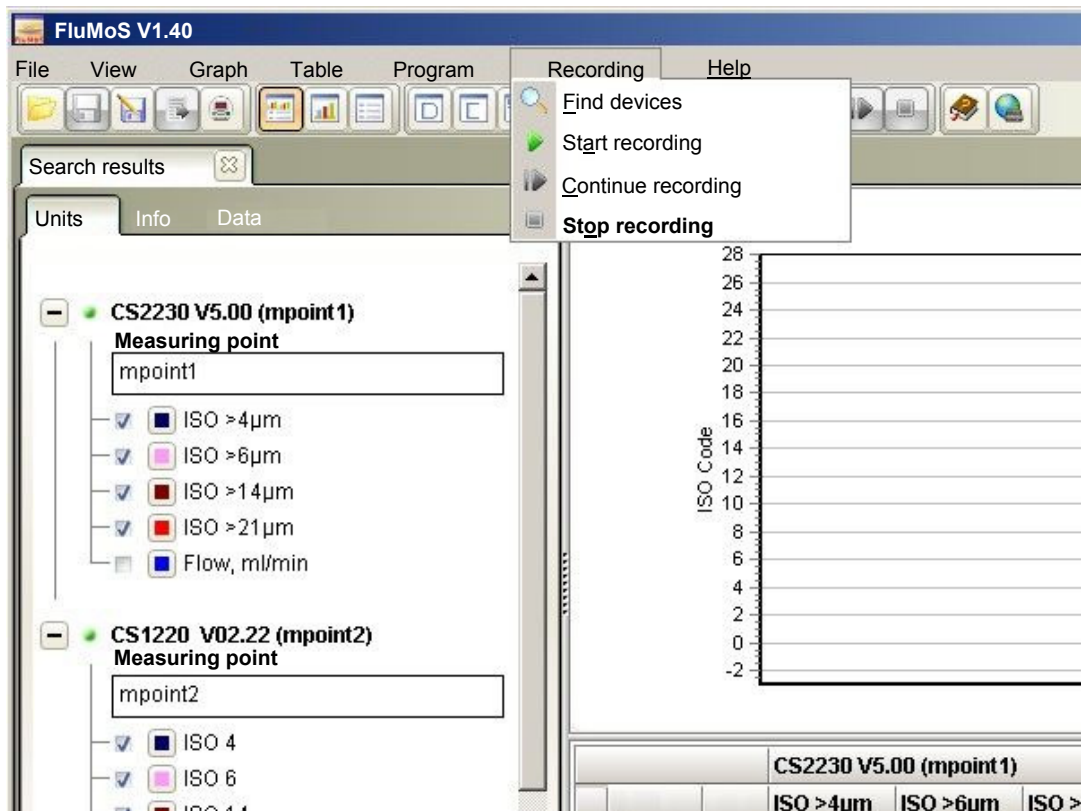
Change DIN measurement bus data to:

-  Differential particle counts
-  Cumulative particle counts
-  SAE/NAS class
-  ISO code

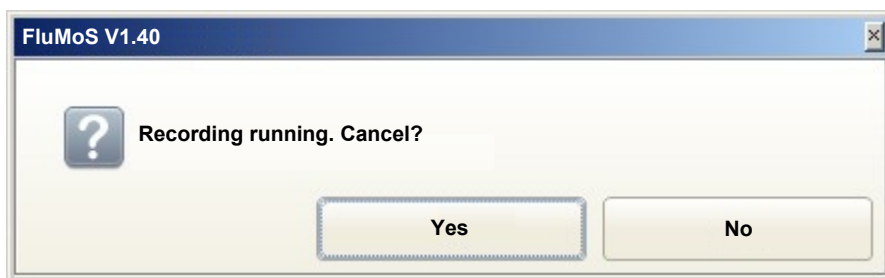
Enter the length of a recording in the "**Settings -> FluMoS**" menu.

The factory setting is "Cancel by user". The measurements will continue to be stored until you stop the recording. You can stop the recording at any time via the menu


item "**Recording -> Stop recording**" or the corresponding toolbar button .



If you try to close FluMoS during a recording, the following prompt will appear:



You can extend a recording which had been previously finished under the "**Recording -> Continue recording**" menu or the corresponding toolbar button

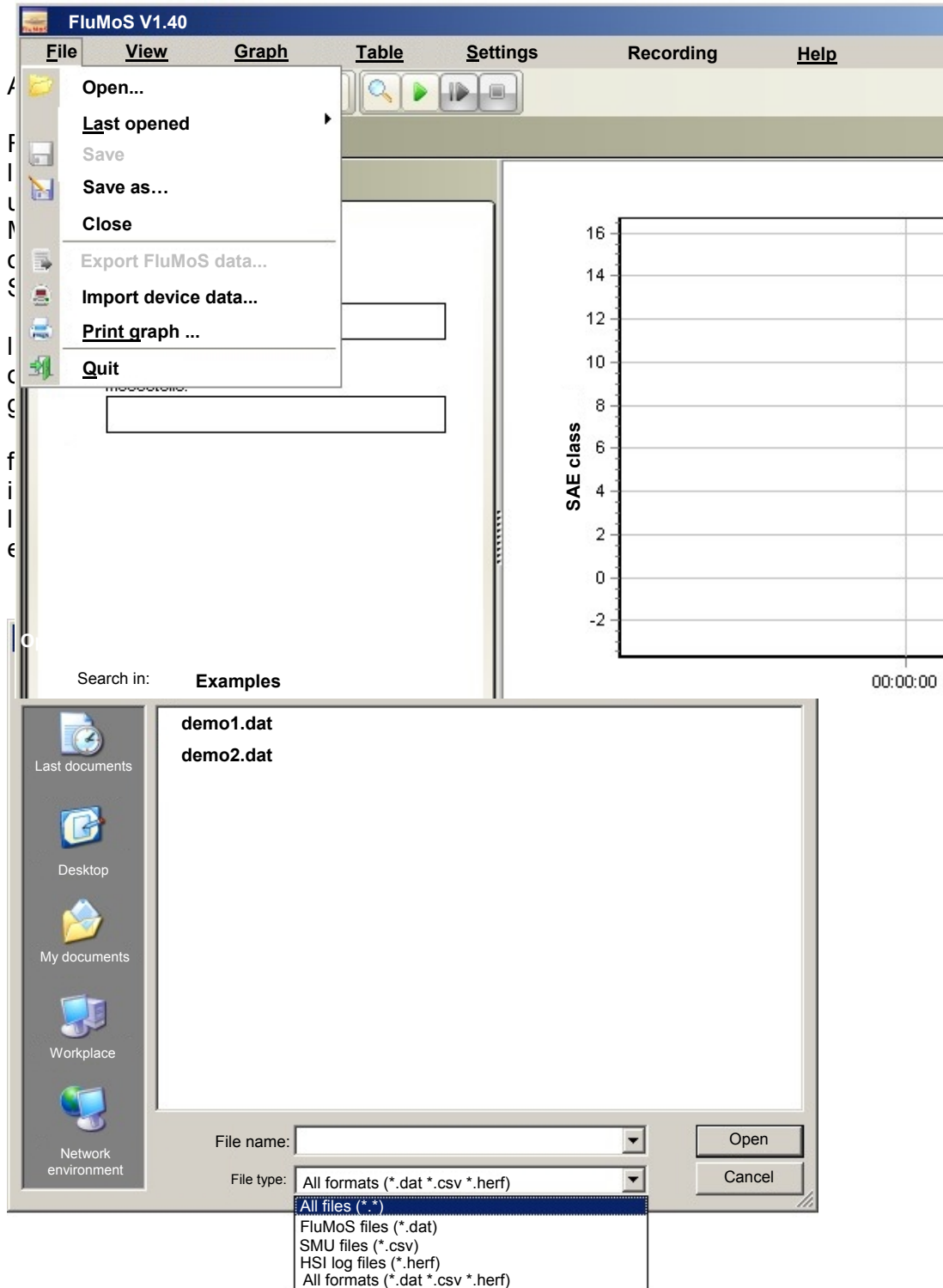
. In this case, FluMoS will first try to find the devices / sensors again. These must be attached to the same interface to the PC as in the file.

