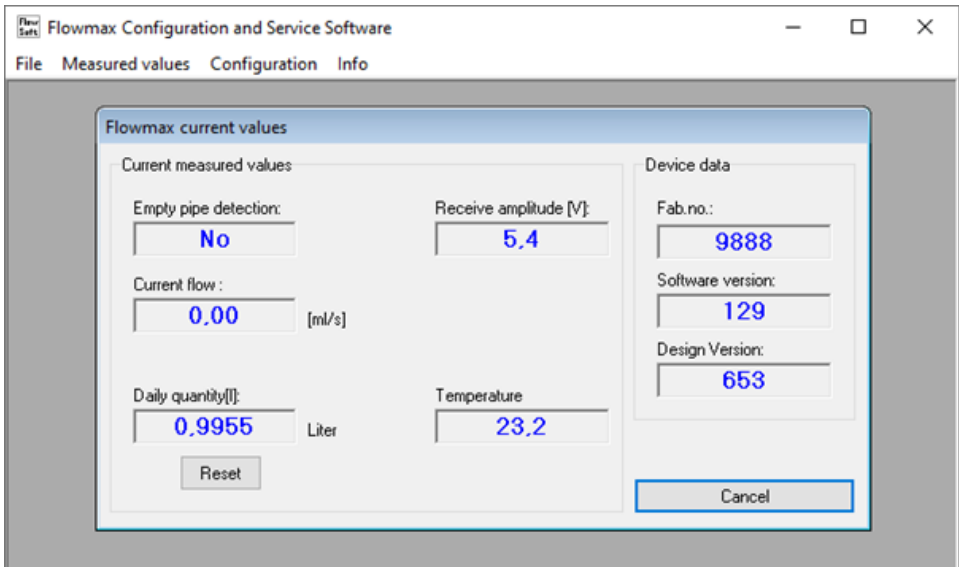


Configuration and service software for ultrasonic flowmeter GEMÜ C38 *SonicLine*®



OPERATING INSTRUCTIONS



As of 27.02.2026

Valid from software version 2.6.3

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1 General information

Read the operating instructions in their entirety before using the **FlowSoft™** configuration software for the first time. The operating instructions are structured in such a way that you are introduced to the operation of the program step by step. At the same time, you will get to know all the options offered by **FlowSoft™**.

Always observe the safety information below!

WARNING

Potentially dangerous situation!

► Non-observance can cause death or severe injury.

Important!

Application tips and other particularly useful information for GEMÜ C38 **SonicLine®**.

Note!

Indicates general information and recommendations.

1.1 Validity of the operating instructions

These operating instructions are valid from **FlowSoft™** software version 2.6.3.

1.2 Copyrights

The software may be copied; it is not subject to copyright. However, we recommend ordering the complete software package directly from GEMÜ. Not only will this provide you with an up-to-date and executable program version, this package also includes the operating instructions and ensures that you can receive support from GEMÜ in case of questions.

1.3 Restrictions

This software was developed and programmed to the best of our knowledge and belief. GEMÜ does not accept any liability, either directly or indirectly, for damage that may result from the use of this software.

1.4 Technical progress

GEMÜ reserves the right to change technical data or information without any particular announcement.

2 Using *FlowSoft™*

FlowSoft™ is a configuration program for Flowmax flowmeters. *FlowSoft™* offers users the following options:


- Carrying out updates of the Flowmax operating program
- Configuring device settings
- Reading out operating data and device settings
- Visualizing operating data
- Viewing configuration data

2.1 Using these operating instructions


These operating instructions explain the steps for installing and operating the *FlowSoft™* software.

- Keyboard inputs are written in angle brackets. For example, <RETURN> means that you need to press the RETURN key.
- *Italics* are used for names, screen displays and menu options of the described applications.


2.2 System requirements

	Important! The following system requirements must be met in order to use the <i>FlowSoft™</i> software:
	<ul style="list-style-type: none">• Microsoft Windows XP™ or newer• 50 MB available memory on the hard drive• 1 free USB type A port

2.3 Installation


	Note! To install the software, insert the <i>FlowSoft™</i> -CD in your PC's CD drive. The files on the CD should be copied into a local folder on the hard drive.
---	---


2.4 Uninstalling

	Note! To uninstall <i>FlowSoft™</i> , delete all the files in the folder.
---	---

3 Operating *FlowSoft™*

3.1 Start

	Important! <ol style="list-style-type: none">1. Plug the USB for the RS485 converter into a free USB port on the PC.2. Connect the wire ends of the Flowmax to the quick connectors of the converter. Always pay attention to the connection assignment! Proceed in the same way for devices with plugs.3. Finally, plug the power supply unit for the RS485 converter into a 230 V socket.
---	---

	Note! All programs with active access to the interface used by <i>FlowSoft™</i> must be closed before starting <i>FlowSoft™</i> .
---	---

When starting **FlowSoft™**, the project frame with the menu bar opens. A white window during the start phase also indicates communication with the connected Flowmax.

3.2 Interface configuration



Note!

During the start phase, the program searches for a connected Flowmax in line with the settings selected in section 2.2. If an error message as shown in Fig. 1 appears, check the settings in the following menu: *Configuration → Define interface*. You can choose from 10 serial PC interfaces. The Flowmax is connected with the USB to the RS485 Converter Sonic or the USB to the RS485 Converter Flow.



Note!

Communication between the master (PC) and the Flowmax takes place via an RS485 interface. To configure the interface parameters, select the following menu item: *Configuration → Define interface*.

Once you click on *Define interface*, the *Define interface* window opens

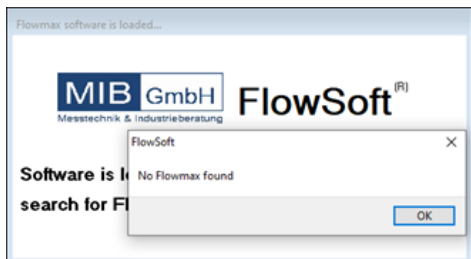


Figure 1: No Flowmax found message

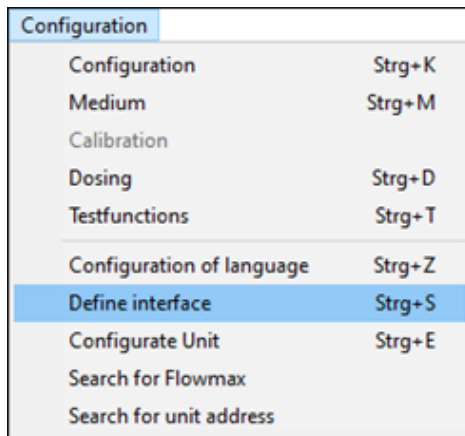


Figure 2: Opening the *Define interface* window

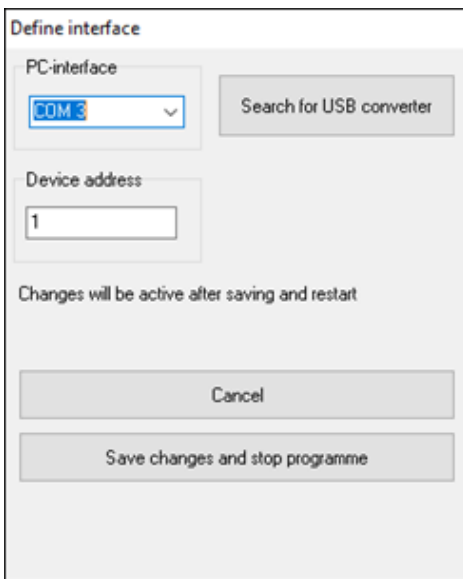


Figure 3: *Define interface* window

First, the USB connector defined as the logical COM port in the control panel of the used PC must be set. Click on the **Search for USB converter** button to automatically search in the Windows registry. As long as there is a matching entry, the required settings are made automatically.

	<p>Note!</p> <p>If the relevant interface driver is installed repeatedly without being uninstalled first in each case, the Windows registry may contain invalid entries. In this case, the logical COM port needs to be entered manually. The address configured in the device must also be entered in the <i>Device address</i> field. Flowmax is assigned the address 1 on delivery ex-works.</p>
--	--

3.3 Current measured values

3.3.1 Displaying measured values

	<p>Note!</p> <p>The <i>Display measured value figures</i> window is accessed from the <i>Measured values</i> pull-down menu.</p>
--	---

Measured values	
Display measured value figures	Strg+A
Record measured values	Strg+F

Figure 4: Opening the *Display measured value figures* window

Click on *Display measured value figures* to open the following window:

Current measured values		Device data	
Empty pipe detection	Receive amplitude [V]	Fab.No.	
No	5.4	9888	
Current flow		Software version	
0.00 [ml/s]		129	
Daily quantity [l]	Temperature	Design Version	
0.9955 Liter	26	653	
Reset		Cancel	

Figure 5: *Flowmax current values* window



Note!

