



User Guide

Flosense 2.0, 3.0 & 4.0 software
Software version 5.0.0.507



Table of contents

1. Introduction	1
1.1. List of symbols.....	1
2. Startup	3
3. Home	4
3.1. Limitations to numbers of manifolds connected.....	6
3.2. Product information	7
3.3. Manifold screen	8
3.4. Sensor screen	11
3.5. Inlet/Outlet sensors.....	14
3.6. Plotting graphs	16
3.7. Downloading logged data	18
4. Settings.....	19
4.1. User login	20
4.2. Global settings.....	21
4.3. Data logging settings.....	24
4.4. Network settings.....	25
4.5. Manifold settings.....	26
4.6. Sensor settings.....	27
4.7. Pin settings.....	32



4.8. Configuration	33
5. Log	35
5.1. Audit log	35
6. On screen keyboard	38
7. Software updates	39
8. Troubleshooting	42
8.1. Download error	42
8.2. Upload error	43
8.3. Config not compatible	44
8.4. Login Error	45
8.5. Disconnected sensor	46
9. Known Issues	50

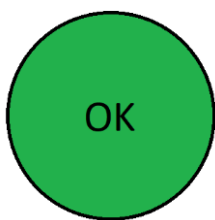
1. Introduction

This User guide serves as a reference for the operator of a Flosense 3.0 and 4.0 Manifold system. It describes configuration and operation of the Flosense software.

1.1. List of symbols

The following symbols can be found in the Flosense Software. In this section, their meaning will be described.

The Flosense software operates on a touchscreen display, so most of the symbols also function as buttons when pressed.



Normal operation
No Alarms or warnings



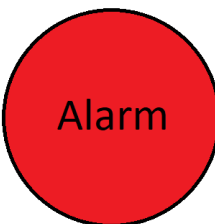
Information



Warning indicator



Settings



Alarm indicator



Return/Previous menu
/Back button



Home Screen



Exit menu



Previous page



Next page



Audit Settings



Configurations



Languages



Auto Alarm button/symbol



Display Graph / Graph
button



Download button



Scan for manifolds



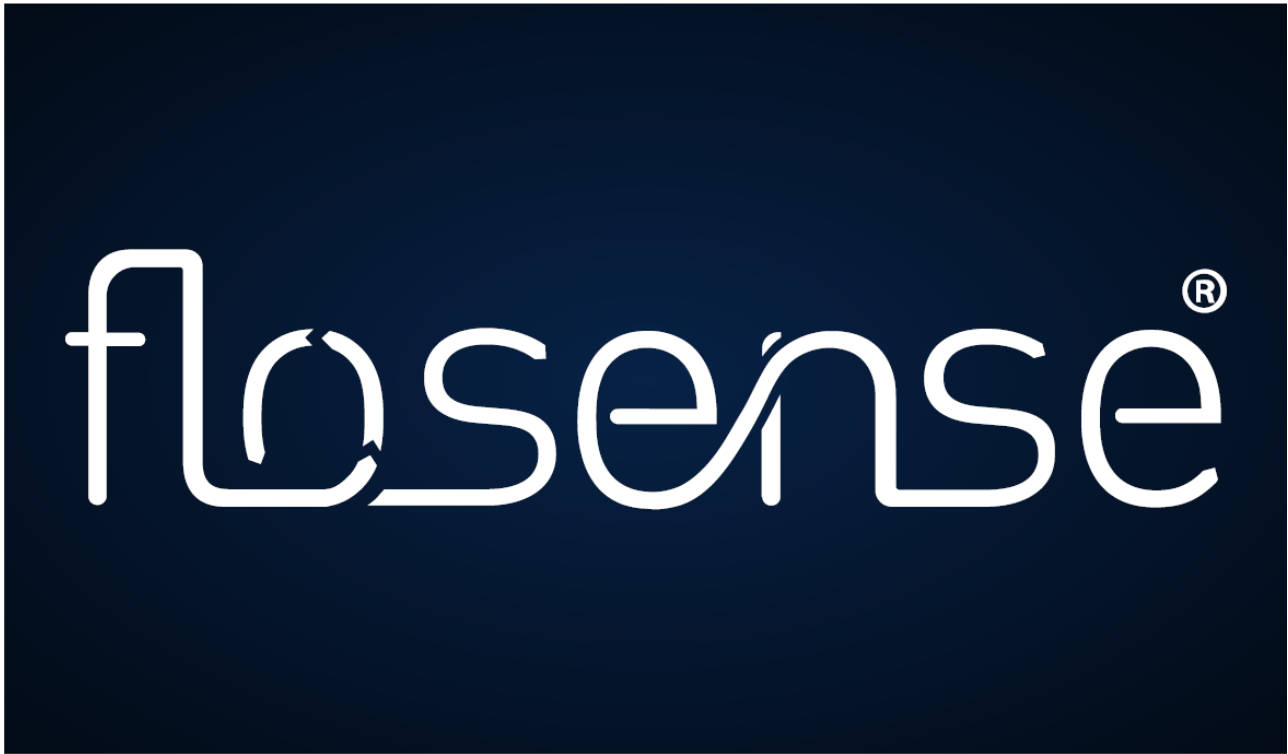
Screenshot button



Reboot button

2. Startup

The Flosense software starts up on the splash screen, shown below. Pressing anywhere on the touchscreen, or waiting for 5 seconds, continues to the home screen.



If it is your first time starting up the software, then the software automatically redirects you to the select language screen instead. After selecting a language, the software continues to the home screen.

3. Home

After startup, the Flosense software automatically displays the Home screen. This screen displays all the connected manifolds. The home page can show up to 4 manifolds at once, and the arrows in the top left and top right corner allows you to cycle to the next page of manifolds. Depending on which manifold sizes are used, it is currently possible to connect up to 8 manifolds. See section 3.1 for the exact restrictions.



The home screen displays the operating status for each of the manifolds. The status is indicated by the small coloured circle in the top right of each manifold. The status indicators are as follows:

Green	Normal operation
Orange	Warning indicator
Red	Alarm indicator
Grey	Manifold Disabled

If the manifold is operating within the specified limits, the indicator will light green. If anything

within the manifold does not operate within the specified limits, the indicator will either light orange or red, depending on the specified settings.

Additionally, the screen displays data as an indicator for the pressure loss [Bar], flow [lpm] (liters pr. minute) and temperature [°C] for each manifold. Additionally, the name of the manifold is displayed below the data.

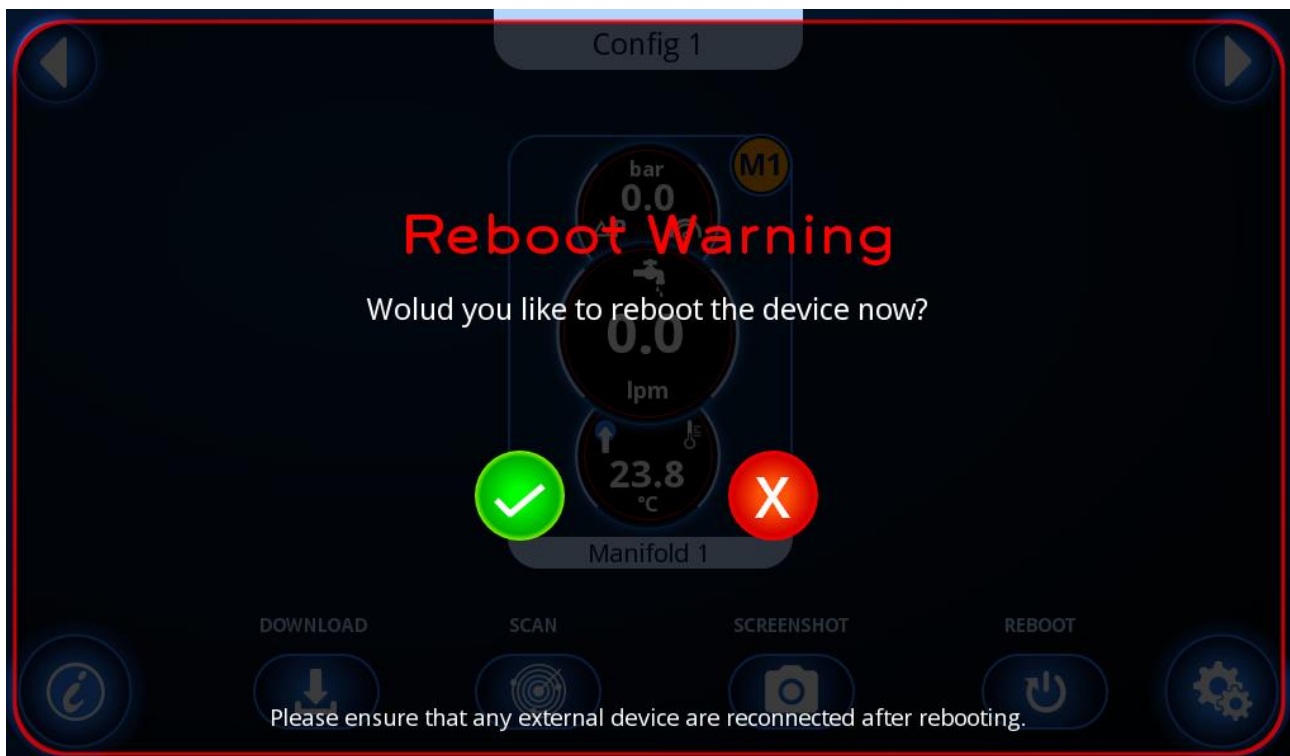
The manifolds can additionally be pressed anywhere in the box containing manifold information and data, to access the Manifold screen (Section 3.3). Below the manifolds, you have access to the product information button (Section 3.2) and the settings button (Section 4)

Additionally, you can press the download button to download all logged data (see section 3.7) to a USB.

You can also press the scan button to scan for manifolds, in case you have added, removed or switched manifolds around.

You can also press the screenshot button to download the current screen to a USB.

Finally you can press the reboot button, which will allow you to reboot the display after confirming the pop-up screen (image below)



3.1. Limitations to numbers of manifolds connected

The following rules are in effect for the number of sensors and manifolds which can be connected to the Flosense 4.0 system:

1. The Flosense 4.0 system can have a maximum of 60 sensors connected
2. The Flosense 4.0 system can have a maximum of 30 sensors connected in series
3. The Flosense 4.0 system can have a maximum of 8 manifolds connected
4. The Flosense 4.0 system can have a maximum of 4 manifolds connected in series.

The number of sensors for each Flosense manifold is described in the table below

	Flow sensors	Pressure sensors	Total sensors
4-Zones	4	3	7
6-Zones	6	3	9
8-Zones	8	3	11
10-Zones	10	3	13
12-Zones	12	3	15

This means that while it is possible to connect eight 4-zone manifolds, it is only possible to connect four 12-zone manifolds.