Processing measurement data

Open/save measurement data

Saved files can be opened via the "File -> Open log file" menu item or via the tool bar button.

When the file is open, you can see the measurements in the main window.



You can also open this file in MS Excel as a text file. It consists of several columns of data separated by tabs. The format of the file is described in more detail in the Measurement file format chapter.

The following types of file can be opened:

- FluMoS and CoCoS files (*.dat)
- SMU1100 files (*.csv)
- HSI Log files (*.herf, CMU1000, HMG3000 and CMWIN software)

The measurement data is stored as a text file (*.dat). Via the "**File -> Save as ...**" menu item you can create a copy of the measurement file. Note that for security reasons, the old file will not be deleted.

FluMoS supports work with several files in parallel, which means that you can view several files at the same time.

Exporting measurement data

Via the "File -> Export FluMoS data..." menu item, the current file can be exported into a different file format. FluMoS allows data to be exported in the following formats:

MS Excel (*.xls)

Rich Text Format (MS WordPad, MS Word, *.rtf)

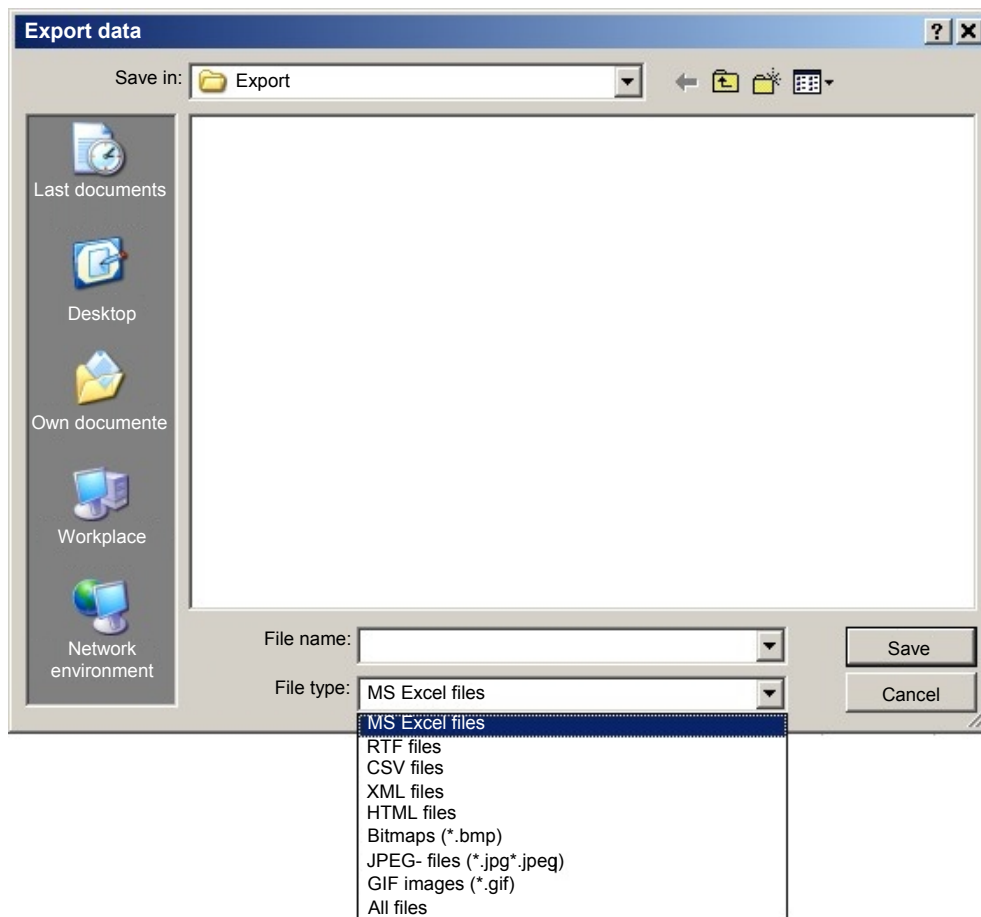
CSV format (*.csv)

XML format (*.xml)

HTML format (*.html)

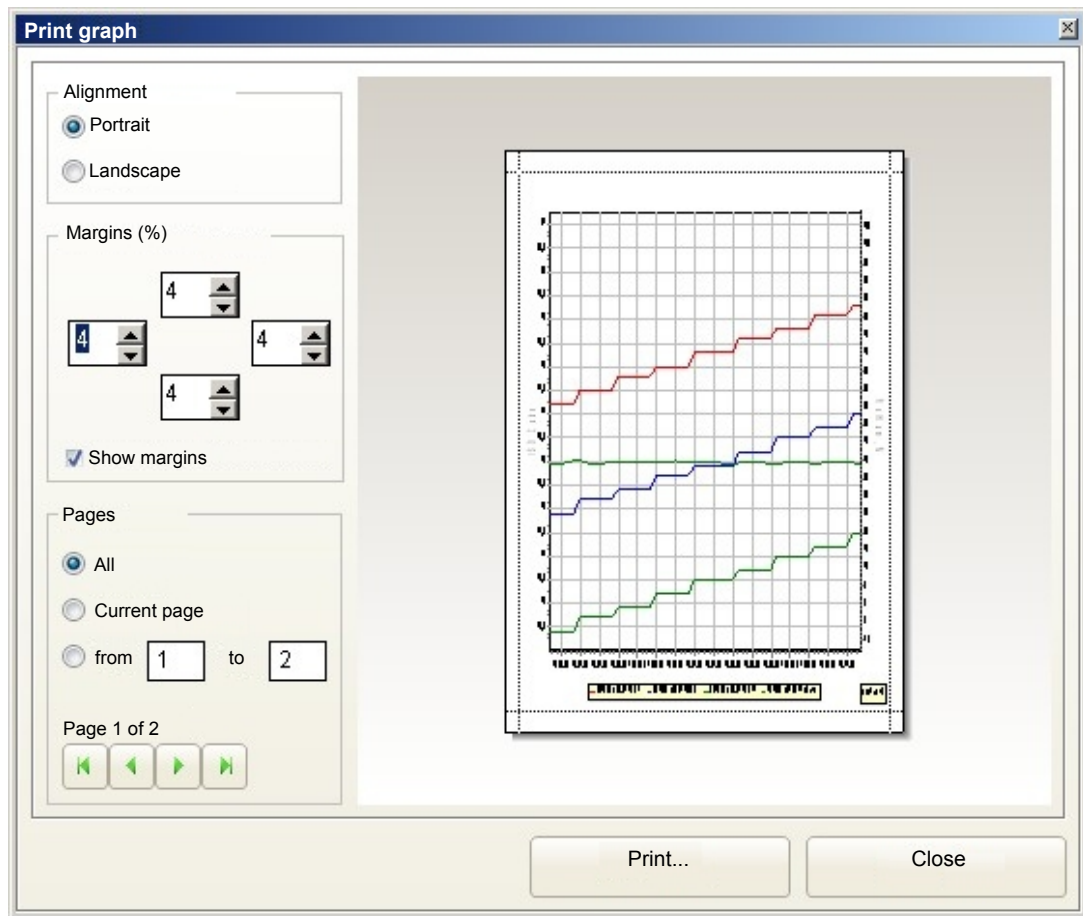
3 graphic formats (*.bmp, *.jpeg, *.gif)