This window always shows the latest measured values for the daily quantity, current flow and receive amplitude as well as the empty pipe detection. The flow is displayed in the unit preselected under *Configuration/Configure Unit* with two decimal places, the daily quantity is shown in [litres] with four decimal places, so ultimately in [0.1 ml]. The following device data is also provided: Fabrication number, software version and design version



Important!

The daily quantity value can be reset to zero by clicking on the



button.

3.3.2 Recording measured values



Note!

The *Record measured values* window is accessed from the *Measured values* pull-down menu.

Measured values

Display measured value figures Strg+A

Record measured values Strg+F

Figure 6: Opening the *Record measured values* window



Note!

The function connected to this window allows you to record the following measured values with a date and time as a CSV file: Flow [unit in line with preselection under “Configuration/Configure Unit”], volume [l], amplitude [V]. For devices with the Speedmax option, the speed of sound [m/s] (compensated and uncompensated) is also shown and recorded.



Note!

The date and time are also saved, which makes it possible to generate diagrams from the recorded data that cover a period longer than 24 hours when further processing in Microsoft Excel.

This field is pre-filled with “file1”.

Figure 7: *Record measured values* window

Basic data about the device and its settings is also saved, such as the device number, hardware and software version, and the current parameters PCK1 to PCK6.

The top half of the *Record measured values* window shows the measured values listed above in a frame and a counter for the number of already stored data points. The bottom half contains two input fields.

The *Time interval* input field can be used to set the interval for data storage in 0.5 seconds. The *Filename* input field can be used to assign a name for the recording.



Note!

In addition to the Flowmax fabrication number, the final file name used for the recording is also appended with the time and date of the recording start, so that it is possible to carry out or start recordings at different times without overwriting old data even if the same file name is selected in the input field.

Example:

The first recording started on 05.01.2022 at 18:04:46 with the name HCL25 results in this file:
HCL25_9888_05-01-2022_18-04-46.csv

The second recording started on 05.01.2022 at 21:45:33 with the name HCL25 results in this file:
HCL25_9888_05-01-2022_21-45-33.csv

Function of the buttons

At the bottom of the *Record measured values* window, there are the following buttons:



Clicking the **Start** button starts the recording. While a recording is ongoing, only the **Stop** and **Recorded values** buttons can be selected. The other buttons are blocked during this phase.

Clicking the **Stop** button stops an ongoing recording and closes the created file. All buttons except for **Stop** are then available again.



Note!

Clicking the **Show** button launches Microsoft Excel and opens the CSV file just created by the recording. Naturally this requires Microsoft Excel to be present on the relevant PC.

The *Open file* dialog window makes it possible to open any of the CSV files available in the set working directory.

The **End** button closes the window.



Important!

The working directory and all higher-level directories must not contain any spaces in their names. Refer to the operating instructions for Microsoft Excel for information on how to create diagrams in Excel. Microsoft Excel is not included in the scope of delivery of **FlowSoft™**.

3.4 Flowmax configuration

FlowSoft offers the option of clearly representing all current configuration parameters of a Flowmax flowmeter and their setting. That means, this tool can be used to make application-specific adjustments.



Note!

This kind of adjustment is not usually necessary, as the devices' factory settings only need to be changed in exceptional cases.

⚠ WARNING

Changes to the values shown here can lead to the device malfunctioning!


- We therefore recommend that, before changing a parameter, you familiarise yourself with its effects and note down or print out the current setting to document it.

3.4.1 Representation of the current device configuration

Select the *Configuration* function in the *Configuration* pull-down menu to open the corresponding window.

Configuration	
Configuration	Strg+K
Medium	Strg+M
Calibration	
Dosing	Strg+D
Testfunctions	Strg+T
Configuration of language	Strg+Z
Define interface	Strg+S
Configure Unit	Strg+E
Search for Flowmax	
Search for device address	

Figure 8: Starting the *Configuration* window

	<p>Note!</p> <p>Once the <i>Configuration</i> window opens, the PC reads out the configuration values set in the connected device and displays them in the form of a table under ACTUAL (see Fig. 12).</p>
---	---

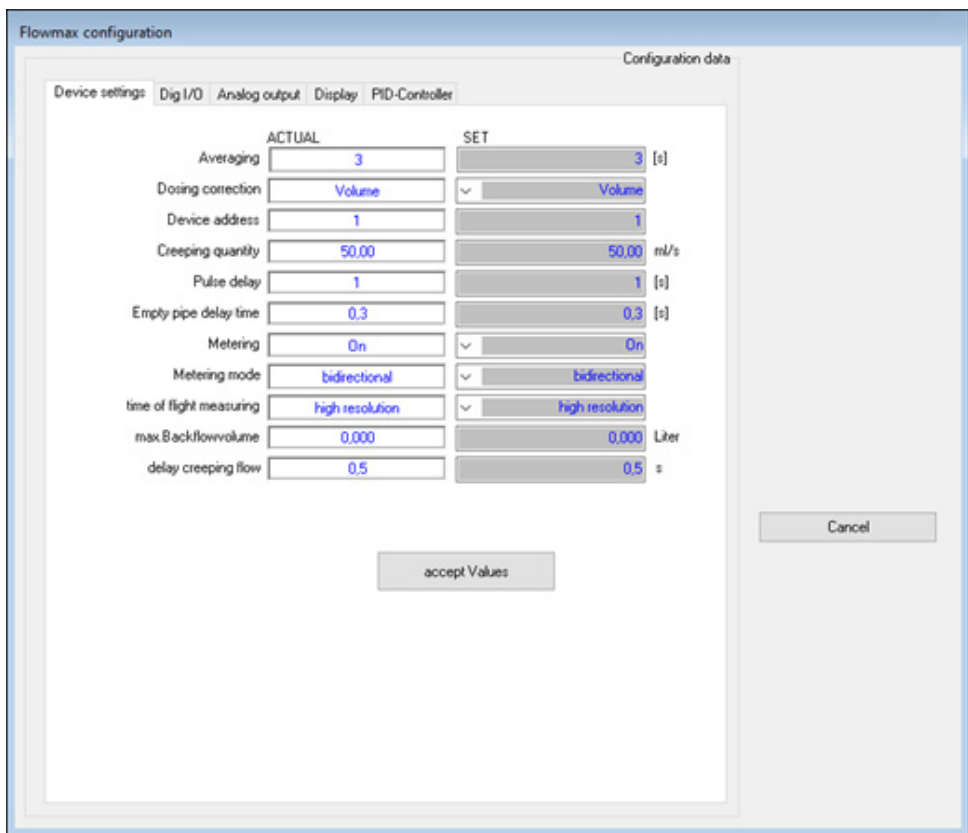


Figure 9: Flowmax configuration window

3.4.2 Changing configuration settings



Important!


In principle, all the parameters in this window can be changed. However, it is essential to sufficiently familiarise yourself with the individual parameters and their significance before making any changes to the device configuration.

⚠ WARNING

- If a parameter needs to be changed to adapt it to plant-specific requirements, the new setting must always be entered in the *SET* column as a number or a selection in one of the button-down fields. When changing a numerical value, the number format in the *ACTUAL* column must be used as a template.



Note!

Click the  button to adopt a change in the SET column for the Flowmax. The PC then transfers the new configuration data to the Flowmax, which stores the new configuration in its memory.

Creeping quantity: The creeping quantity serves to exclude flows from the measurement which can be created by convection within a narrow scope around zero even with the valve closed. The creeping flow quantity is set at the factory to an advisable standard value in relation to the cross-section of the measurement device.

Pulse delay: A pulse delay time can be set to take possible return flows, which occur, for example, when valves close, into account for the total quantity. If a pulse delay time is activated, the pulses are delayed by the set time before being output at the digital output.

Empty pipe delay time: Small air bubble or particles carried along in the liquid interfere with sound transmission in the measurement channel.

For the set time, but no longer than three seconds, the last undisturbed flow rate value is output. After this time, the measurement device behaves as though there is no flow and only enters an alarm state after the set delay.

Metering: Metering of flow rates can be switched off here. Deactivating metering makes sense, for example, when the pipeline is being cleaned. While deactivated, the cleaning agents flowing through the measurement device are not recorded. Setting range: On, off.