Using the total number of sensors in the table above, it is possible to determine if your system can be set up in the configuration you wish, by checking if the system is following all of the 4 rules above.

3.2. Product information

This screen shows information about the product and the display. Information such as product and display ID can be found, as well as firmware and software versions for both.



From this screen it is only possible to return to the previous screen, or enter the settings menu (Section 4). There is also a QR code which can be scanned for more help and information.

3.3. Manifold screen

After selecting a manifold from the home screen, information and data from all the sensors in the manifold is displayed



The manifold screen displays the operating status for each of the sensors within the manifold. Exactly like the manifold, the status is indicated by the small coloured circle in the top right of each sensor. The status indicators are as follows:

Green	Normal operation
Orange	Warning indicator
Red	Alarm indicator
Grey	Sensor Disabled

If the data measured by the sensors is within the specified limits, the indicator will light green. If the data is not within the specified limits, the indicator will either light orange or red, depending on the specified settings.

The manifold shows one sensor at the inlet and one at the outlet of the manifold, which measures the pressure at the inlet and outlet to determine the pressure difference, and it

measures the temperature at the inlet. These 2 sensors are paired together in a box at the bottom of the home screen (sensors S13 and S14 in the figure above). In this box, the total flow measured throughout the manifold is also displayed.

Additionally, the manifold contains between 4 and 12 flow and temperature sensors. These are placed in each channel, and measure the flow in the channel, and the temperature at the outlet of the channel.

The sensors can additionally be pressed, to access the sensor screen (Section 3.4). Below the sensors, you have access to the home button, the screenshot button and the settings button (Section 4)

3.3.1. Manifold missing data

In case some of the sensors are not supplying readings, the manifold screen will mark the sensors with a red x as the sensor number, and display dashes instead of measurements.



3.3.2. Disabled sensors

Sensors that have been deactivated will be displayed with a grey background. The disabled sensors will measure, log and display flow, pressure and temperature normally, but the alarm signal will be disabled, so the sensor will not trigger alarms.

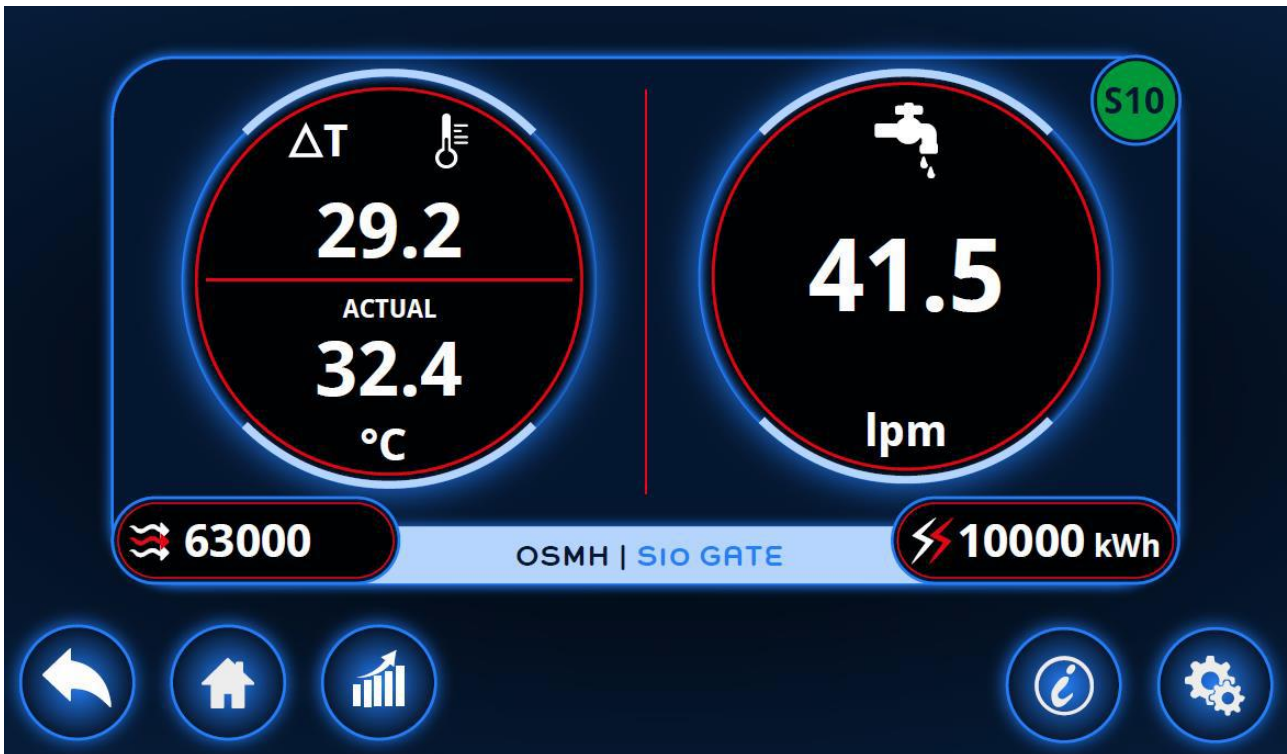


In addition, the flow of this sensor will not be deducted from the total flow of the manifold. This means that if all sensors in the manifold is disabled, the entire manifold will show a flow of 0, even if there is flow.

How to activate and deactivate sensors will be explained in section 4.6.

3.4. Sensor screen

After selecting a sensor from the manifold screen, the data returned from the sensor is displayed.



The data available is the temperature difference from the channel inlet and outlet (ΔT), the actual temperature at the channel outlet the flow measured in the channel outlet, the Reynolds number and the energy dissipated in the cooling circuit calculated for the channel.



Laminar Flow



Transitional Flow



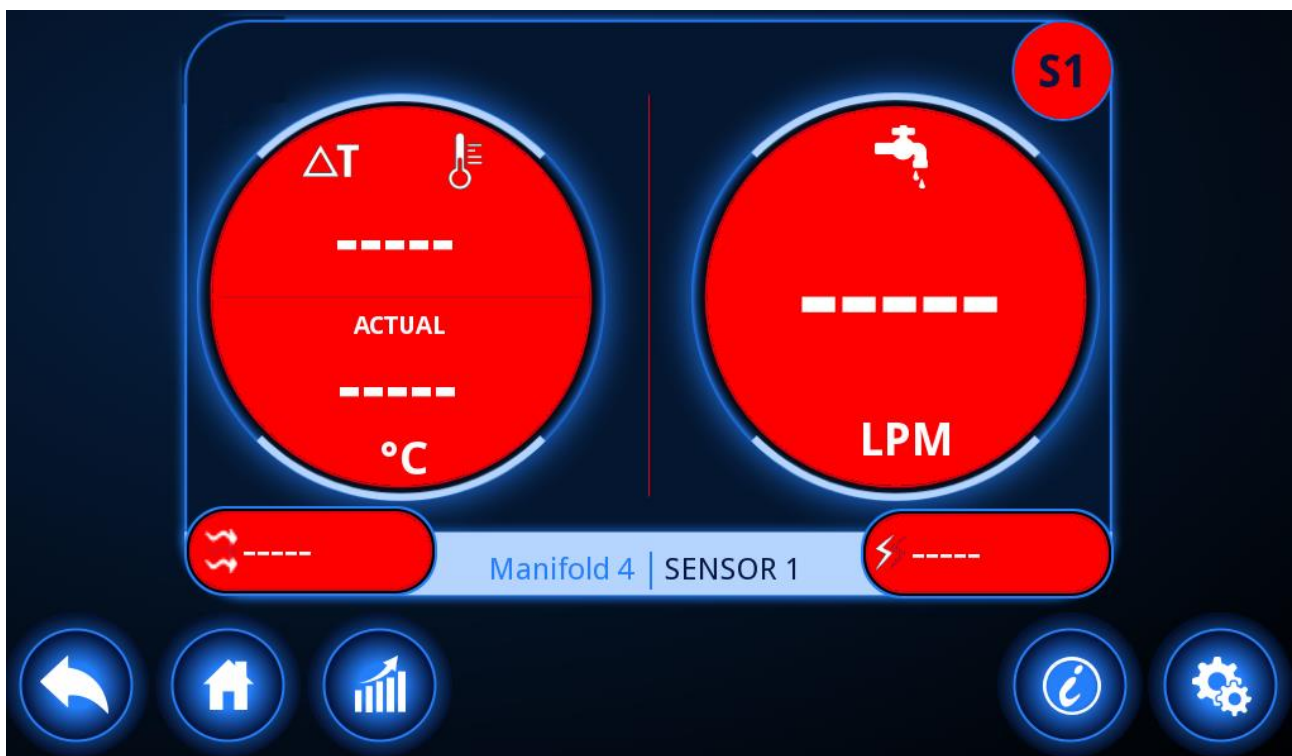
Turbulent Flow

Additionally, next to the Reynolds number, there will be a symbol, which indicates the type of flow in the channel.

From the sensor screen, it is possible to access the graphs screen (Section 3.6), the sensor information screen (Section 3.4.2) and the settings screen (Section 4)

3.4.1. Sensor missing data

If the selected channel is not returning data, then the sensor will be marked completely red, and display blank values