The graphics are always exported in the current graphic view.



Print graph

You can print an image (the current view) directly from FluMoS. Select the "File -> Print image..." menu.



Here you can configure the margins.

The "Pages" field is only displayed if the graph runs over to more than one page.

After pressing the "Print ..." button, the Windows dialog to select the printer and with the printer settings will appear.

Measurement file format

FluMoS automatically generates the file name. It uses the point in time when the recording was started.

For example, the file name „070629_1753.dat“ means that the recording was started on 29.06.2007 at 17:53.

```

FluMoS Light V1.05 Data File
Start 29.06.2007 17:53:26
RecordCount 22324
Interval 10
DeviceCount 2

Device 0 1
Name CS1220 V02.21 HLB1000 V02.10
SerNumber 6789 4711
MeasPoint
Port 1 1
Address c d
Protocol 0 0
ChannelCount 10 4

Channel 0 1 2 3 4 5 6 7 8 9 0 1 2
LowerRange 8.00 7.00 6.00 0.00 0.00 0.00 0.00 0.00 -60.00 30.00 0.00 -25.00 -3
UpperRange 25.00 24.00 23.00 14.00 14.00 14.00 14.00 14.00 150.00 300.00 100.00 100.00 30
Unit °C ml/min % °C % °C %
Comment

*Data*
Date Time ISO 4 ISO 6 ISO 14 SAE A SAE B SAE C SAE D Temp Flow Drive Temp Re
29.06.2007 17:53:37 19.30 17.00 14.50 9.60 8.70 8.70 8.20 28.80 100.00 0.
29.06.2007 17:53:47 19.30 17.00 14.50 9.60 8.70 8.70 8.20 28.80 100.00 0.
29.06.2007 17:53:57 19.30 17.00 14.50 9.60 8.70 8.70 8.20 28.80 100.00 0.
29.06.2007 17:54:07 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:54:17 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:54:27 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:54:37 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:54:47 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:54:57 19.60 17.30 14.80 9.90 8.90 8.90 8.50 28.80 100.00 0.
29.06.2007 17:55:07 19.90 17.50 15.00 10.20 9.20 9.20 8.80 28.80 100.00 0.
29.06.2007 17:55:17 19.90 17.50 15.00 10.20 9.20 9.20 8.80 28.80 100.00 0.
29.06.2007 17:55:27 19.90 17.50 15.00 10.20 9.20 9.20 8.80 28.80 100.00 0.
29.06.2007 17:55:37 19.90 17.50 15.00 10.20 9.20 9.20 8.80 28.80 100.00 0.
29.06.2007 17:55:47 19.90 17.50 15.00 10.20 9.20 9.20 8.80 28.80 100.00 0.

```

The LOG file always consists of two parts. In the first part, general information about the recording and units / sensors is saved.

These include:

- **FluMoS** – Version
- Time when the recording was started, number of measurement data entries, recording interval
- Number of devices, SensorID, measuring points
- COM ports (interfaces) of the computer and the bus addresses of the units
- Communications protocol used by the devices (0 -> HSI, 1 -> DIN instrumentation -bus)
- Channel number for each unit
- Upper and lower limit of the measurement category and measurement units
- Comment on the recording

After the word ***Data,*** the actual measurement data is saved. Each measurement value is placed in a column. The channel name is found in the header.

Import measurement data from sensor /device

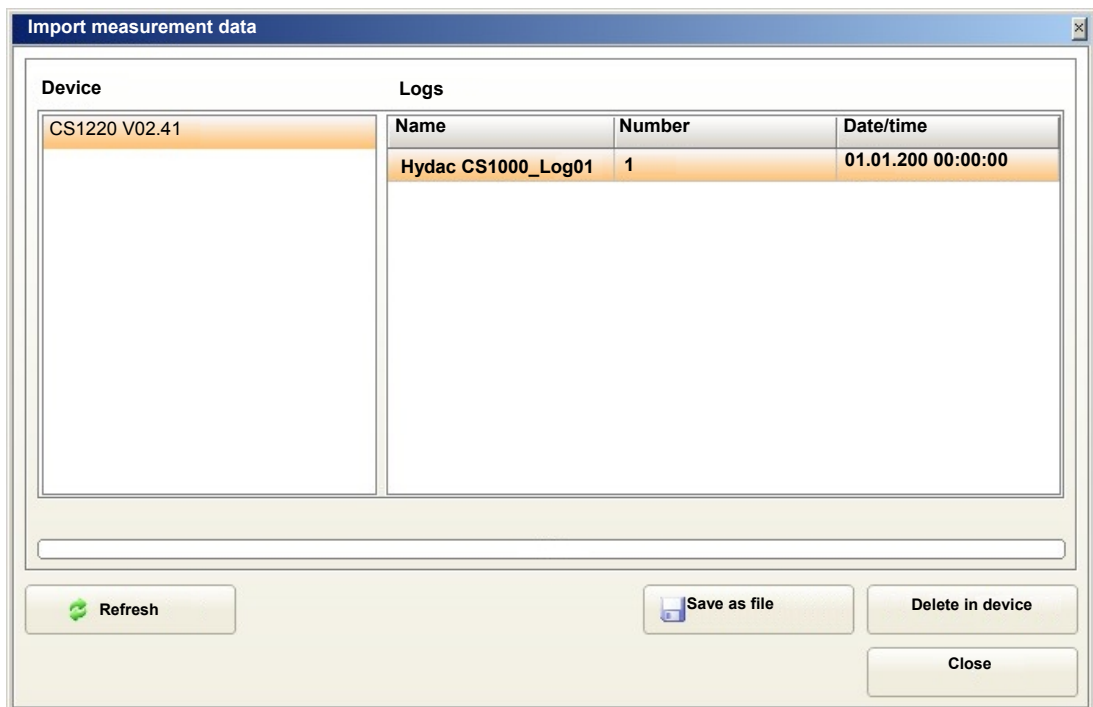
Via the "**File -> Import device data...**" menu, the dialog window will open to import measurement data.