Metering mode: The behaviour of the internal counters (daily quantity counter or operating quantity counter) can be set here. **The selection does not affect the pulse output.**

- Unidirectional => counter changes only with positive flow direction
- Bidirectional => counter changes in both flow directions

3.4.3 Significance of configuration parameters

Device settings

Averaging: The "Averaging" function averages the analogue output signal.

Setting range: 0 to 33.3 s in
0.1 s increments

Factory setting: 3 s

In the case of weak mean value formation, the emitted analogue signal responds more quickly. If mean value formation is strong, the response of the analogue value is slow.

Dosing correction: This determines whether the dosing correction is based on volume or time.

Device address: It is possible to connect several Flowmax to one RS485 bus in parallel. Individual measurement devices can be selectively addressed by the master system via a previously assigned address. The necessary settings can be made here. The permitted value range is 1 to 254.



Important!

If you change the device address here and transfer it, the bus address in the FlowSoft interface settings will be changed accordingly. This must be taken into consideration when connecting another Flowmax at a later point.

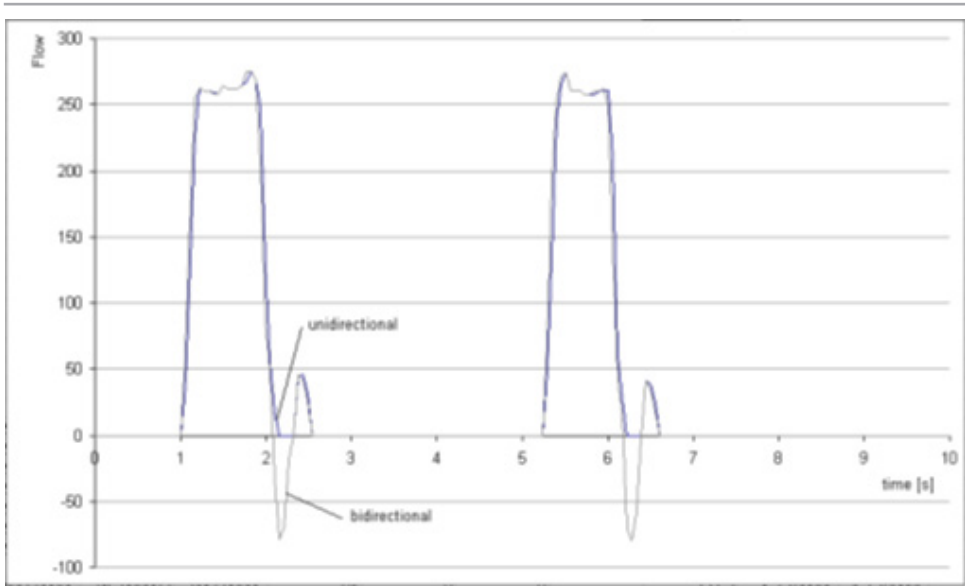


Figure 10: Flow for unidirectional and bidirectional measurement

Bidirectional is set as standard, as this mode makes it possible to measure both dynamic and uniform flows with a high degree of accuracy. This setting must be selected for maximum accuracy in plants where oscillations occur in the piping system, for example due to the closing of valves (see Fig. 13). A unidirectional measurement would exclude negative oscillation components in this case, which would result in a measurement error.

The unidirectional setting is recommended when forward and return flows need to be determined independently, for example. In this case, two Flowmax devices must be installed in the same pipe: One in the flow direction and another in the opposite direction.

Time of flight measuring: The resolution for the time of flight measurement can be set here. The rule is:

High resolution => precise result

Fast => imprecise result

Max. backflow volume: If the medium is stopped mid-flow and comes to a standstill, a small amount of medium may flow back. Once the flow starts up again, the backflow is measured again and added to the daily quantity counter. To correct this, a quantity [l] can be set under “Max. backflow volume” that will adjust the value of the daily quantity counter.

Delay creeping flow: Activation of the creeping flow volume can be delayed.

Setting range: 0 to 99.0 s in increments of 0.1 s

Factory setting: 0.5 s

Dig. I/O

Q1/Q2 pulse logic:

Depending on the application, NPN or PNP logic can be selected.

Setting range: PNP/NPN, break contact/
make contact

Q1/Q2 function: The function of digital output Q1/Q2 can be set here.

Settings: Off, pulse output,
frequency output, empty pipe,
dosing output, low set point,
high set point, negative flow

I1 function: Various settings of digital input I1 can be adjusted here.

Setting range: Off, dosing, zero balance,
reset counter, creeping flow off

Pulse value: This specifies for which flow rate an output pulse is emitted. The setting must be selected so that the max. output frequency of the Flowmax (10 kHz) as well as the max. input frequency of the control unit are not exceeded. The pulse/pause ratio is 1:1. The pulse length is restricted to 1 s.

Pulse delay: The delay (see "Pulse delay") and backflow (see "Max. backflow volume") settings can be activated and the function deactivated with "Off" here.

Empty pipe alarm 12kHz on pulse: This function is used to send an alarm to the PLC when the creeping flow is undercut and an empty pipe is detected.

Lower limit: The lower limit value for the digital output is set here.

Setting range: 0 to 20,000.00 ml/s in
increments of 0.01 ml/s.

Upper limit: The upper limit value for the digital output is set here.

Setting range: 0 to 20,000.00 ml/s in
increments of 0.01 ml/s.

Hysteresis: The limit values can be equipped with a hysteresis. This is to prevent frequent switching of the outputs if a flow is near a limit value.

Setting range: 0 to 8000 ml/s in
increments of 0.01 ml/s.

Output pulse: The flow, speed of sound (Speedmax option) and temperature (Speedmax option) settings can be adjusted here.

Output limit value: The function to which a limit value refers (see upper limit/lower limit) is set here.

Setting range: Flow, speed of sound (Speedmax option), temperature (Speedmax option)

Analog output

Max. range: The value at which 20 mA is to be output is set here.

Setting range: 0.01 to 20,000.00 ml/s in
increments of 0.01 ml/s

Min. range: The value at which 0 or 4 mA is to be output is set here.

Setting range: 0.00 to 20,000.00 ml/s in
increments of 0.01 ml/s



Note!

The "Min. range" value cannot be set to a value that is greater than or equal to the "Max. range" value.

Function: This is where you can decide whether the analogue output should output a current in the range of 0 to 20 mA or 4 to 20 mA or a voltage from 0 to 10 V for the respective flow range set.



Note!

Output value: All output values can be viewed in the drop-down menu. However, the optional functions are only available if they were ordered for the Flowmax. If you select a function that was not ordered, the output is set to "Flow".

Setting range: Flow, PID controller,
speed of sound,
temperature

Factory setting: Flow

Display

Password: The factory setting for the Flowmax menu password is 41414. It can be changed as needed.

Display: The display can be activated and deactivated

Backlight: The backlight can be activated and deactivated.

Rotate display: The display can be rotated in 90° increments.

Setting range: 0°, 90°, 180°, 270°

Factory setting: 0°

Display unit: Flowmax can display current measured values and counted volumes in different units.

Setting range: ml/s + l, l/h + l, l/min + m³,
gal/min +gal, l/min + l

Example: ml/s + l

The flow is displayed here in the unit ml/s (millilitres per second) and the daily quantity is displayed in l (litres).

Gal refers to US gallons where 1 gal = 3.785 l.

Menu: The menu can be activated or deactivated.

Alarm flashing: The display flashes in the event of an error and this function can also be switched off

When alarm flashing is activated, the backlight only flashes after 150 s. When an empty pipe delay time is set, this time is extended by the set empty pipe delay time.

Setting range: On, off

Factory setting: On

Alarm flashing can be suppressed for 150 second with the ESC button.

PID controller (option)



Note!

It is possible to implement flow control on the current output. The settings for the target flow, proportional gain, integral gain and differential gain parameters can be configured here.

If you select this function via the menu but the PID controller function was not ordered, the output is set to "Flow".

3.5 Adapting the Flowmax to the medium and environment



Note!

In the *Medium* window, the user can adapt the measurement device to medium-specific properties in a very differentiated manner. The measurement devices are calibrated with water at the factory. Adaptations are not generally necessary when measuring media with similar viscosity and sound properties to water. However, it makes sense to carry out a 1-point correction if a reproducible measurement error is detected. If several different types of flow are part of an application and different deviations outside of the devices' specifications are identified, it is possible to correct these with a matrix function. Non-linear deviations across the entire measuring range can be compensated with a maximum of 8 supporting values. Please contact GEMÜ for information on the exact procedure.

WARNING

Changes to the values shown here can lead to the device malfunctioning!