3.4.2. Sensor information

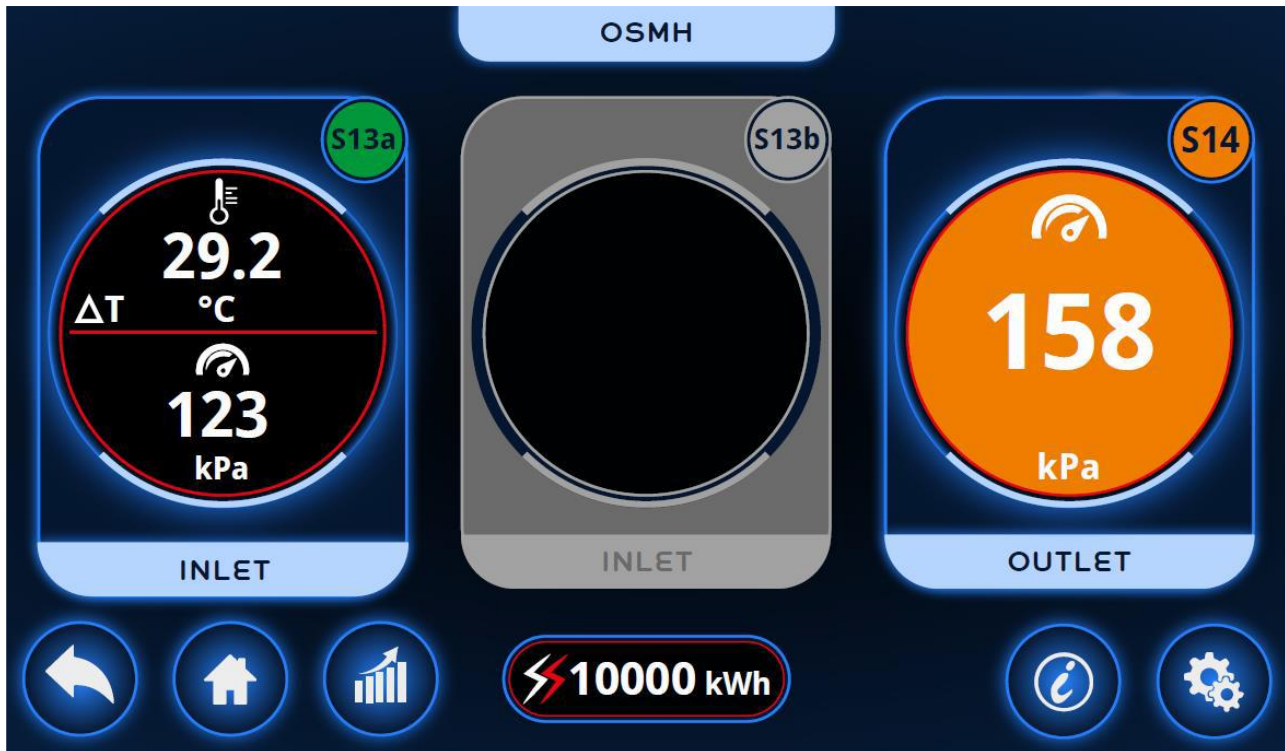
This screen shows information about the sensor. Here, the model number, the serial number, the flow range and the temperature range can be found



There is also a QR code which can be scanned for more help and information.

3.5. Inlet/Outlet sensors

After selecting the inlet/outlet sensor from the manifold screen, the data returned from the sensors is displayed.



The data available is the temperature difference from the manifold inlet and outlet (ΔT), the pressure at the inlet and outlet and the total energy dissipated calculated for all of the cooling circuits.

The figure above shows three possible sensors. This is because there are 2 pressure sensors on each side of the inlet. It is possible to select which sensor you wish to use (either S13a or S13b) in the Sensor settings menu, Layout (section 4.6.1).

From this screen, it is possible to access the graphs screen (Section 3.6), the inlet/outlet sensor information screen (Section 3.5.1) and the settings screen (Section 4)

3.5.1. Inlet/Outlet sensor information

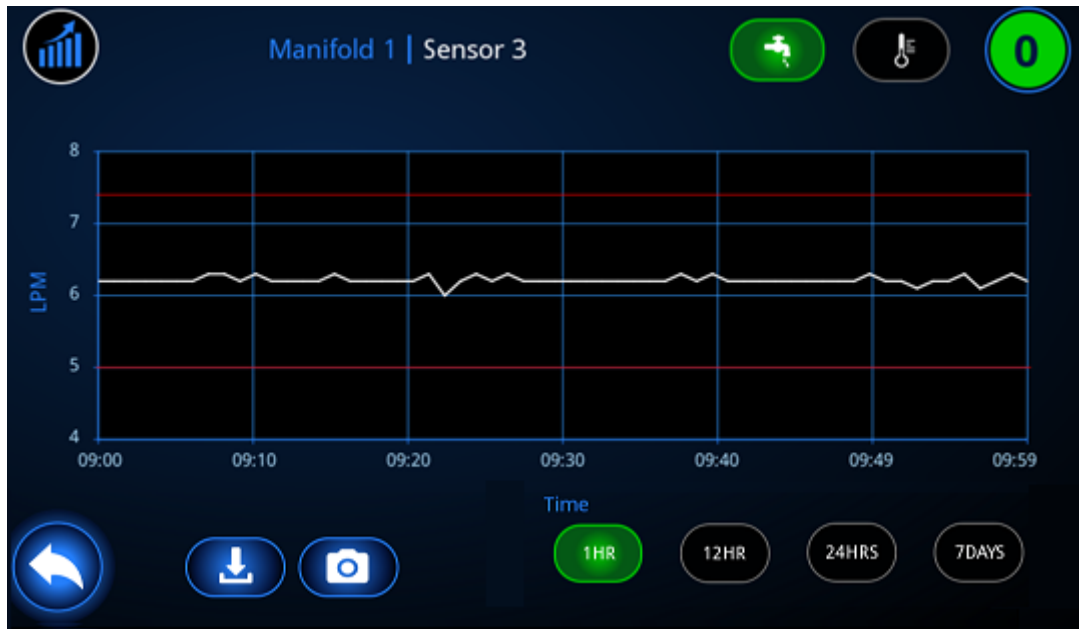
This screen shows information about the inlet and outlet sensor. Here, the model numbers, the serial numbers, the flow range and the temperature range can be found for each sensor.



There is also a barcode which can be scanned for more help and information.

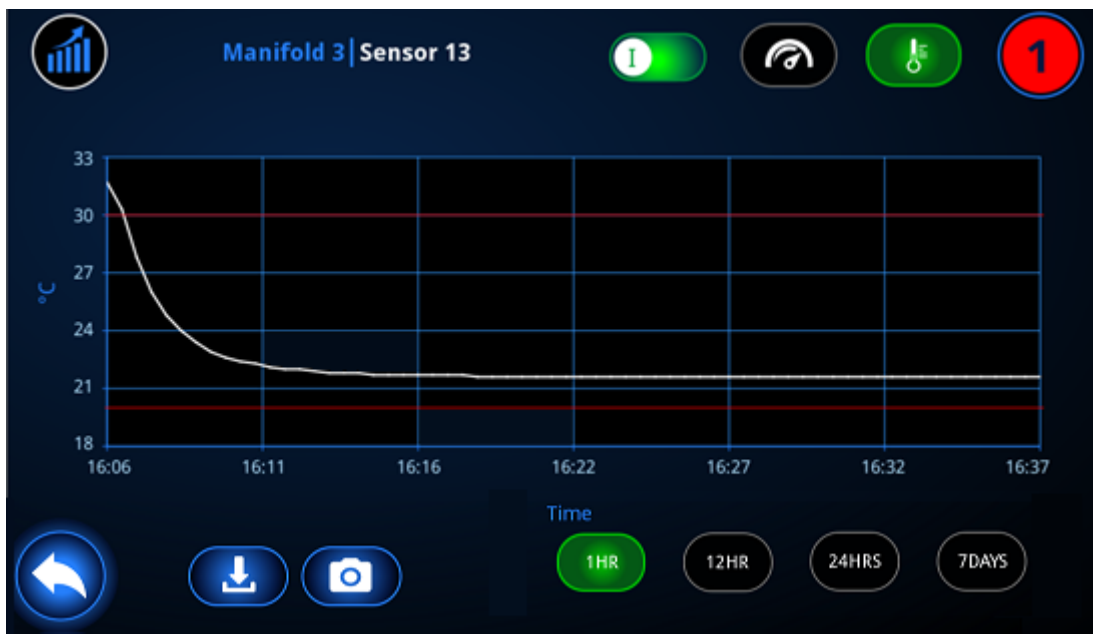
3.6. Plotting graphs

Once the plot graph screen has been selected, a graph will be displayed of the measured data.



(Above: Plotting flow for one of the flow sensors in the cooling channels

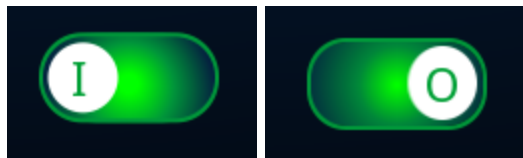
Below: Plotting temperature for one of the pressure sensors)



It is possible to select the parameters in the top right corner. The parameters will depend on the selected sensor, so they will either be flow and temperature (Top figure) or pressure and temperature (Bottom figure). By default, the flow or pressure will be selected, but if you exit the graph screen, your currently selected parameter will stay on the settings last used.

Additionally, it is possible to select the time period to observe, in the bottom right of the screen. Here it is possible to set the observed time to: 1 hour, 12 hours, 24 hours or 7 days. However, it is not possible to set the observable time a higher tier if the previous one has not been surpassed. This means that until an hour has passed, it is not possible to set it to 12 hours. The same thing applies for each of the next two tiers of observable time.

For the inlet and outlet pressure sensors, it is possible to cycle between the two sensors with the slider next to the download button. When the inlet is selected, the slider will show the letter I, and when the outlet is selected the slider will show the letter O.



The graph will be plotted as a white line, and alongside the plotted data, a horizontal red line will also be displayed, to show the alarm limits

From this screen, it is possible to return to the selected sensor, or to press the download data button. If the download data button is pressed, the current data log will be downloaded via the USB port, to the root level of the connected USB drive, and the data on the Flosense screen will be deleted afterwards.

You can also press the screenshot button to download the current page onto a USB

3.7. Downloading logged data

In order to download the logged data, you need to connect a USB drive with a mini-USB adapter to the Flosense display. Make sure that you do not have previously logged data on the USB drive, as downloading new data will overwrite the old data.



The logged data will be downloaded and saved as comma separated values (CSV-file), with commas as separators and dots as decimal separators. This means that you can import the data into any data processing software.

There is a separate guide for importing downloaded data into Microsoft Excel [here](#).

4. Settings

When entering the settings menu, the screen displays a similar state to the manifold menu.