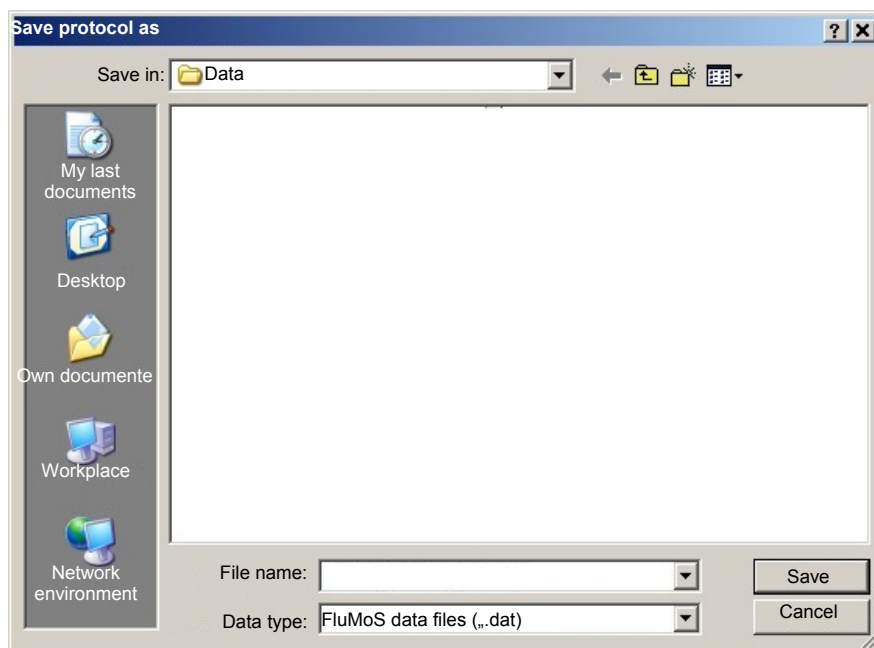
In the left area you can see the sensors/devices connected as a list with the names of the devices. Only sensors/devices which can save logs are shown.



You can alter the structure of device names in the program under the "**Settings -> FluMoS**" menu. For more information, see chapter FluMoS settings.

In the right area you can see the files currently available in the sensor / device. By pressing the "Save as file" button, or by double-clicking on the row in the table, the marked file is read out of the device and is copied to the hard disk. Once the download has been successfully completed FluMoS will open the file.

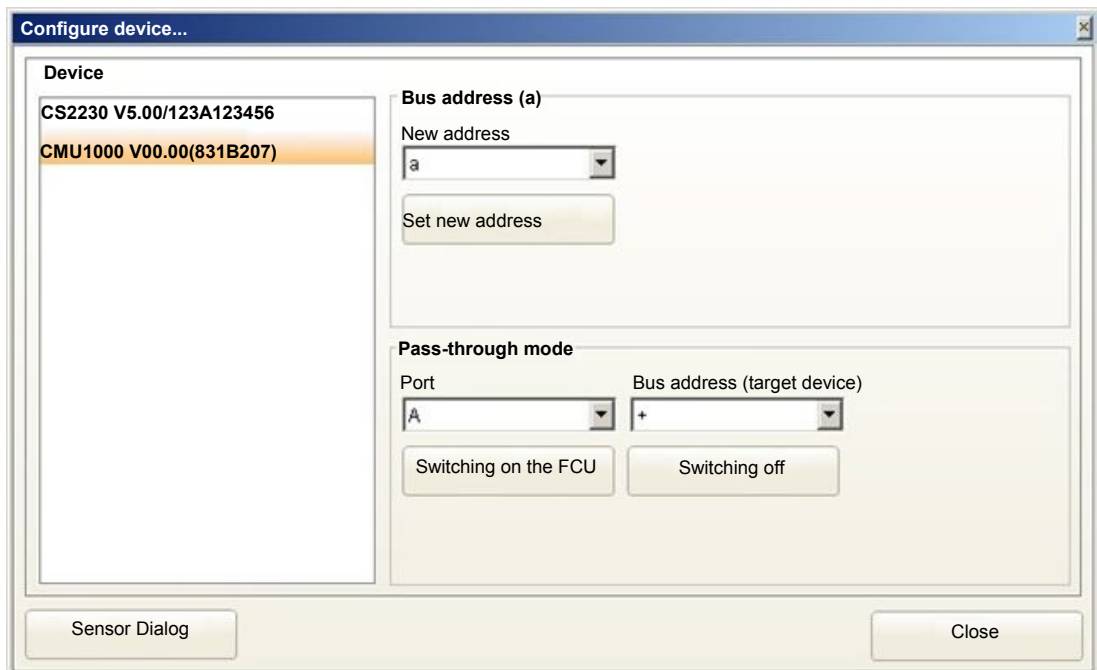
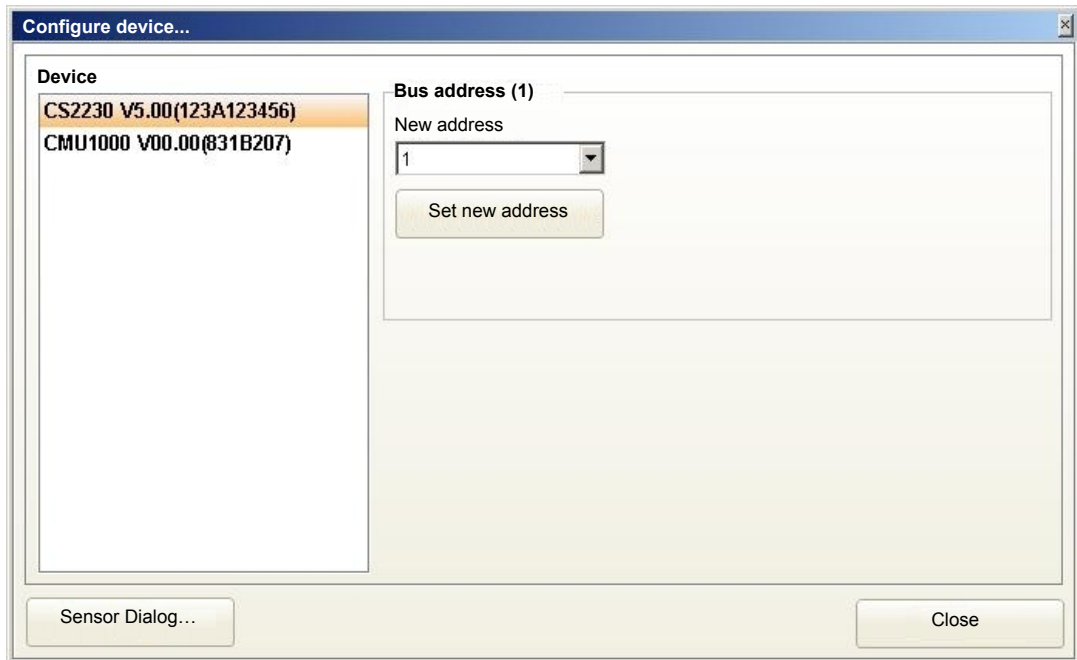




Configure sensors/devices

Some sensors/devices offer the option of configuring the bus address and/or switching the pass-through mode on/off.

The corresponding dialog to configure the sensor / device is accessed via the "**Settings -> Connected devices...**" menu.