- We therefore recommend that, before changing a parameter, you familiarise yourself with its effects and note down or print out the current setting to document it.

3.5.1 Representation of the current medium values

Select the *Medium* function in the *Configuration* pull-down menu to open the corresponding window.

Configuration	
Configuration	Strg+K
Medium	Strg+M
Calibration	
Dosing	Strg+D
Testfunctions	Strg+T
Configuration of language	Strg+Z
Define interface	Strg+S
Configure Unit	Strg+E
Search for Flowmax	
Search for device address	

Figure 11: Starting the *Medium* window

When you open the *Medium* window, the medium values set in the connected device are read out and displayed.

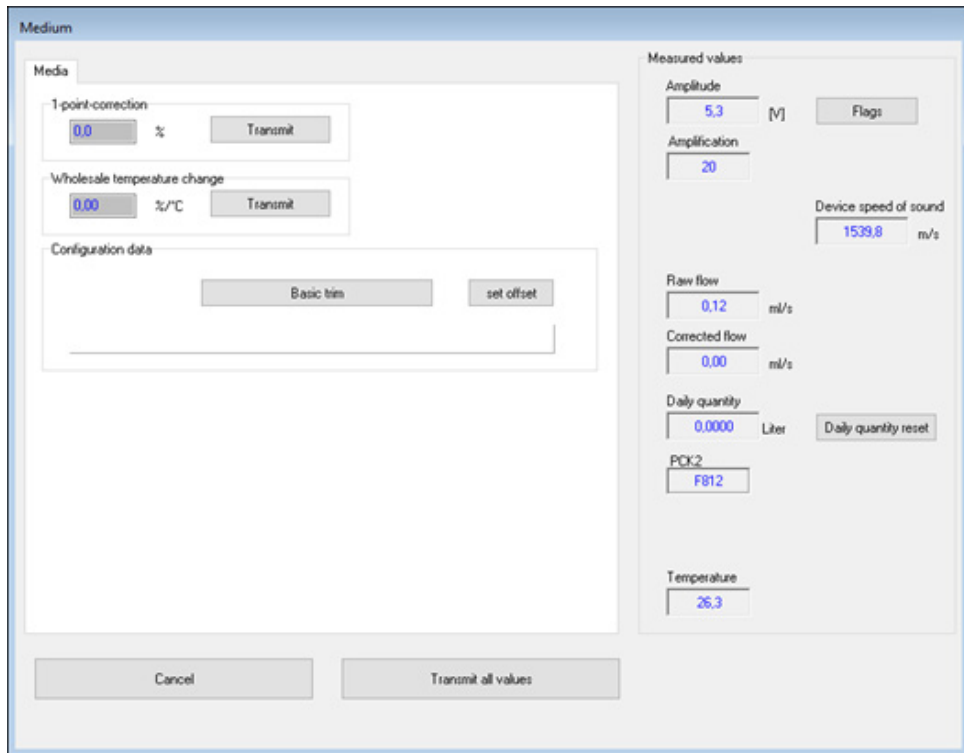


Figure 12: *Medium* window

3.5.2 Measured values section in the *Medium* window

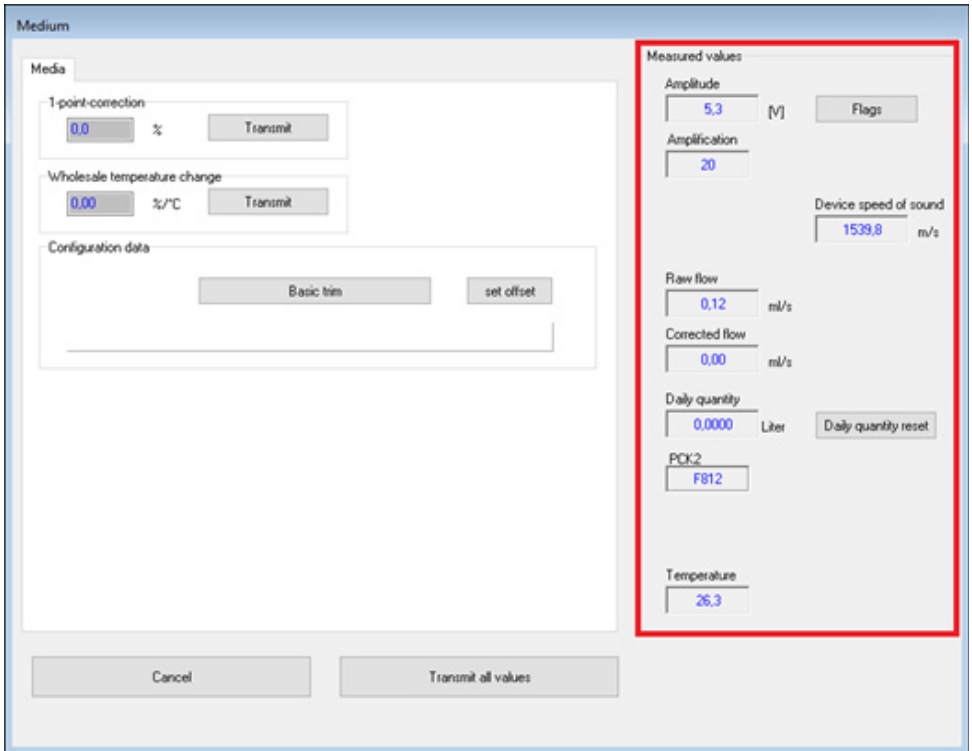


Figure 13: Measured values section



Important!

The values shown here are measured values and calibration parameters. The values are continuously read out from the connected measurement device and represent online data. It is essential to carry out the basic trim or set offset function (see section 3.5.3) to receive reliable values in this context.



Note!

Amplitude: This measured value shown here is the receive amplitude. The value must be at least 3.5 V for a reliable and stable measurement. If the value is 0, measurements are not possible due to an excessive gas share in the medium.

**Note!**

Amplification: The amplification provides additional information for support cases. It indicates to GEMÜ support technicians whether the displayed receive signal can be further dampened or amplified.

Raw flow: The raw flow is the flow calculated directly from the phase values of the receiving electronics. The filter and the creeping flow (see section 3.4.3) do not affect the displayed measured value.

Corrected flow: The corrected flow is the result of the calculation from the matrix values and the filtering through the creeping flow and median filter based on the raw flow.

Daily quantity: The daily quantity shows the current Flowmax counter reading in litres with a resolution of 0.1 millilitres. It can be reset to 0 (zero) before a measurement by

clicking the button.

3.5.3 Basic trim/set offset

3.5.3.1 Basic trim

The screenshot shows a software interface for configuring a device. The main window is titled 'Medium'. On the left, there are two sections: '1-point-correction' with a value of 0.0 and a 'Transmit' button, and 'Wholesale temperature change' with a value of 0.00 and a 'Transmit' button. Below these is the 'Configuration data' section, which is highlighted with a red rectangular box. This section contains two buttons: 'Basic trim' and 'set offset'. At the bottom of the interface are 'Cancel' and 'Transmit all values' buttons. On the right side, there is a 'Measured values' panel with several readouts: Amplitude (5.3 [V]), Amplification (20), Device speed of sound (1539.8 m/s), Raw flow (0.12 ml/s), Corrected flow (0.00 ml/s), Daily quantity (0.0000 Liter) with a 'Daily quantity reset' button, PCK2 (F912), and Temperature (26.3).

Figure 14: Configuration data section



Note!

The “Basic trim” function enables an optimal adaptation to medium-specific properties. By performing this function, Flowmax runs through an internal parameterization and saves the relevant parameters independently. This process can take up to approx. one minute.



Important!

The device must be filled with liquid and there must be no flow so that the adjustment can be correctly executed. The basic trim function can be carried out again if important operating parameters change. This is the case after changing to a different medium, for example.

Once you click the button, a basic adaptation to the medium in the metering tube is performed fully automatically.

While the function is running, the following message is shown in the status field underneath the phase window field to indicate that the function is active:



Figure 15: *Basic trim is active...* status message in the *Configuration data* section

The following feedback message appears once the basic trim function has successfully run:

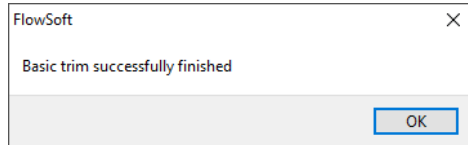


Figure 16: *Basic trim successfully finished* message



Note!

Once this message appears, the device is adapted to the medium to be measured.