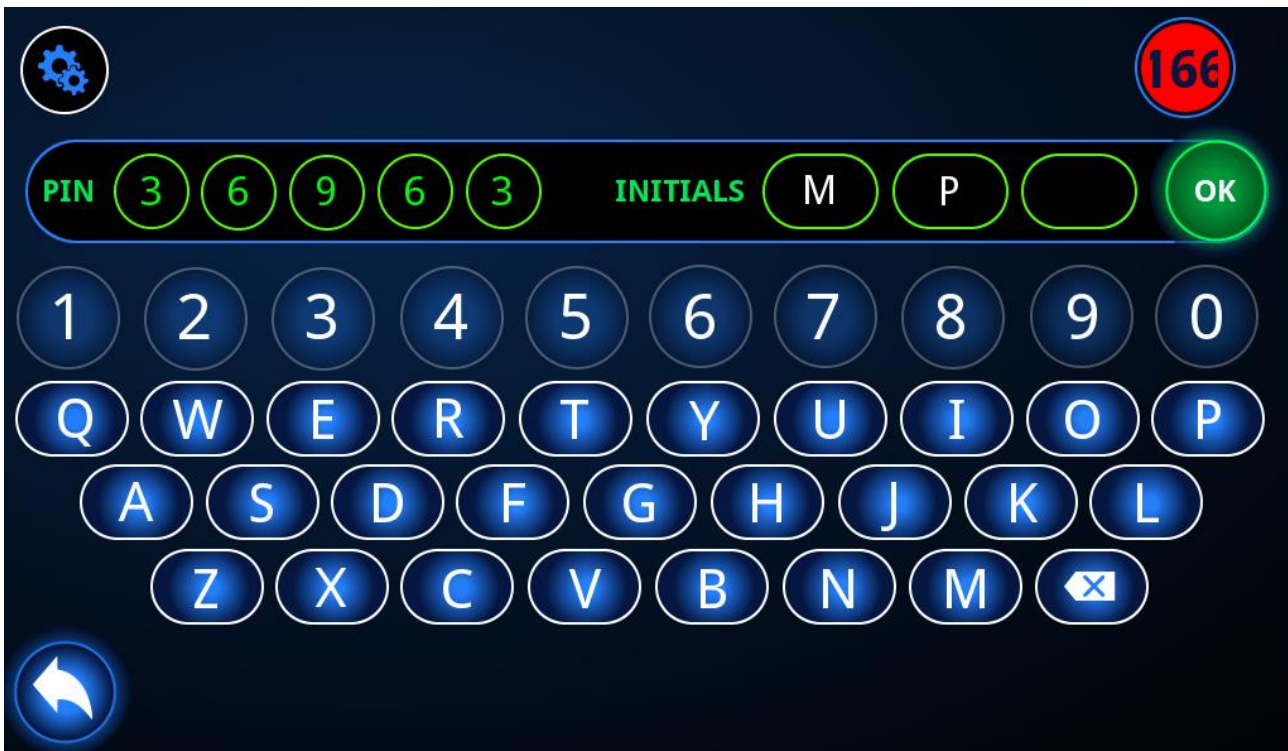
The settings menu is initially shown with a dark background. When pressing any option besides the home button, the screen will prompt the user to log in. Once the user has logged in, the background will turn blue, and it will be possible to access and change the settings.



From this menu it is possible to access the audit logs (Section 5.1), the configurations menu (Section 4.8) and the manifold settings (Section 4.5) which are accessed by selecting a manifold.

4.1. User login

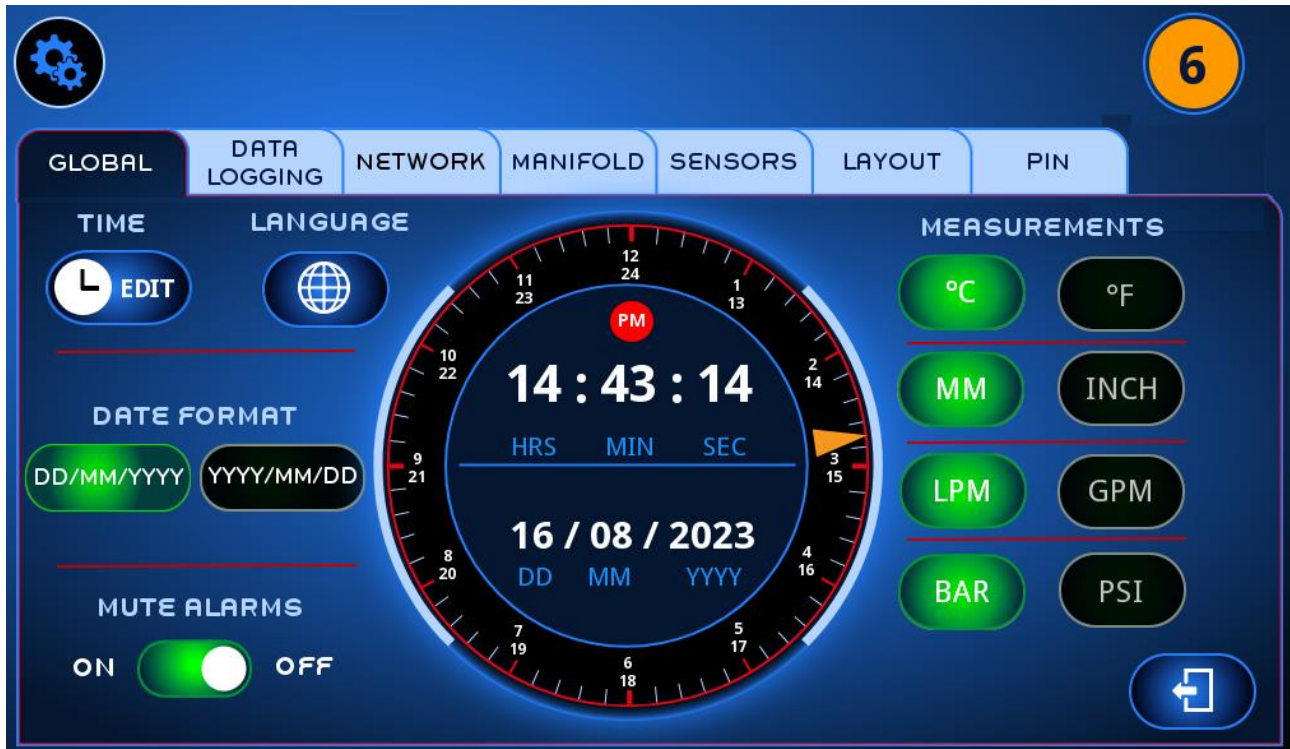
When prompted to log in, the user is required to enter a 5-digit PIN, and 1-3 initials. Any initials may be entered, but these will be displayed in the audit log, if the user makes any changes in the settings/configurations.



Each display has a single PIN, which enables anyone who knows the PIN to access and change the settings. It is possible to change the PIN, by entering the PIN-settings menu (Section 4.7)

4.2. Global settings

When pressing any manifold in the settings menu, the screen will display the global menu. At the top of the display, there are 7 tabs in total. The currently selected tab will be displayed in dark blue, while the rest of the available tabs will be displayed in light blue. Pressing any of the tabs gives access to the appropriate menu, from Data logging settings to PIN-settings (Sections 4.2.2-4.7)



From the global menu, it is possible to change the settings for the screen and all manifolds. To the right, it is possible to change the units of the measured data. For temperature, it is possible to choose between °C and °F. For flow it is possible to choose between liters or gallons pr. minute (LPM or GPM). For pressure it is possible to choose between kPa or Bar. For channel diameter it is possible to choose between mm and inches.

To the left it is possible to edit the time (section 4.2.2) and language settings (section 4.2.2) It is also possible to select the date between DD/MM/YYYY and YYYY/MM/DD

Finally it is possible to toggle the mute alarms option on and off. This option disables the alarm signal from the Flosense unit, but keeps all sensors and alarms enabled and visible.

4.2.1. Select language

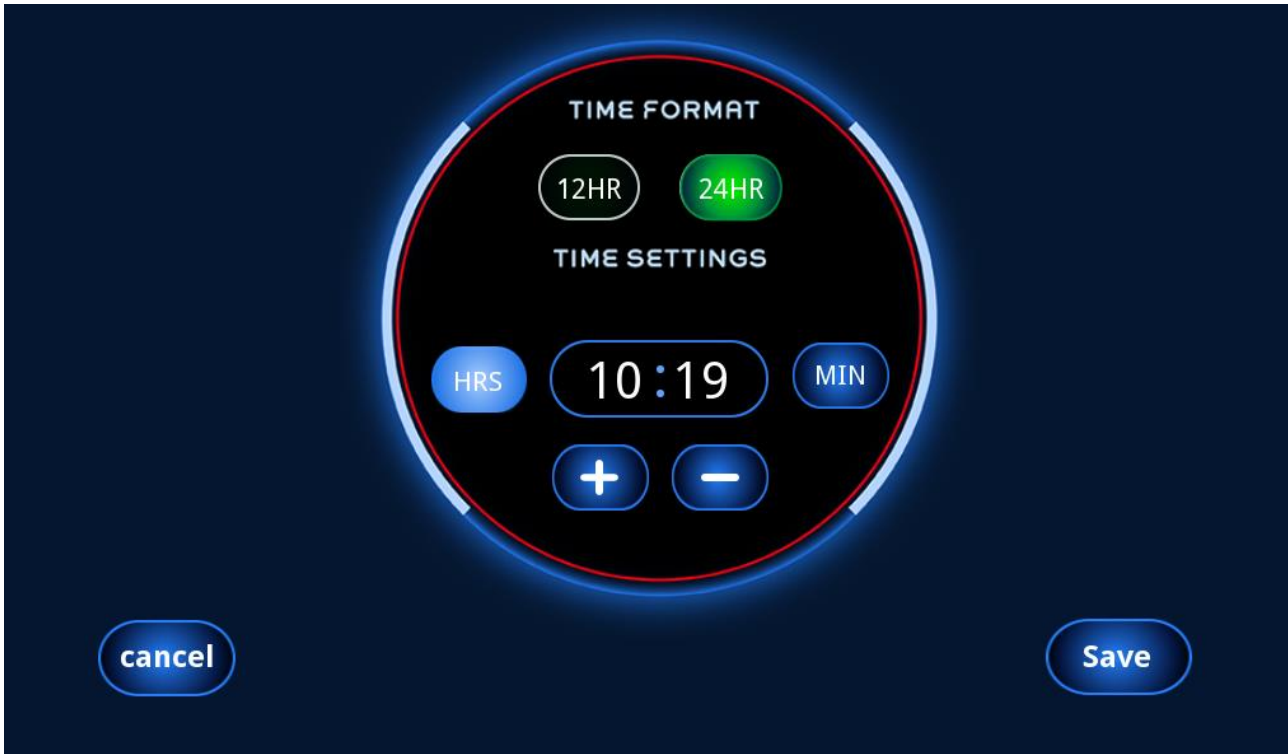
Whether accessed from the Global settings menu, or being redirected from the first time startup, the select language menu will display a list of the available languages for the software.



If more than 12 languages are available, the screen will display the left and right arrows at the bottom of the screen, and multiple pages with languages will be available. When selecting a language, the selected language is highlighted for 1 second, before returning the user to the previous menu, which will now be in the new selected language.

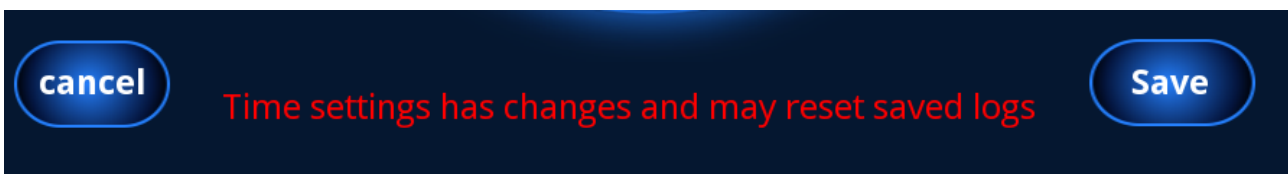
4.2.2. Time Settings

In the Time settings, it is possible to change the time format between a 12 hour and 24 hour format, and it is possible to adjust the internal clock to match local time.