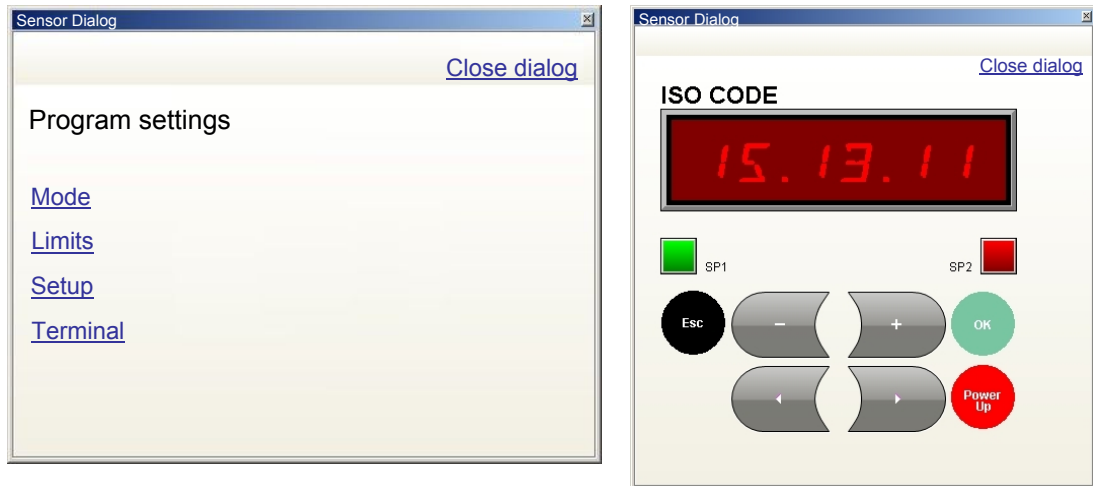
Start Sensor Dialog... (only FluMoS Professional)

Sensor dialog means interactive communication with the device. Settings are displayed which you can change and confirm.

The device checks the settings you made for plausibility or reports an error. Each device has its own dialog structure.



Please note: not every device supports this function.

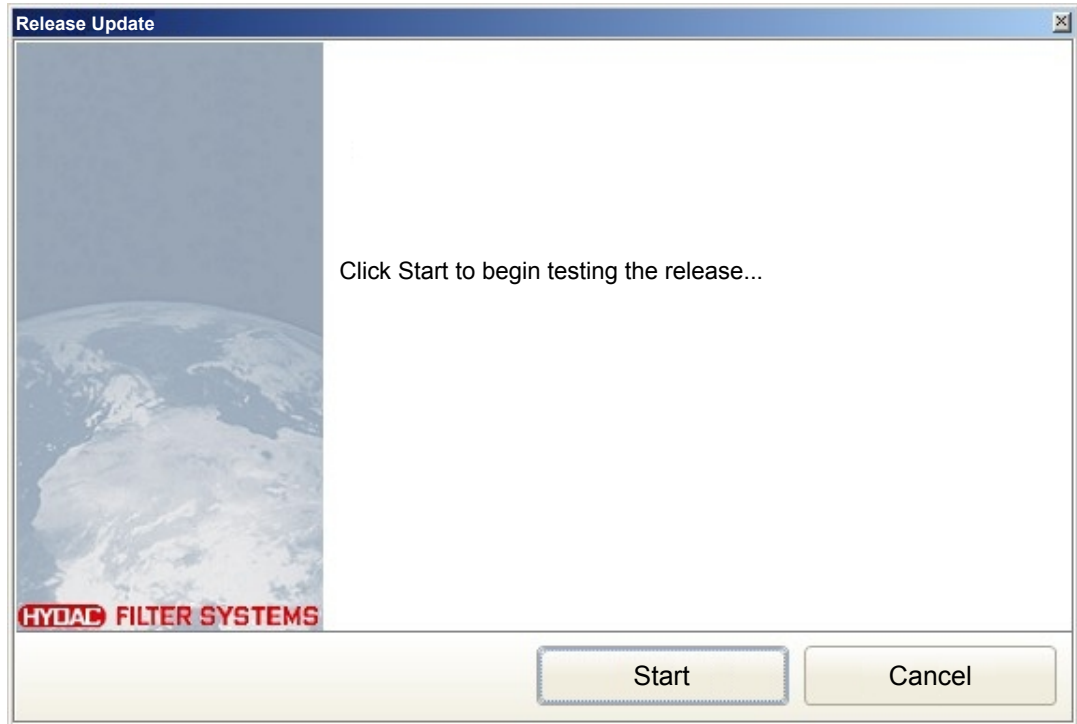


To find out more about the options offered by the sensor dialog, see the operating instructions for the device in question.

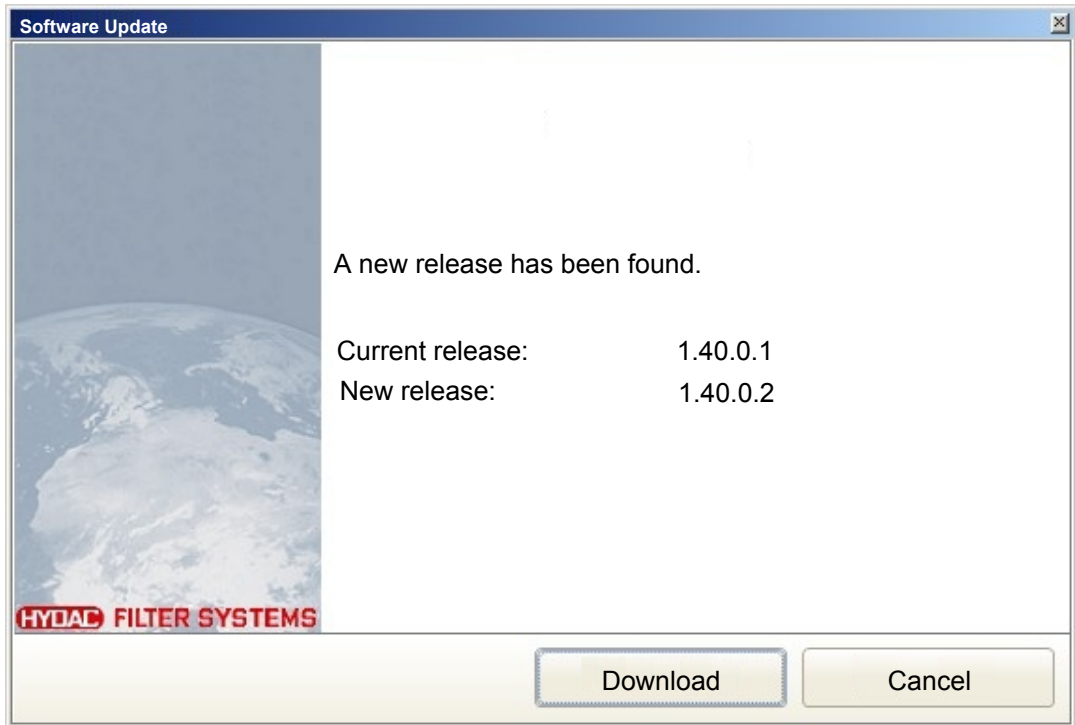
FluMoS Release Update (only FluMoS Professional)

If your PC has Internet access, FluMoS Professional can search for new releases.