If the basic trim could not be completed successfully, the following message appears:

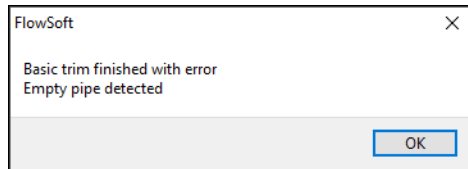


Figure 17: *Basic trim finished with error* message



Note!

If this happens, we recommend checking whether the prerequisites listed on page 19 are fulfilled and repeating the basic trim.



Note!

If the amplitude in the *Measured values* section is less than 2.0 V, check the filling of the metering tube and ensure there are no bubbles.

The following messages may also appear:

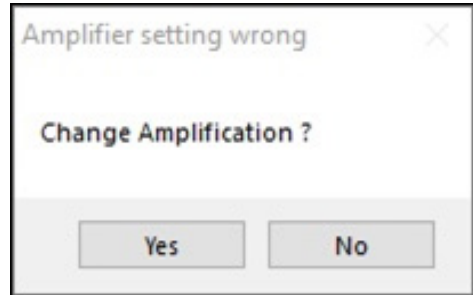


Figure 18: *Change Amplification?* message/query
This message appears when the receive signal is too weak at the start of the basic trim. In this case, first check whether the conditions for carrying out a basic trim listed above are fulfilled.

If they are fulfilled, click the button. The basic trim function will then start again with a significantly higher amplification, if possible.

If you click the button, the following query immediately appears:

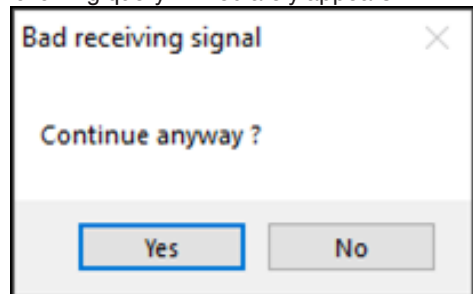


Figure 19: *Continue anyway?* message/query

You should normally acknowledge this with **No**, unless the necessary conditions have been fulfilled in the meantime.

If the basic trim was started with a good receive signal, but the liquid was removed from the measurement channel in the meantime, the following message appears:

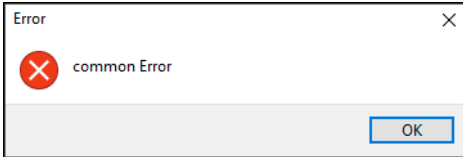


Figure 20: *common Error* message

Once you acknowledge the message and check the fill level in the metering tube, the process can be restarted.

3.5.3.2 Set offset

A set offset calibration can be carried out manually via the **set offset** button. The device must be filled with liquid and there must be no flow so that the adjustment can be correctly executed, as this state will be the new zero value.

Slight zero point changes, for example, due to temperature fluctuations, are automatically adjusted by the Flowmax.



Important!

Unlike the basic trim, the set offset is not saved in the device. The original, last saved value will be active if you restart the Flowmax.

3.5.4 Changing medium-specific settings



Important!

In principle, all the parameters in this window can be changed with the exception of the pure measured values. However, it is essential that you sufficiently familiarise yourself with the individual parameters and their significance and, where necessary, contact GEMÜ Service before making any changes to the medium settings.



Note!

If a parameter needs to be changed to adapt it to a medium, the new setting must always be entered in the SET column as a number or a selection in one of the button-down fields. When changing a numerical value, the number format in the ACTUAL column must be used as a template.

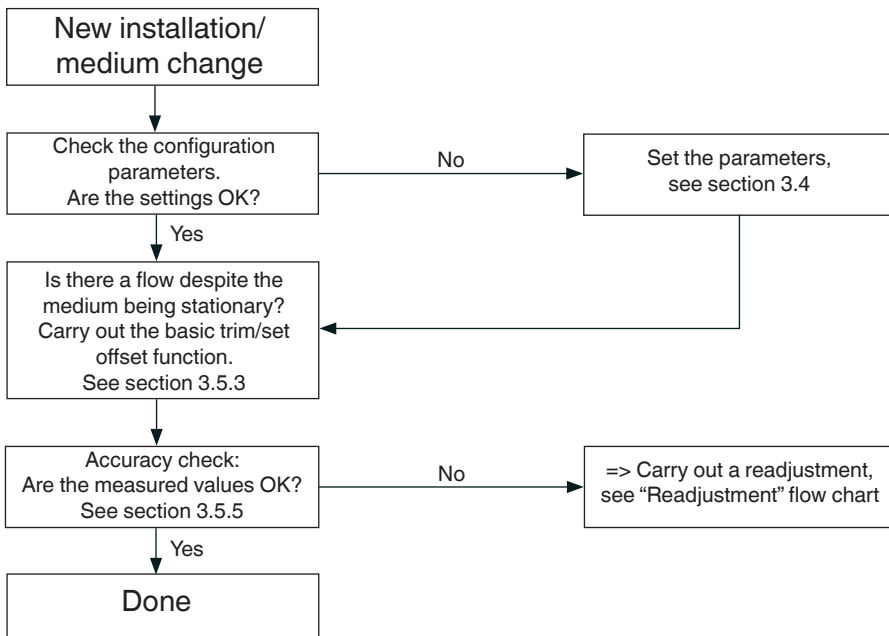


Figure 21: *New installation/medium change* flow chart

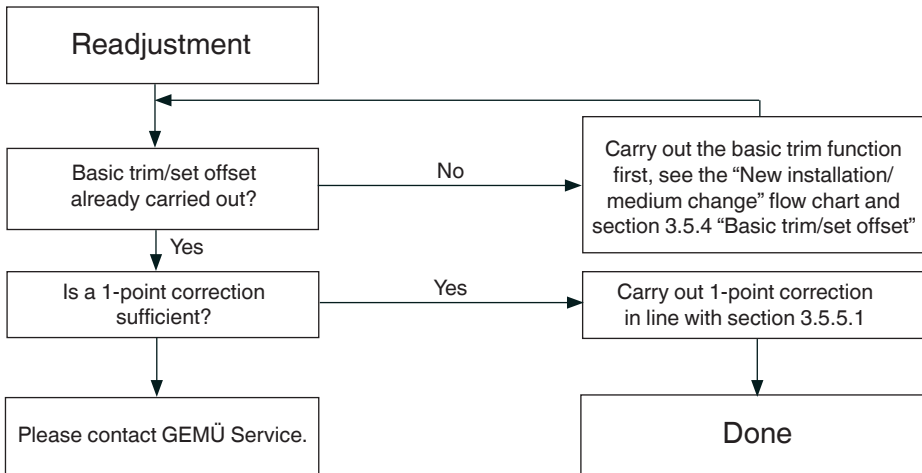



Figure 22: *Readjustment* flow chart

Proceed as follows to make changes to the Flowmax medium value settings:



Note!

Click the  button to adopt a change in the *SET* column for the Flowmax. The PC then transfers all configuration data in the *SET* column to the Flowmax, which stores the transferred configuration in its memory.

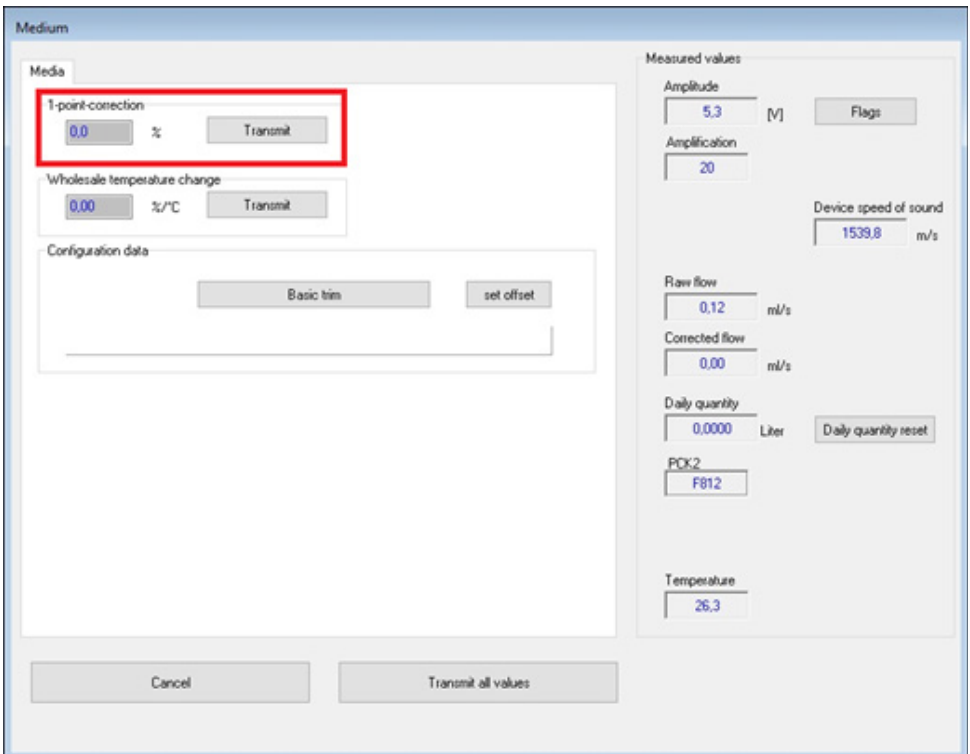


Important!