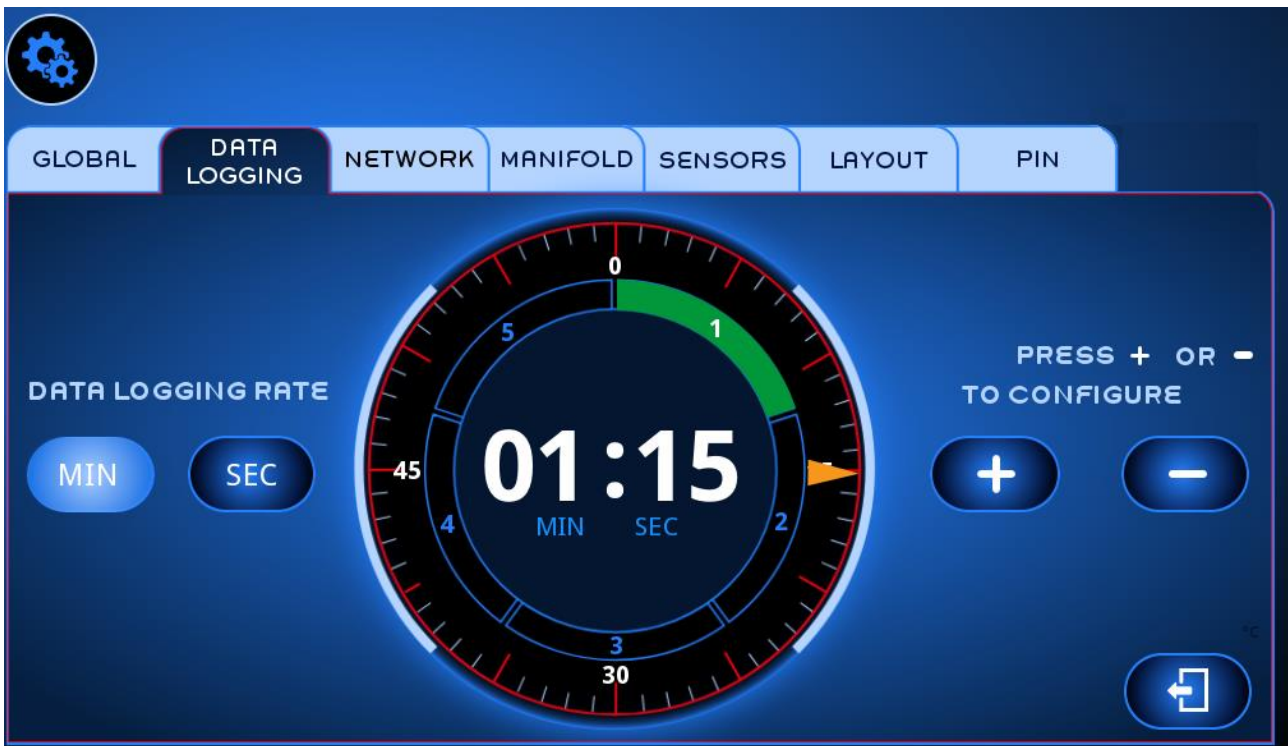
The middle shows the current time, and it is possible to toggle either the Hours button to the left or the minutes button to the right, before changing the time in increments of 1 with the + and – buttons below.

If you press the save button, you will save the time entered, and clear the internal memory of logged data. A message will appear to inform you of this.



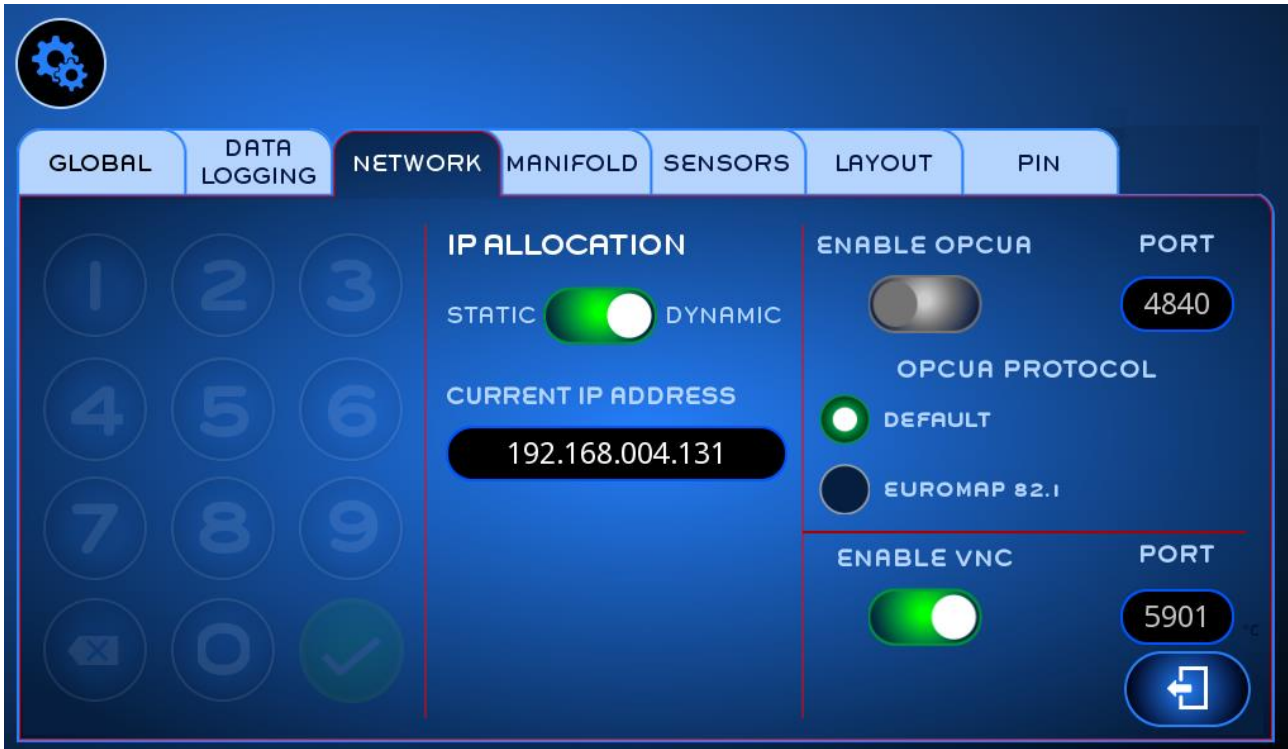
4.3. Data logging settings

Here it is possible to change the data logging rate. The Min and Sec buttons can be toggled, so the changes made in data logging rate will be in the toggled magnitude. It is possible to adjust the data logging rate to any value between 1 second, and 5 minutes and 59 seconds. The gauge in the middle displays the data logging rate visually, with each of the green bars lighting up for each minute added, as well as the dial moving clockwise for each second added. Additionally, the logging rate will be displayed in the center of the dial.



4.4. Network settings

In the network settings menu it is possible to set up the Flosense unit so you can connect to it through your network. The Flosense unit supports connection through VNC and OPC-UA.



It is possible to toggle OPC-UA and VNC on and off to the right, and the port for each of these settings can be edited as well.

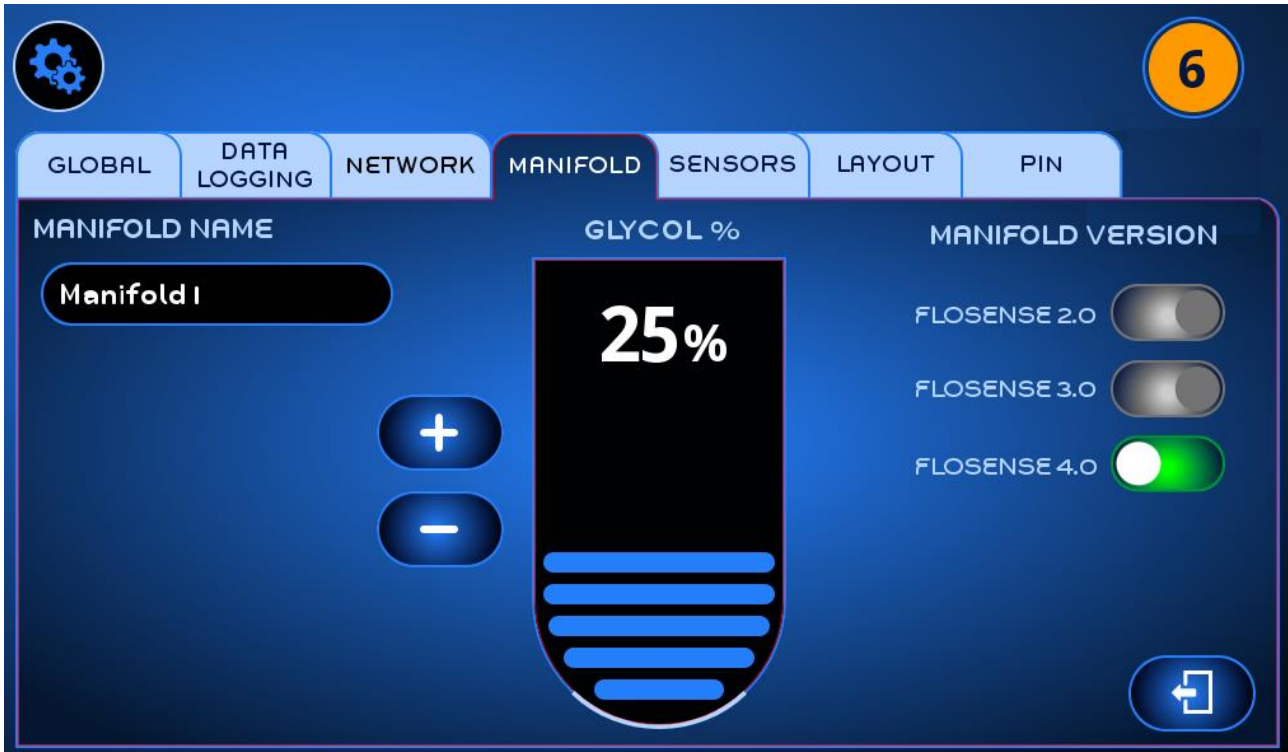
It is also possible to toggle between dynamic and static IP addresses for the unit. For a Dynamic IP address, you will need a router or server with DHCP to assign an IP address, and the IP address will be acquired on its own, after rebooting the Flosense unit. For a static IP address, you can set up the IP address, Subnet mask and Gateway on your own.