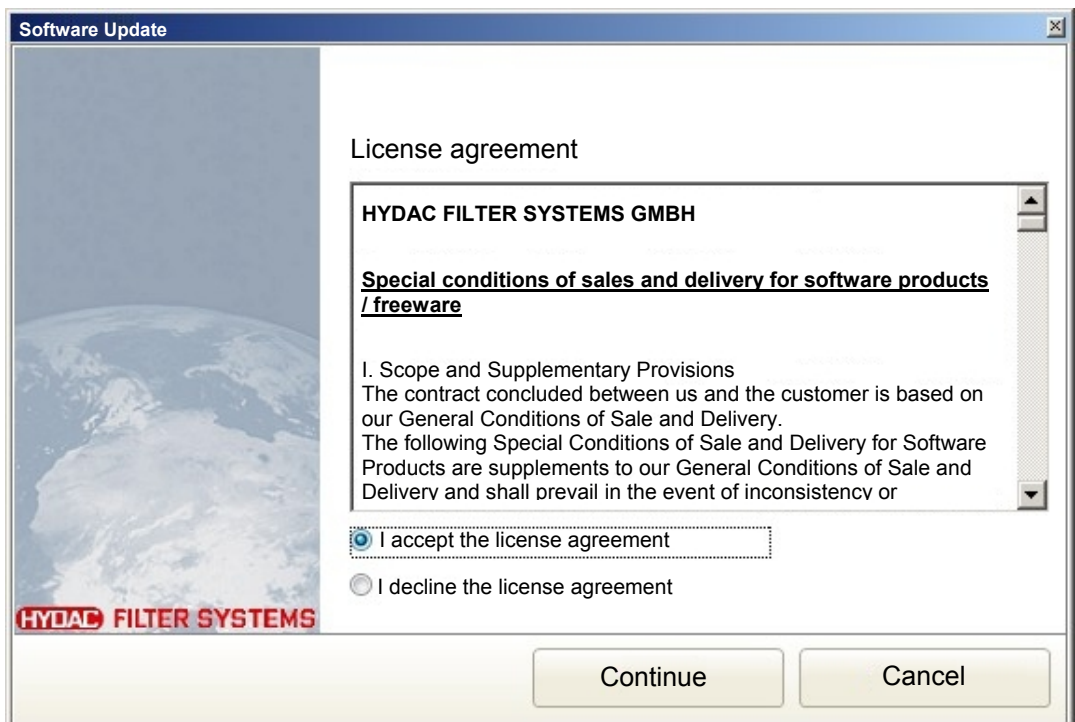
You can use the menu item **Help -> Search for new release...** to start searching for new releases.



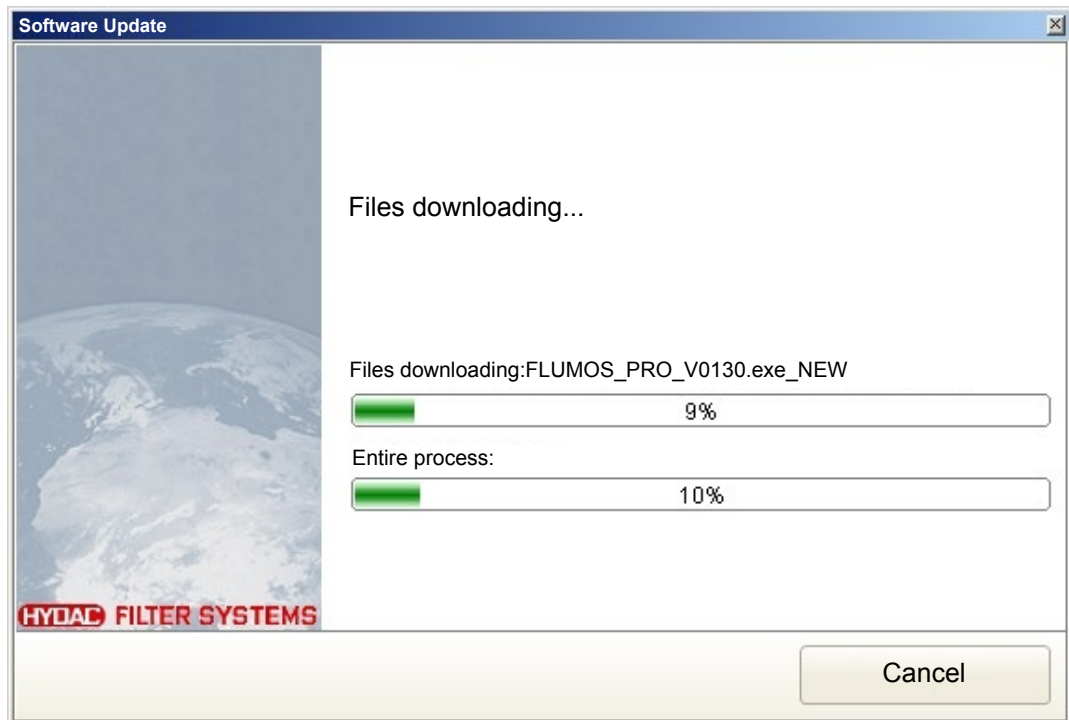
If a new release is available, you can see your current release and the new available release in the next screen:



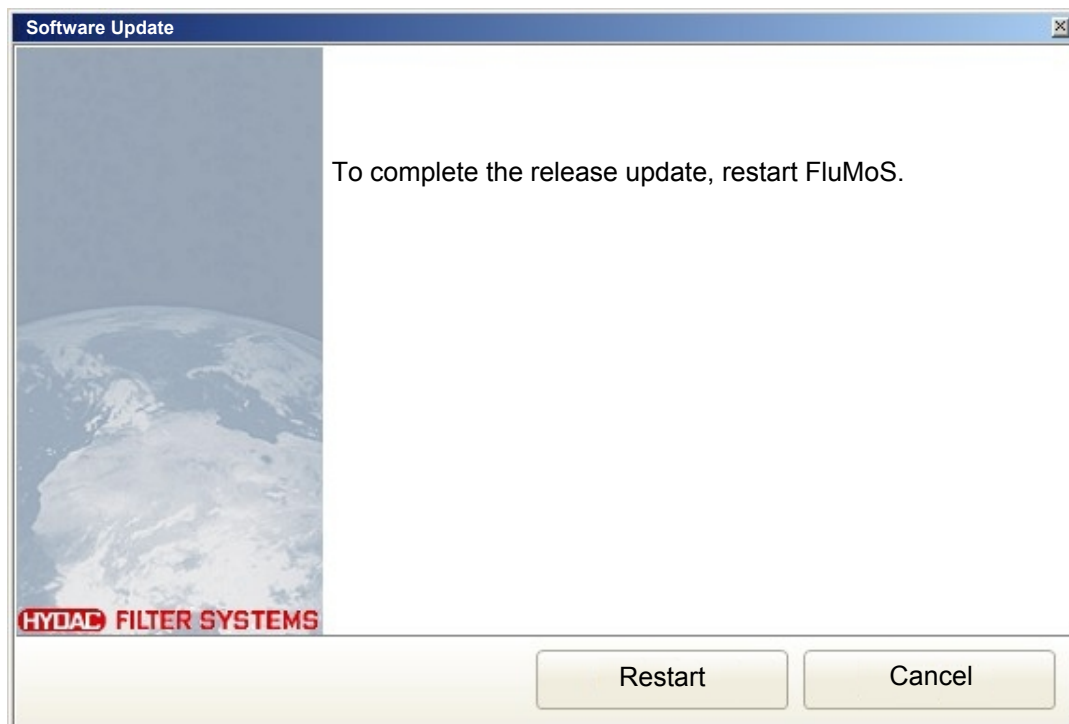
Press the Download button and accept the license agreement to start downloading the release file.