As a general rule, the device must be filled with the target medium without bubbles forming to determine all measured values via Flowmax.

3.5.5 Determining medium-specific correction data

3.5.5.1 1-point correction



The screenshot shows the 'Medium' configuration window. The '1-point-correction' section is highlighted with a red box. It contains a text input field with the value '0.0' followed by a '%' symbol and a 'Transmit' button. Below this is the 'Wholesale temperature change' section with a text input field containing '0.00', a '%/°C' symbol, and a 'Transmit' button. The 'Configuration data' section includes 'Basic trim' and 'set offset' buttons. On the right, the 'Measured values' section displays: Amplitude (5.3 M), Amplification (20), Device speed of sound (1539.8 m/s), Raw flow (0.12 ml/s), Corrected flow (0.00 ml/s), Daily quantity (0.0000 Liter), PCX.2 (F812), and Temperature (26.3). At the bottom are 'Cancel' and 'Transmit all values' buttons.

Figure 23: 1-point-correction section

The measurement device is calibrated to an operating point with 1-point correction. To do so, a typical volume quantity for the application is filled into a container and weighed using scales. Remember to subtract the weight of the container. You obtain the volume by taking into account the density of the medium (volume = mass/density). This is compared with the display of the measurement device. The set flow velocity must be constant and should be as close as possible to the typical value for the application.

If the measurement device displays more than 2% above the value determined using the scales, for example, a value of -02.0% must be entered for the 1-point correction.



Note!

The correction value determined in this way must be entered in the “1-point-correction” input field. Once you click the **Transmit** button, the entire measuring range will be corrected automatically. You can check the changes made during a subsequent test run by following the same process.

3.5.5.2 Correction via wholesale temperature change

The screenshot shows the 'Medium' configuration window. The 'Wholesale temperature change' section is highlighted with a red box. It contains a text input field with the value '0.00', a unit selector set to '%/°C', and a 'Transmit' button. Above it is the '1-point-correction' section with a text input field set to '0.0', a unit selector set to '%', and a 'Transmit' button. Below the highlighted section is the 'Configuration data' section with 'Basic trim' and 'set offset' buttons. On the right side, the 'Measured values' section displays: Amplitude (5.3 [V]), Amplification (20), Device speed of sound (1539.8 m/s), Raw flow (0.12 m/s), Corrected flow (0.00 m/s), Daily quantity (0.0000 Liter), PCK:2 (F812), and Temperature (26.3). At the bottom are 'Cancel' and 'Transmit all values' buttons.

Figure 24: Wholesale temperature change section

In individual cases, it is necessary to make a correction via a temperature change. The process is similar to the 1-point correction. However, this correction should be carried out in several steps, with the temperature gradually increasing or decreasing with each step. The remaining parameters (medium, flow velocity) must remain stable.

3.6 Dosing with Flowmax



Note!

Several Flowmax versions offer the option of an independent dosing function, which does not require a separate control unit. Refer to the “Dosing” chapter of the Flowmax operating instructions for more information. The dosing function only requires an initial adjustment of the quantity to be dosed via the PC software documented here.

In addition to the dosing quantity setting, it is also possible to test the dosing function and optimise the dosing accuracy taking into account plant-specific influences.

Select the *Dosing* function in the *Configuration* pull-down menu to open the corresponding window:

Configuration	Strg+K
Medium	Strg+M
Calibration	
Dosing	Strg+D
Testfunctions	Strg+T
Configuration of language	Strg+Z
Define interface	Strg+S
Configure Unit	Strg+E
Search for Flowmax	
Search for device address	

Figure 25: Starting the Flowmax *Dosing* window



Note!

The dosing function is not available for all Flowmax models.

Once the Flowmax *Dosing* window opens, the PC reads out the configured dosing values set in the connected device and displays them in the form of a table under ACTUAL.

Dosing values		
	ACTUAL	SET
Dosing time	32 [s]	32 [s]
Dosing correction	0.0 [ml]	0.0 [ml]
Dosing correction via	Volume	Volume
Operation by button to bus	both	both

Execute

Dosing quantity: 0,000 Liter

No dosing active

Start

Stop

Cancel

Take over SET value

Figure 26: Flowmax dosing Operation window

3.7 Setting the dosing parameters



Note!

For the dosing parameters on the left, the *ACTUAL* column should generally show the values currently active in the connected Flowmax. If a value needs to be changed, the new set value needs to be entered in the *SET* column. Once you click

the button, the new value is transferred to the Flowmax and saved permanently there.

Dosing can be configured in the *Flowmax dosing Operation* window. It is possible to enter the required "Dosing quantity" and a "Dosing time" for this. The dosing time is meant as a fail-safe function to prevent unintentional overfilling. The output is switched once the set time has elapsed, regardless of the measured quantity. The dosing time can be deactivated at any time by entering "0". A dosing process can also be started and stopped via the *Flowmax dosing Operation* window.

In addition, a dosing process can be started with a communication command (RS485) or via the digital input (I1).



Important!

To be able to activate dosing, a digital output must be parameterized for dosing and the Flowmax must be completely filled with the medium.



Note!

The digital output for valve actuation must be configured in line with section 3.4.2 "Changing configuration settings" and section 3.4.3 "Significance of configuration parameters".

⚠ WARNING

A technical solution for overflow protection and an EMERGENCY STOP switch must be provided on-site.

► For safety reasons, both functions must result in the valve closing.

3.7.1 Dosing quantity and dosing test

The quantity to be dosed is entered in the input field on the right side of the *Flowmax dosing Operation* window. Once you click the button, the entered value is transferred to the Flowmax and saved permanently there.

You can also test the dosing function. To start the test, click the button, just like when transferring the dosing value. Click the button to stop an ongoing dosing process at any time.

3.7.2 Significance of dosing parameters

Dosing time: The dosing time is the maximum duration for which digital output Q1 is switched to active once dosing starts. The dosing time is meant as a fail-safe function to prevent unintentional overfilling. The output is switched once the set time has elapsed, regardless of the measured quantity. The dosing time can be deactivated at any time by entering "0".

"Dosing time"

setting range: 0 to 30,000 seconds, in increments of 1 second, with an accuracy of +0/-1 second.

"Dosing time"

factory setting: 3 seconds


Dosing correction: The dosing correction serves to compensate for empirically determined deviations of the actual volume from the set volume. Subsequent emptying of the already closed valve can skew the dosing accuracy, for example. This is possible by setting the dosing correction value.

Dosing quantity: The dosing quantity is the volume of liquid that can flow through the Flowmax before digital output Q1 is switched back to passive at the end of a dosing process. The dosing quantity value is saved in the Flowmax after being transferred by the PC and is the basis for every subsequent dosing process unless it is changed.

“Dosing quantity”
 setting range: 0 to 3500 litres,
 in increments of
 0.001 litres

“Dosing quantity”
 factory setting: 0 litres

Important!

 If the dosing time is 0, timeout is deactivated.

To be able to activate dosing, a digital output must be parameterized for dosing. Dosing can be started via FlowSoft, via the Flowmax menu or via the digital input.

⚠ WARNING

A technical solution for overflow protection and an EMERGENCY STOP switch must be provided on-site.

➤ For safety reasons, both functions must result in the valve closing.

3.8 Test functions

Configuration	
Configuration	Strg+K
Medium	Strg+M
Calibration	
Dosing	Strg+D
Testfunctions	Strg+T
Configuration of language	Strg+Z
Define interface	Strg+S
Configure Unit	Strg+E
Search for Flowmax	
Search for device address	

Figure 27: Starting the *Testfunctions* window

A test flow can be set for commissioning the process plant. In this case, the measurement device behaves as if the test flow really flows, even when the measurement device is empty

Setting range: 0.0 to 3200 ml/s
 in increments of 1 ml/s

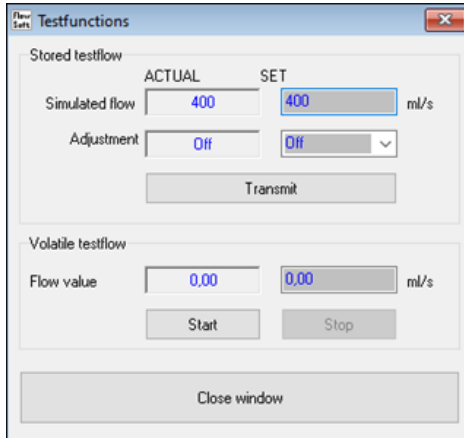


Figure 28: *Testfunctions* window

There are two ways of generating a test flow.