If you wish to set up a VNC connection, a guide is available on [here](#). There is a quick guide with simple steps or a full guide with more detailed explanation.

If you wish to set up an OPC-UA connection, contact sales@mouldpro.com for the protocol.

4.5. Manifold settings

When selecting the Manifold tab, it is possible to rename the manifold and to input the glycol level in the cooling water.



The glycol level can be adjusted in 5% increments from 0% to 50%. This will be visually represented by the bars filling up for every 5% added.

Finally, you can select the type of Flosense manifold the selected manifold is. Based on the selected type, the layout of the manifold changes and the sensor recognition changes as well.

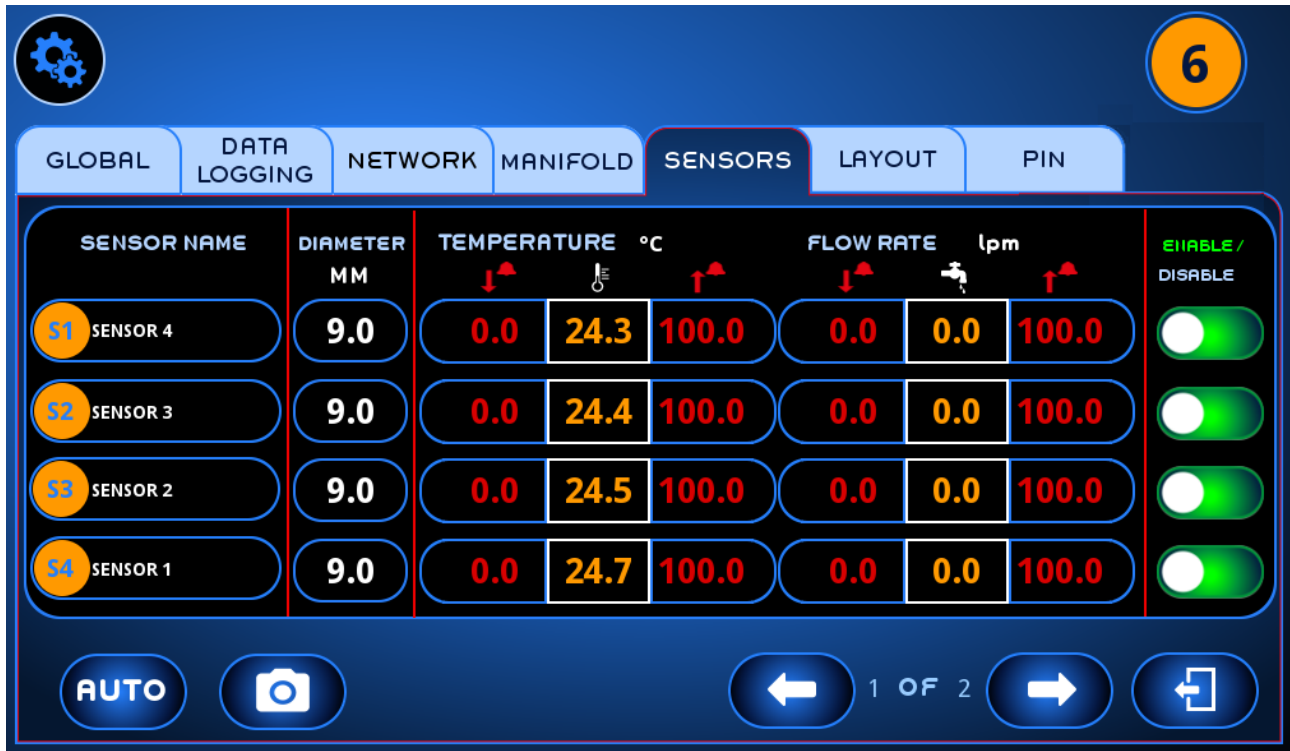
On boot-up, the Flosense device will automatically detect what type of manifold is connected, and select the correct setting. However, if you switch around manifolds and re-scan then the setting may be incorrect and you may need to change it manually.

NOTE:

On startup Flosense 3.0 manifolds will be recognized as Flosense 4.0, as the sensor layout is the exact same for both types of manifold.

4.6. Sensor settings

In the sensors menu it is possible to see the active sensors, name them, define the channel diameter for each channel, set the alarms for each sensor and to enable and disable each sensor.



The active sensors are shown with the sensor ID (S1-S12). The Sensor ID is coloured based on the alarm state if the sensor is enabled and grey if the sensor is disabled. So the colours mean:

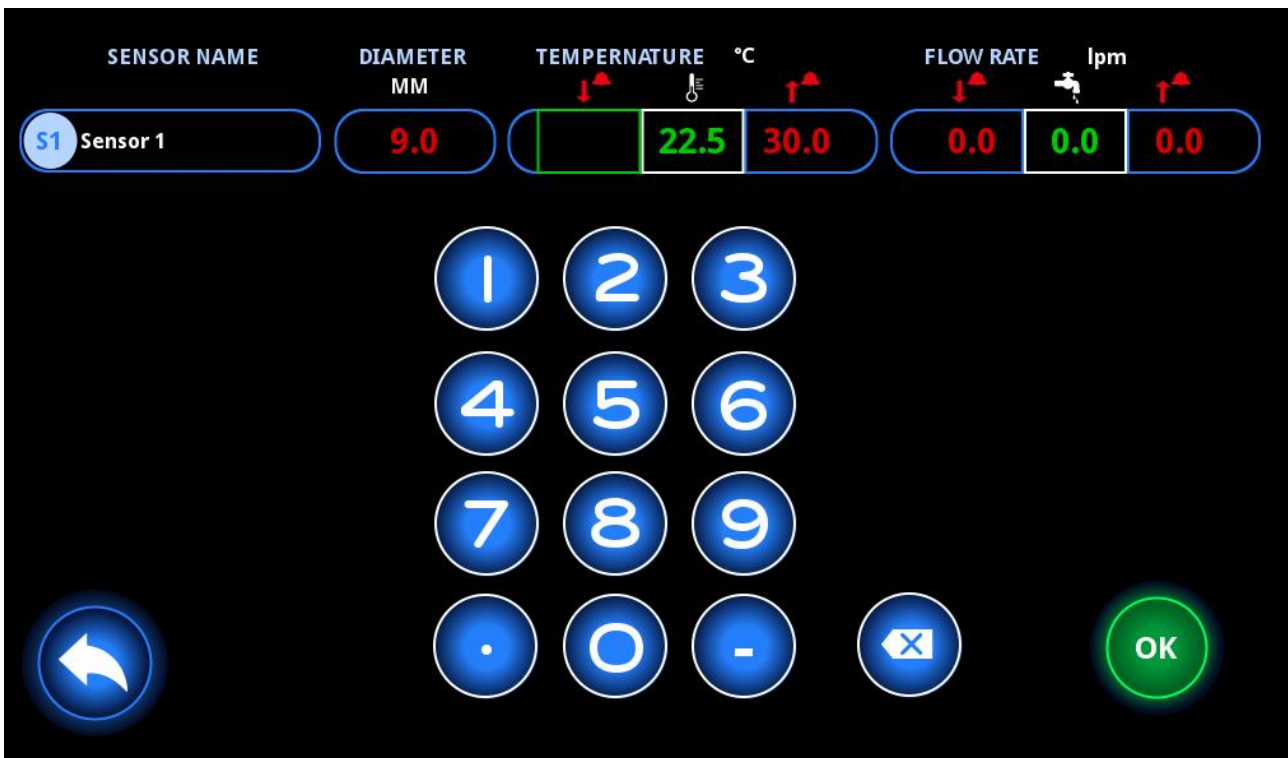
Green	Normal operation
Orange	Warning indicator
Red	Alarm indicator
Grey	Sensor Disabled

For alarm states, green is the “best” state and red is the “worst state”. The alarm state will not change immediately if the system goes into alarm or warning. In order for the system to change to a “worse” alarm state it will need to enter and stay within that alarm state for at least 5 seconds without entering a “better” alarm state. So if the system is on the edge and

keeps switching back and forth between the two states, the system will recognize it as being the "better" state.

The sensor name is next to the sensor ID and is by default named from Sensor 1 to Sensor 12 for the flow sensors and sensor 13 for the inlet pressure sensor and 14 for the outlet pressure sensor. By selecting a parameter on any sensor, the on-screen keyboard will be displayed, and the selected sensor can be edited.

It is possible to edit the name and the channel diameter of each channel, and it is possible to change the upper and lower alarm limit for the following parameters: Temperature, Flow rate and Pressure.



The selected value will be indicated by a green square and the currently entered value will be hidden. If you elect to not change the selected parameter, the hidden value will be shown as soon as you return or select a different parameter. It is also possible to see the current temperature, flow or pressure for the selected sensor.

It is possible to change multiple settings at the same time, and pressing the OK button will save all changes made, while pressing the return button will discard any changes made.

Additionally, the sensors can be enabled or disabled, by toggling the slider to the right. Enabling a sensor means that the sensor is allowed to activate alarms throughout the software, and that its flow measurements will be included in the total flow of the manifold. Disabling a sensor will disable its ability to toggle alarms and will exclude its flow measurements from the total flow of the manifold. By default, all detected sensors are automatically enabled and can only be disabled manually by a user.