You can stop the procedure at any time by pressing the "Cancel" button.



To complete the release update, restart FluMoS.



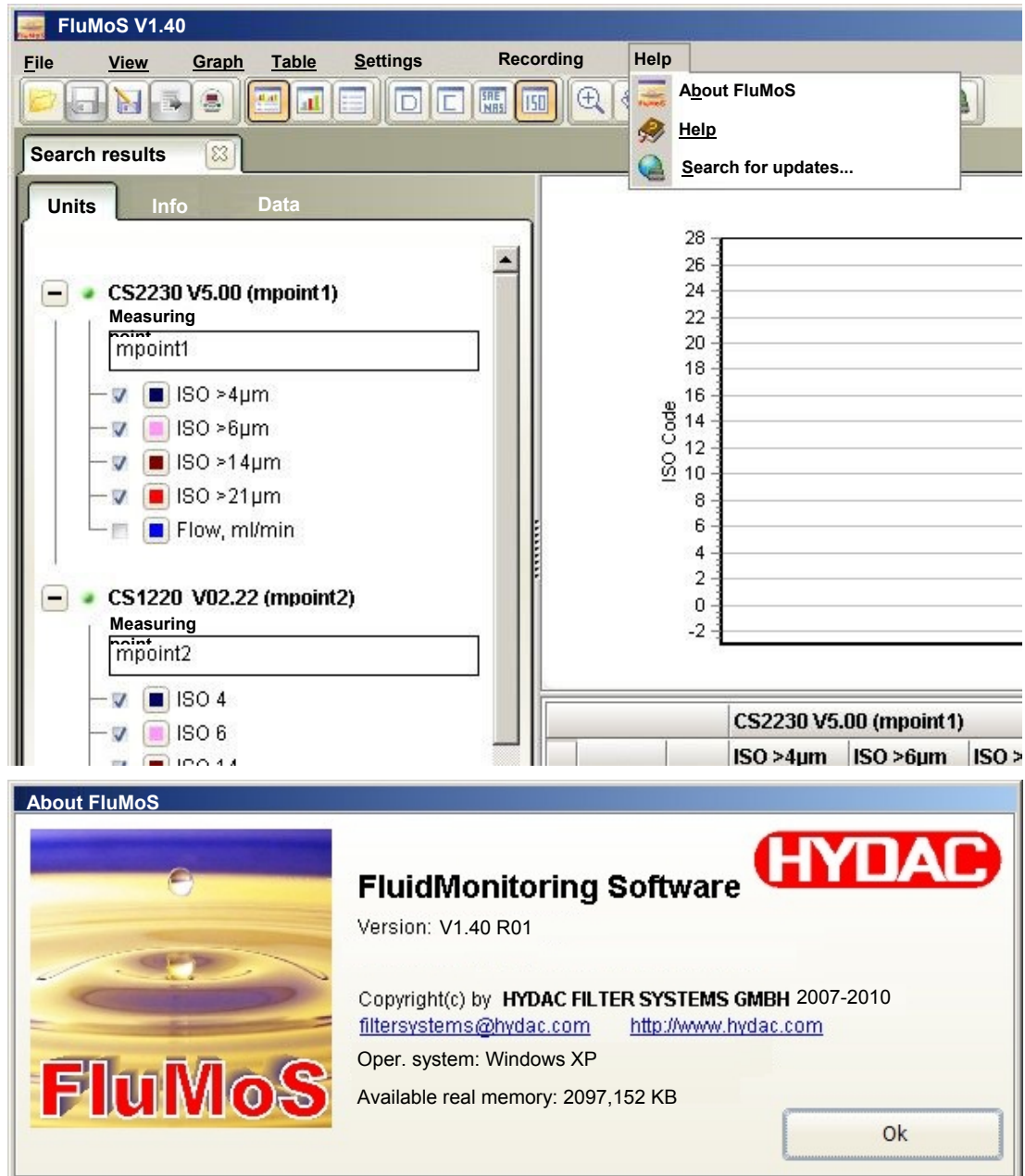
We recommend always keeping the software at the most up-to-date release. The release update is possible only for a software version.

You can only update the software version by acquiring a new license.

Help

Via the menu item "**Help -> About FluMoS...**", a window is displayed with a link to the HYDAC home page and details of the software version are displayed.

Help for the program is opened via "**Help -> Help**". When in program windows, help can be called up by pushing F1.



Attachment

Communication logs/interfaces

HSI (Hydac Sensor Interface)

HSI is a digital interface and a log which enables sensors, measurement devices and PCs to be networked. HSI specifies the electrical connection and the type and manner of data transfer.

HSITP (HSI Text Protocol)

The HSITP log (text protocol) uses the Ethernet interface (RJ45) to transfer the HSI log (SensorID, sensor values, sensor info...).

HSITP is used for modem connections and TCP/IP connections. The log is only available as a peer-to-peer variant. This means that there are no bus addresses, and that the port number is always 5000 and cannot be changed.