Stored testflow: A simulated flow can be entered under “Simulated flow” --> “Set”. The simulated flow is permanently transferred to the Flowmax memory with the setting “On” and by confirming with the **Transmit** button. The outputs and display behave as if medium is flowing through the Flowmax metering tube. The simulated flow remains active even if you switch the power supply off and on again.

Select the setting “Off” and confirm this with the **Transmit** button to deactivate the simulated flow.

Volatile testflow: When you enter a simulated flow here, and confirm this with the **Start** button, the simulated flow is loaded to the volatile memory. If you switch the power supply off and on again, the simulated flow is deactivated and the flow value is reset to 0.00 ml/s. The simulated flow can be deactivated with the **Stop** button.

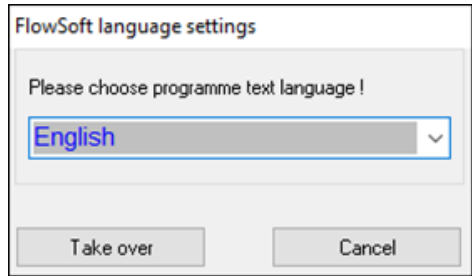


Figure 30: FlowSoft language settings window

Select the required language in the button-down menu and confirm it by clicking the **Take over** button. The selected language will become active the **next time** you start the software.

3.9 Language selection

FlowSoft offers several menu languages. Select the *Configuration of language* function in the *Configuration* pull-down menu to open the corresponding window.

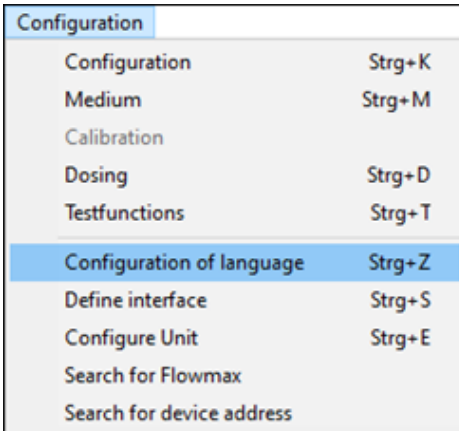


Figure 29: Starting the Configuration of language window

3.10 Unit configuration

Important!

FlowSoft offers several units for displaying measured flow values. Select the *Configure Unit* function in the *Configuration* pull-down menu to open the corresponding window.

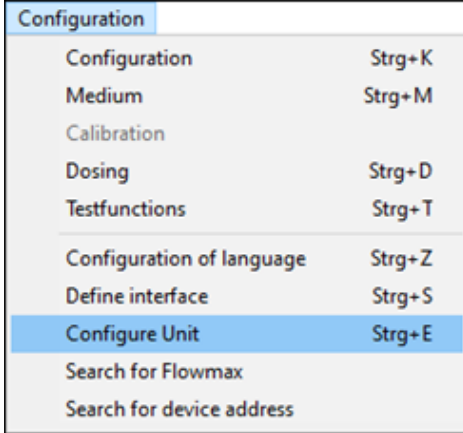
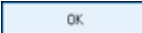


Figure 31: Starting the *Configure Unit* window



Figure 32: *Units* window

Select the required unit, then click the  button.

3.11 Special functions

3.11.1 Search for Flowmax

This function is used to search for a Flowmax, for example when FlowSoft was started before the Flowmax was switched on at the converter and the FlowSoft was not able to establish communication.

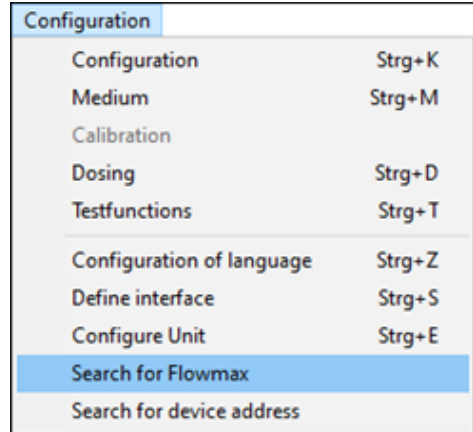


Figure 33: Starting the *Search for Flowmax* window

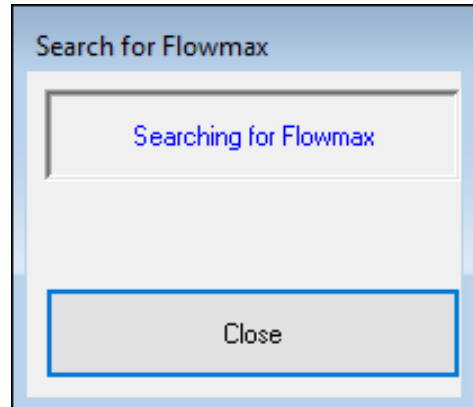


Figure 34: *Search for Flowmax* window

When you click on the *Search for Flowmax* menu item, the software automatically starts sending communication requests via the interface. Once a Flowmax was found, the feedback message “found Flowmax” appears.

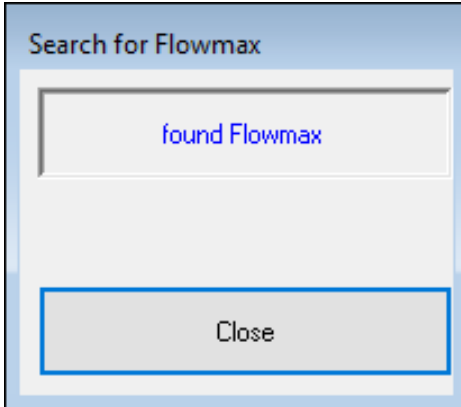


Figure 35: *found Flowmax* window

If it is not possible to establish communication with the Flowmax, please check the wiring between the converter and the Flowmax and observe section 3.2 *Interface configuration*.

3.11.2 Search for device address

This function serves to determine the address of devices whose address is not known.

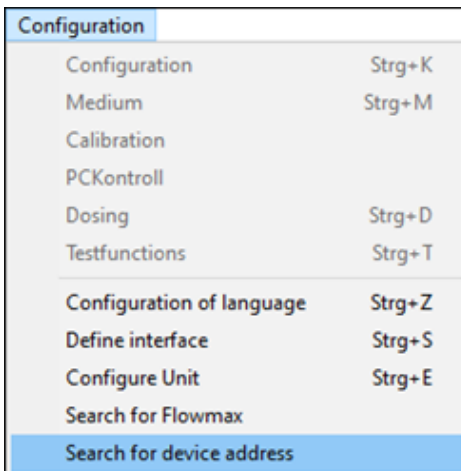


Figure 36: Starting the *Search for device address* window

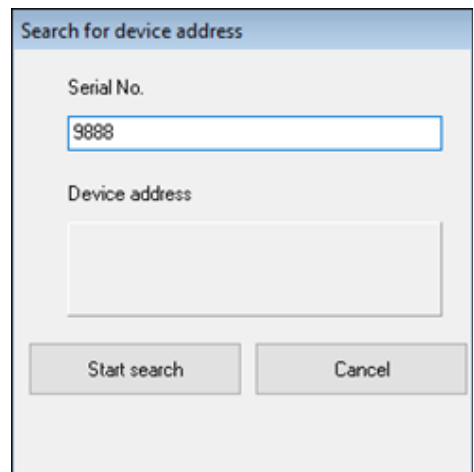


Figure 37: Entering the serial number in the *Search for device address* window

Enter the serial number of the connected device into the “Serial No.” field, then click on “Start search”. FlowSoft then starts searching for connected devices, starting with address 1 up to the highest possible address 255. The currently searched address is shown in the “Device address” display field.

Once a Flowmax responds to the currently displayed address, the last checked address remains displayed.