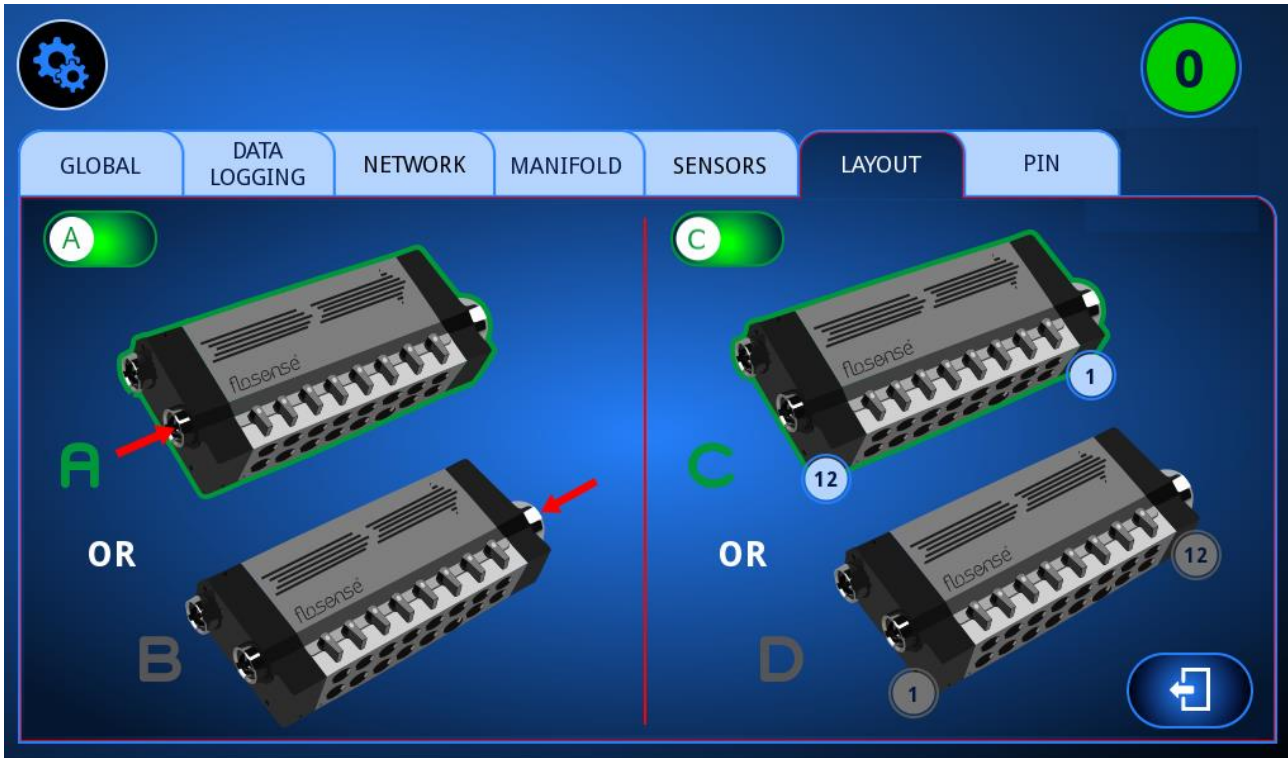
Next, pressing the AUTO-alarm button, will automatically set the alarms of all enabled sensors to +/-20% of the currently measured value of each sensor. Any disabled sensors will stay disabled and will not have their alarm value changed.

Finally, this page also has access to the screenshot button, which will download the current page onto a USB.

A basic explanation of the alarm wire layout is described in section 8.

4.6.1. Layout

In the layout menu, it is possible to choose the position of the used inlet sensor, and to choose the numbering order of the cooling channels.



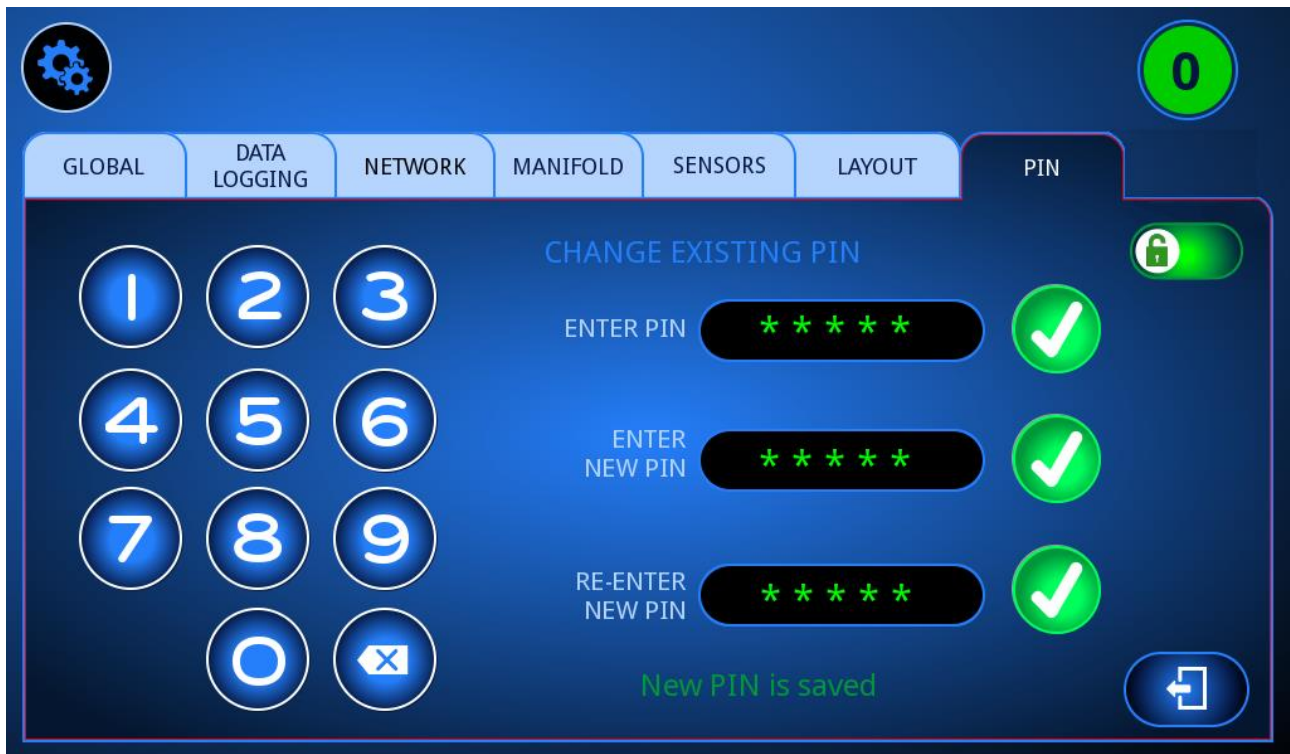
On the left side it is possible to select which side of the manifold the inlet sensor is located at. This needs to be defined, as the manifold contains one outlet sensor, and two inlet sensors, one sensor on each side of the inlet. Selecting the sensor on the side connected to the water supply allows the software to select which inlet sensor to use for measurements. On the right side it is possible to select the numbering direction of the cooling channels.

4.7. Pin settings

The Pin settings menu can only be used to change the pin used to access the settings menu.

To the left, you will see a numpad. Pressing the buttons will enter the pin as asterisks in the top bar. If the correct 5-digit pin is entered, the pin will turn green, and a green checkmark will be added in the circle to the right of the bar. It is also possible to delete the last digit with the delete button.

The default PIN is: **36963**



Afterwards, you can use the numpad to enter the new 5-digit pin. Once it has been entered, you will have to re-enter the new 5-digit pin below. If the two pins match, all three circles to the right will turn green and the text “New Pin Saved” will be displayed.

At any point, the user may press the exit button, and it will keep the currently saved pin, and clear all fields in the menu.

Additionally, in the right side of the settings, there is a lock slider. This can be used to enable and disable the use of a pin on the device.

Once enabled, whenever the user enters the settings it will skip asking for a pin, until the pin is enabled again. When it is re-enabled, the previously used pin will be in effect again.

4.8. Configuration

If the configuration menu is selected from the settings menu, a list of configurations will be displayed. A configuration contains the all the settings from the manifold to the alarm tabs



Up to 21 configurations can be saved, and they will be indicated by their ID to the left, and a customizable name in the bar next to the ID. The currently activated configuration will be highlighted by a green outline. If no configuration is activated, the configuration used will be

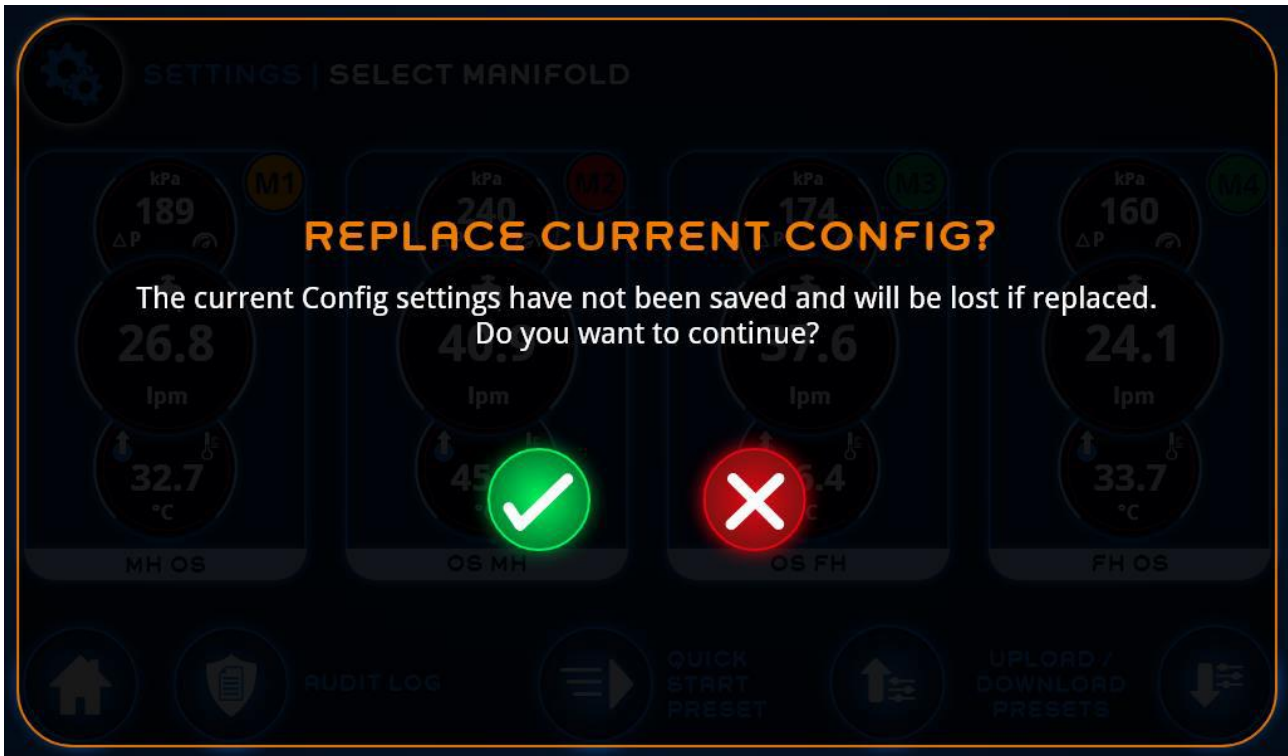
the default configuration, which cannot be deleted or edited. Pressing any configuration will select it and highlight it with an orange outline. In order to activate the selected config, you need to press the checkmark in the bottom right of the screen. Pressing the star icon will return the configurations to the default configuration.

Unused configurations slots will be greyed out. It is possible to add new configurations. It is also possible to save a new configuration, and currently the upload button also functions as the save/overwrite current configuration button.