DIN Measurement Bus

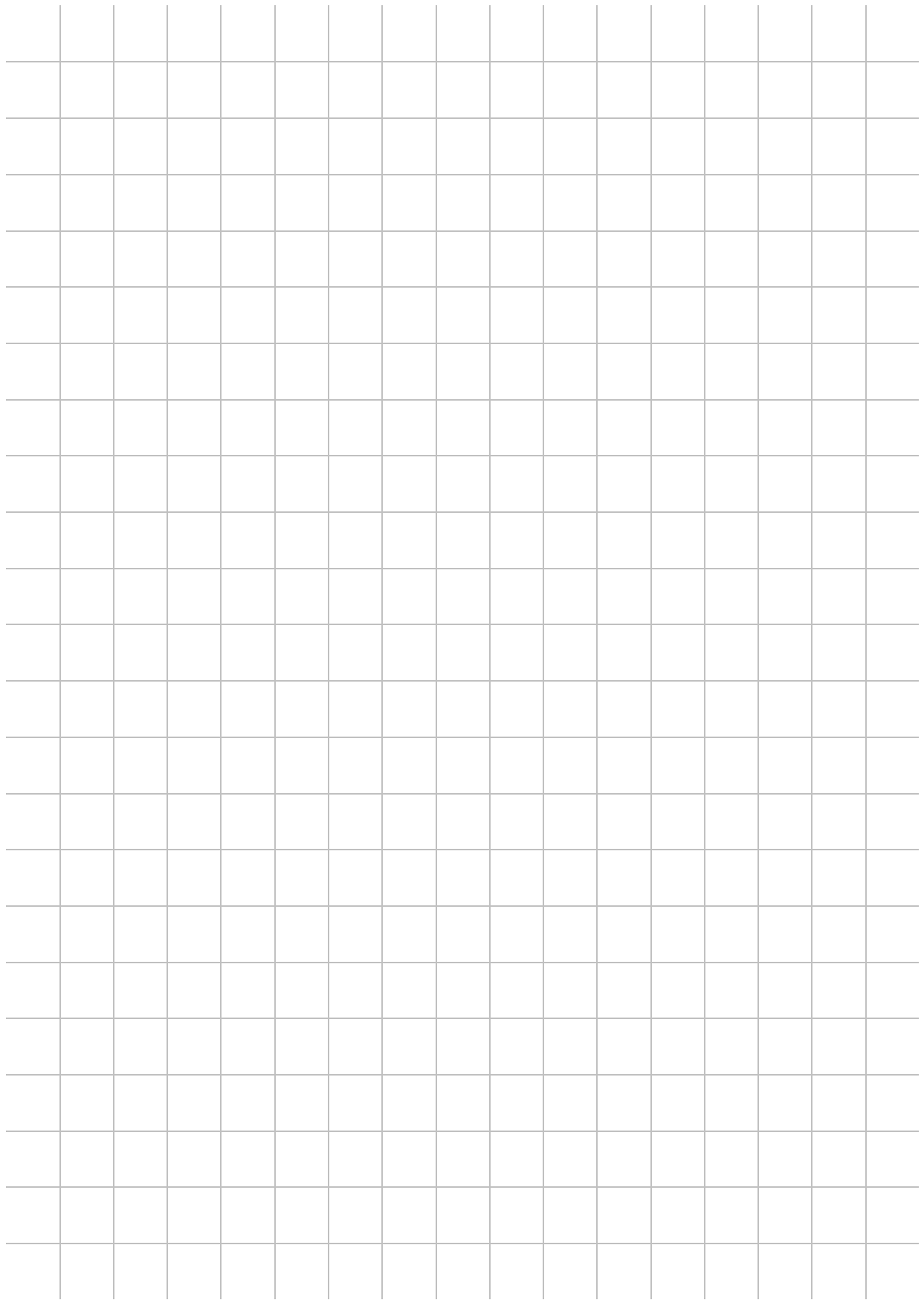
DIN Measurement Bus is a standard used in data transfer for start/stop transmission, particularly in instrumentation and measurement applications and associated information processing.

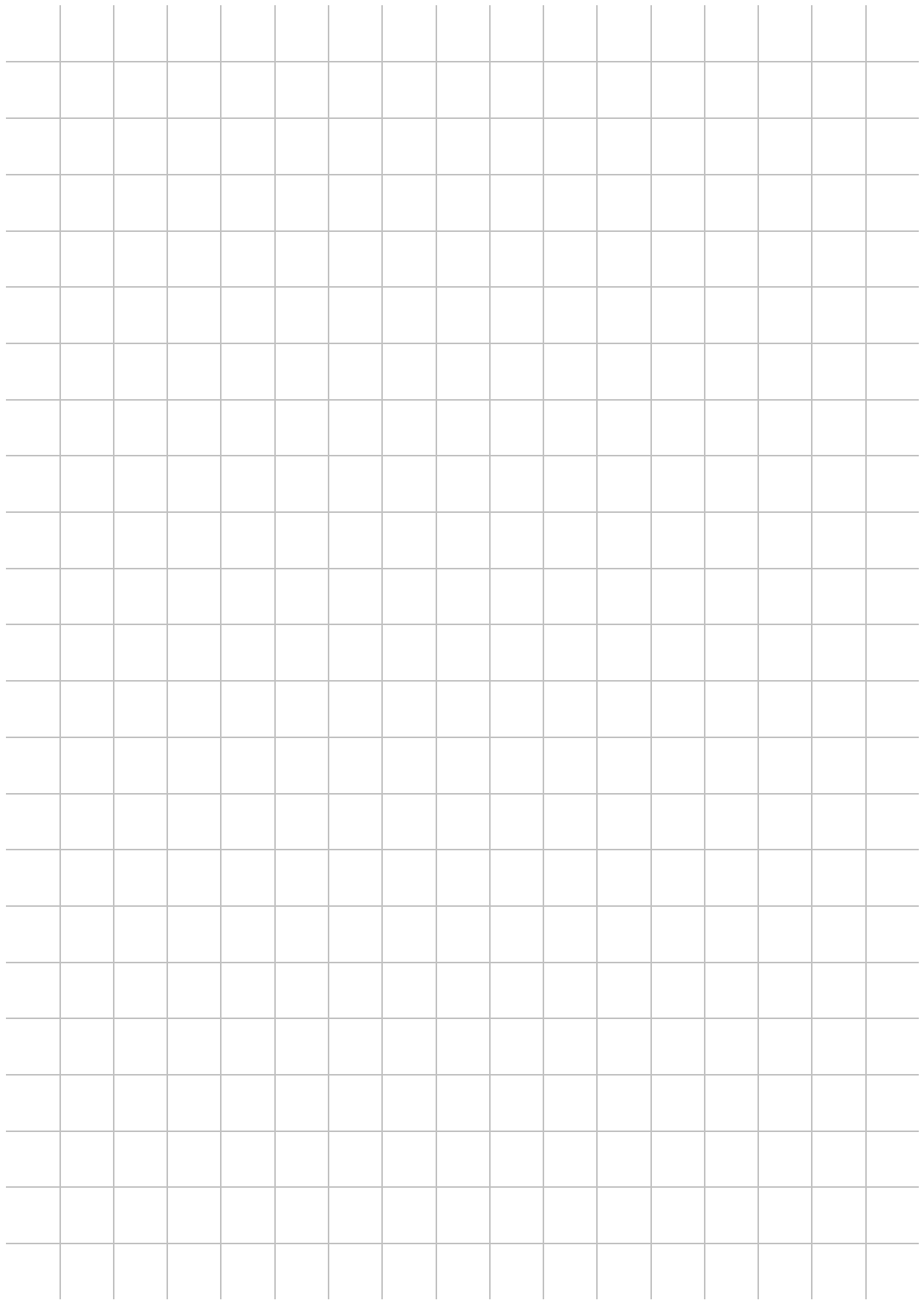
Overview of device/sensor <-> communication protocol

The device scan is used to define a communication protocol for each interface on the PC. The HYDAC devices/sensors can be accessed with various protocols.

Below is an overview of the sensors/devices and their corresponding communication protocols:

Device/sensor:	-> Report	-> Interface
CS 1000 series	-> HSI	-> - RS 485/HSI
CS 2000 series	-> DIN Measurement Bus	-> Terminal strip
	-> CS2000 Ethernet	-> Ethernet (RJ45)
FCU 1000 Series	-> HSI	-> HSI
FCU 2000 Series	-> DIN Measurement Bus	-> RS232, RS485
FCU 8000 Series	-> DIN Measurement Bus	-> RS232, RS485
MCS 1000 Series	-> HSI	-> - RS 485/HSI
SMU 1200	-> HSI	-> HSI
AS 1000 Series	-> HSI	-> HSI
HydacLab Series	-> HSI	-> HSI
CMU 1000 Series	-> HSI	-> Terminal strip HSI, USB
	-> HSITP	-> Ethernet (RJ45)
HMG 3000 Series	-> HSI	-> USB (A)







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