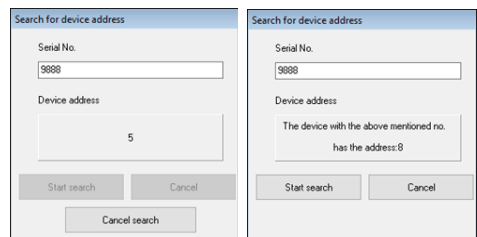


Figure 38: Display of the found address in the *Search for device address* window

3.11.3 Single command



Note!

The *Single command* function can be used to send encrypted commands, which are only accessible to GEMÜ, to a connected Flowmax. This makes it possible to make changes or adaptations in consultation with GEMÜ in particularly difficult cases, which would otherwise require a GEMÜ technician to be present on site. The code can only be generated by GEMÜ.



Note!

Enter the special code generated by GEMÜ in the “Data set” field, then click the **Transmit** button. The single command is then executed. If a correct single command was transmitted to the connected device, the device acknowledges this with the response “6”.

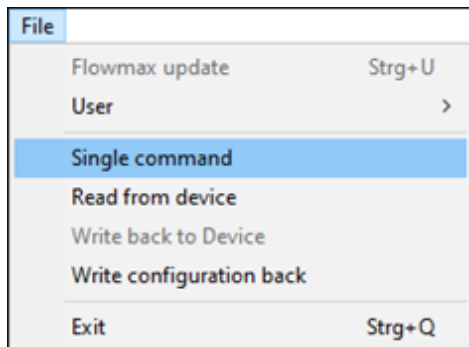


Figure 39: Starting the *Single command* window

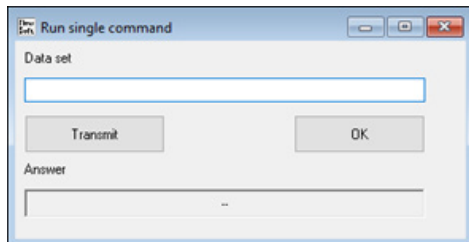


Figure 40: *Run single command* window

Select the *Single command* function in the *File* pull-down menu to open the corresponding window.

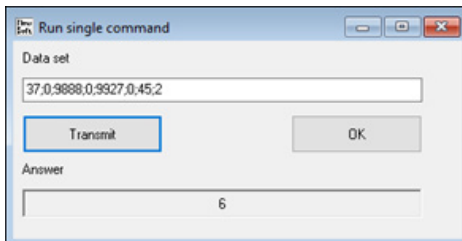


Figure 41: *Run single command* window with positive response from Flowmax

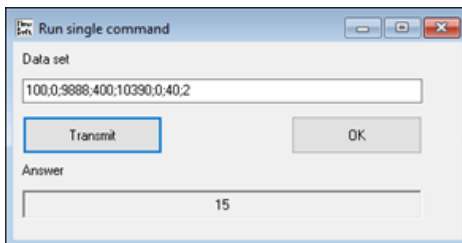


Figure 42: *Run single command* window with negative response from Flowmax



Important!

If the data set was entered correctly but the Flowmax does not know the command, the Flowmax responds with “15”. If the data set was entered incorrectly, it is not transmitted to the Flowmax. In this case, the “Error in dataset” error message appears.

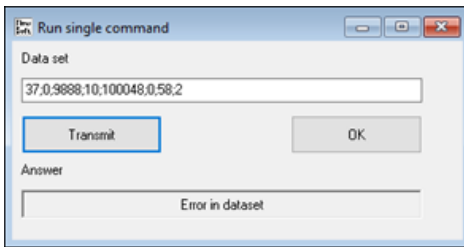
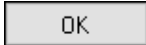


Figure 43: *Run single command* window with incorrect data set

Close the window by clicking the



button.

3.11.4 Read from device



Note!

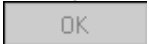
The *Read from device* function can be used to read out all device parameters. The CSV file generated in this way can be useful for remote diagnostics of any problems.



Figure 45: *Read from device* window

The *Read from device* window opens after starting the function.

This automatically starts the process.

During the process, a counter runs under *Read dataset* which displays the number of read data sets. The  button is deactivated (greyed out) during this phase.

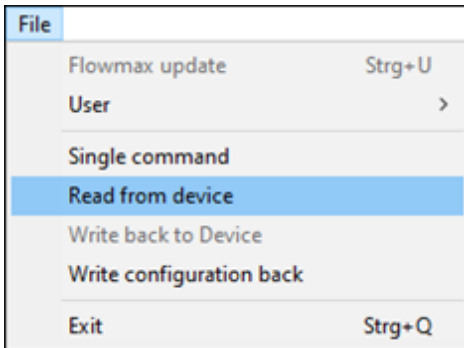


Figure 44: Starting the *Read from device* function

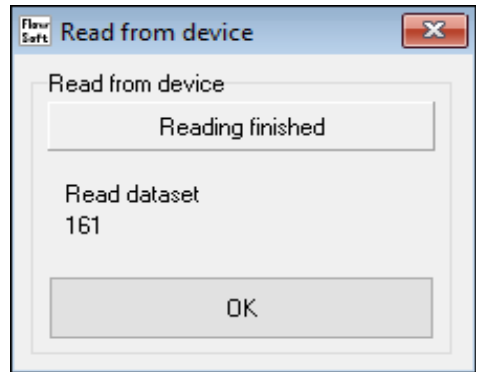


Figure 46: *Read from device* window, process complete


**Note!**

After the process is complete, the number of the last parameter read out remains under displayed “Read dataset”. The read out data is stored in the FlowSoft working directory in a CSV file.

The name is made up as follows: “Werte_Auslesen_device number_DD-MM-YYYY_HH-MM-SS.csv”; the date and time are shown with hyphens.

**Note!**

The number of individual data records/read-out parameters can vary depending on the device version and software.

Click the  button, which is now active, to close the window.

3.11.5 Write configuration back

The *Write configuration back* function is used to re-apply the settings from a previously saved file to the Flowmax.

Example: A reading carried out on 23.05.2017 at 13:49:47 from a device with the number 99999 results in the file “Werte_Auslesen_99999_23-05-2017_13-49-47.csv”.

The data record generated in this way can be transferred to MIB for analysis upon agreement.

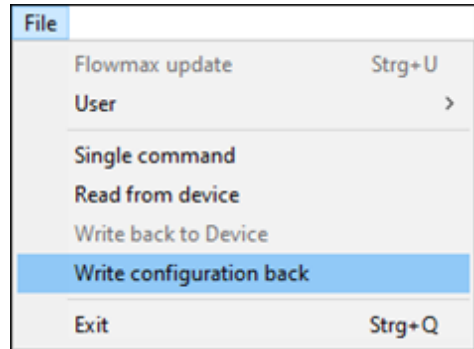
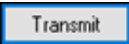


Figure 47: Opening the *Write configuration back* window

The file to be re-applied to the device can be

selected with the “Open file” function. The selection is displayed. Click on  to transmit the values to the device.

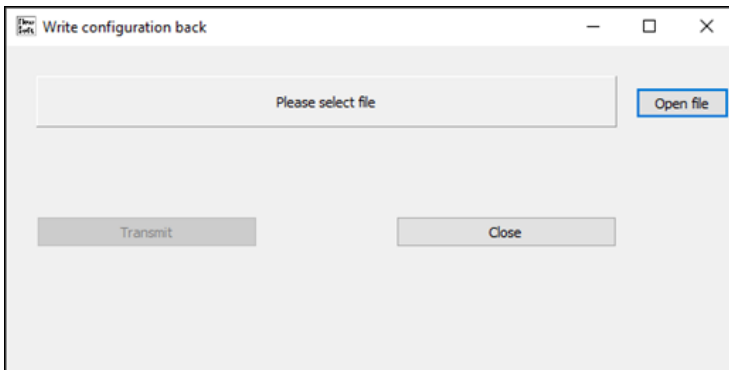


Figure 48: *Write configuration back* window

3.11.6 Device information

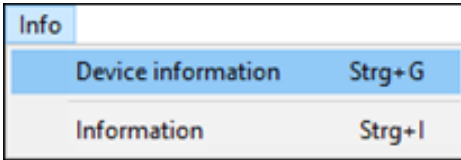


Figure 49: Opening the *Device information* window

This is where information such as the device number, device address, software version, hardware version and the design version for the connected Flowmax is displayed.



Figure 50: *Device Information* window

3.11.7 Information

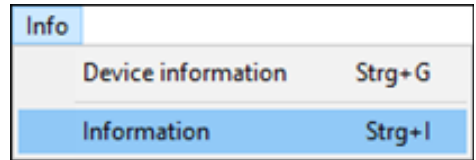


Figure 51: Opening the *Information* window

This is where version information for the FlowSoft Flowmax configuration and service software is displayed.



Figure 52: *Information* window

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