Next to the star icon is the download and upload button. Pressing the download button will download all the saved configurations from the software to a connected USB. A USB can be connected to the mini USB port at the bottom of the screen by using the provided adapter. This is useful if you have set up the software for a specific system, and you wish to save it for future use. Pressing the upload button will upload all saved configurations from a connected USB to the software. This is useful if you have previously saved a configuration you wish to use again, or if you wish to change the configuration on a second system to be the same as the previously set up system, or if you wish to use the configuration on another moulding machine fitted with Flosense.

If you attempt to upload or download a set of configurations without a connected USB, you will either get a download error (Section 9.1) or upload error (Section 9.2)

If you attempt to activate a new configuration without saving the current configuration, a warning message will be displayed, to confirm if you wish to change configurations.



If you attempt to activate a configuration which does not match the current settings, either because of a differing number of manifold or sensors, you will get a config not compatible error (Section 9.3).

5. Log

From the settings menu, it is possible to access the audit log after logging in. The audit log contains information regarding any changes made to the system. The information displayed in the audit log cannot be edited or deleted once they are entered in the log.

5.1. Audit log

The audit log is separated into 6 columns. The columns display the date & time of the event, the initials of the user who made the changes, the type of event (Section 5.1.1), the designation of the manifold in which the event occurred, the designation of the sensor where the event occurred and type of alarm triggered due to the event. The colour of the alarm indicates whether it was a warning (**orange**) or a full alarm (**red**). If the field is blank it indicates no alarm.



The screenshot shows a dark blue interface with a top navigation bar. On the left is a shield icon, and on the right is a red circle with the number '166'. Below this is a table with columns: DATE | TIME, USER, EVENT TYPE, MANIFOLD, SENSORS, and ALARMS. The table contains seven rows of event data. At the bottom, there are navigation buttons: a back arrow, up and down arrows, a download icon, and a refresh icon. To the right of these buttons, it says '1 OF 2'. A vertical blue sidebar on the right side of the table indicates the current page position.

DATE TIME	USER	EVENT TYPE	MANIFOLD	SENSORS	ALARMS
07/10/2020 15:47:02	MP	Saved Configuration 4 Used			
07/10/2020 15:45:30	MP	Saved Configuration 4 Used			
07/10/2020 15:45:27	MP	Saved Configuration 3 Used			
07/10/2020 15:41:43	MP	Auto-set Alarms Function Used	Manifold 3	ALL	
07/10/2020 15:41:25	MP	Auto-set Alarms Function Used	Manifold 3	ALL	
07/10/2020 15:35:04	M	Change to Logging Rate 130	ALL	ALL	
06/10/2020 09:05:12	M	Change to High Flow Alarm Settings	Manifold 1	SENSOR 1	

The audit log displays up to 7 entries at a time. However, there can be multiple pages, which can be scrolled through with the up and down arrow at the bottom of the screen. The page number and total number of pages can be seen to the right below the last entry displayed, and there is a sidebar to the right of the entries, which displays visually how far up or down the user is in the list of pages of the audit log.

It is also possible to download the contents of the audit log to a connected USB drive, by pressing the download button.

All events are listed in the table below

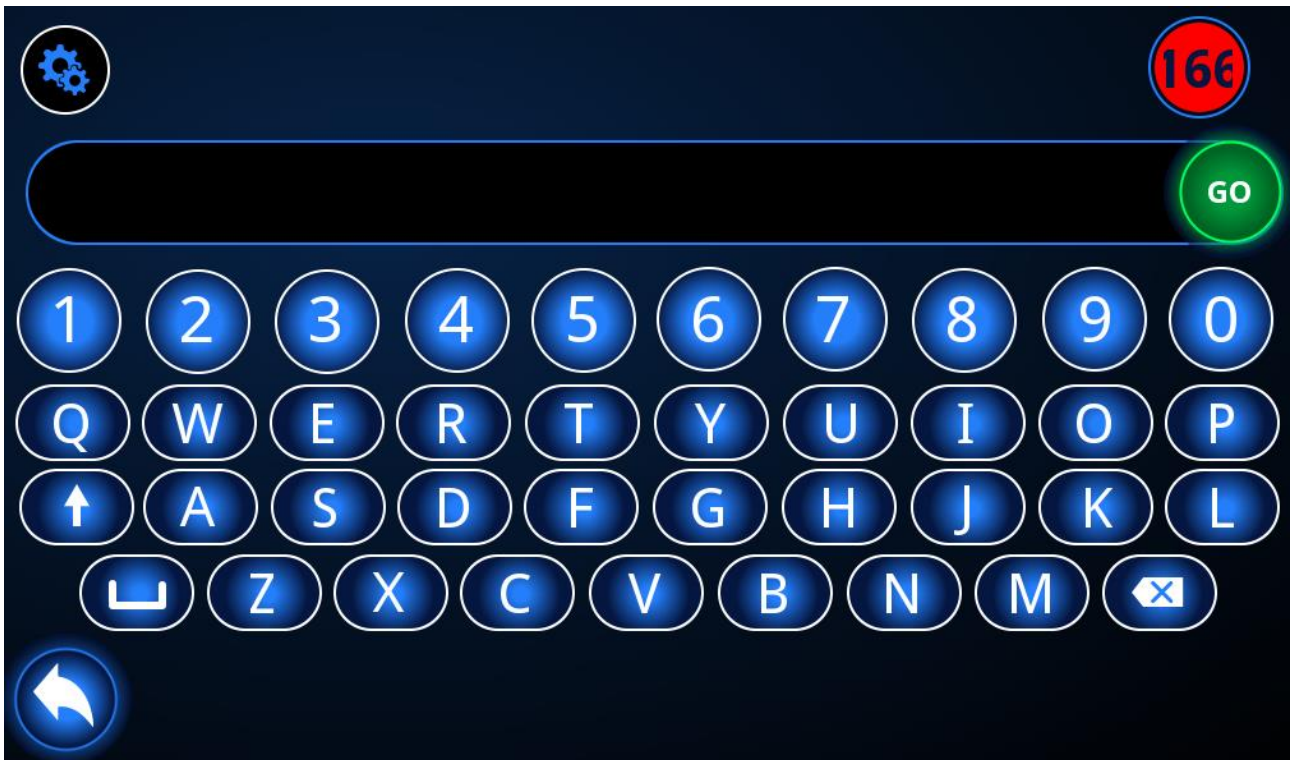
5.1.1. Event types

Here, all of the possible event types will be listed, alongside an explanation

Event type	Description
Change to High/Low temperature alarm settings	A change to the temperature alarm limits has been made.
Change to High/Low flow alarm settings	A change to the flow alarm limits has been made.
Change to High/Low pressure alarm settings	A change to the pressure alarm limits has been made.
Auto-set alarm function used	The auto-set alarm function is activated.
Saved configurations used	A saved configuration is activated as currently used configuration.
Default configuration used	The default configuration is activated as currently used configuration.
Change to manifold names	The designation of a manifold has been changed. The new manifold name will be displayed in the Manifold column.
Change to sensor names	The designation of a sensor has been changed. The new sensor name will be displayed in the sensor column.
Change to measurement parameters	One or more of the measurement parameters in the Global settings tab have been changed, e.g. °C to °F or psi to Bar.
Change to logging rate	The logging rate has been changed in the Global settings tab.
Sensor switched on or off	A sensor has been activated or deactivated.
Sensor out of range	A sensor reached a temperature, pressure or flow outside of the alarm range
Reverse order function used	The reverse order function in section 4.6.1 has been used, to change the order of sensors, either from C to D or D to C.

6. On screen keyboard

The on screen keyboard has been designed to be easy to use. It is used whenever it is necessary to enter characters into the Flosense software.



When using the keyboard to enter characters, it is not possible to select the space in which you wish to write. If you wish to move to an earlier entered space, you will have to use the delete key to move back.

Once you finish writing, pressing go will enter the written characters into the selected field. If you press go without having entered any characters, no changes will be made in the selected field.

7. Software updates

The flosense software is updated by using a USB drive. Updating the software is done as follows:

Please note that **step 4** (which is marked in **BOLD**) is only relevant after software version 5.0.0.495. Any software versions older than this will automatically start the update without a prompt.

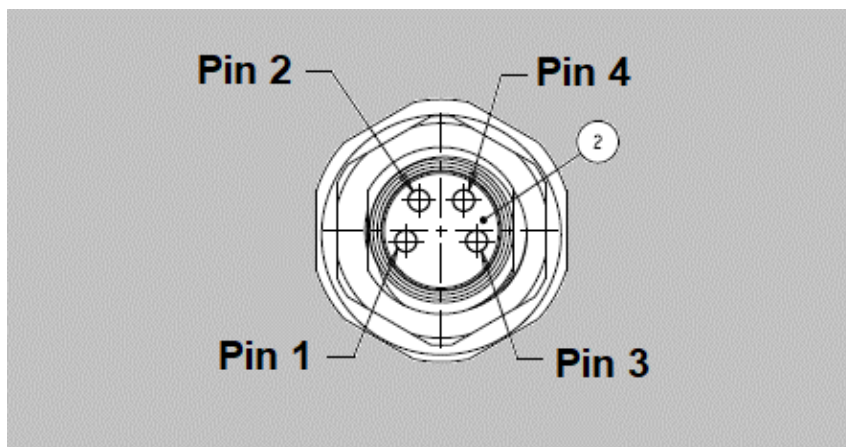
1. Unzip and copy the software update file (update.tar.gz) onto an empty USB drive.
2. Safely remove the USB drive.
3. Insert the USB drive into the micro-USB port using a USB to micro-USB adapter.
4. **Once the USB has been entered, the display will become unresponsive for a few moments, after which a window will pop up asking you to confirm if you would like to update the software. Confirm if you would like to proceed with the software update.**
5. The software update will start automatically, but the screen will become unresponsive until the update starts. You will know that the update has started once the software starts rebooting.
6. Once the screen has rebooted the software will automatically update. A loading bar will appear to indicate the progress of the update. Once the update is finished, the software will automatically launch into the home screen
7. When the update is completed, remove the USB drive from the micro-USB port. For future use, please remove the software update file from the USB

8. Alarm connection layout

When connecting the Flosense to your alarm system, you need to use the M8 connector with 4 pins on the Flosense display. When connected, the system has two potential free relays. This means that when the alarm or warning is triggered in the Flosense system, the relays will open for signals to be transmitted in and out of the Flosense system.

The Flosense systems Alarm output does not have any power and will not send the signal by itself, so a voltage needs to be provided with a separate power supply in order for the Flosense to send a signal to your alarm system.

The figures below show the pin-out.



If you use the standard FS-AC5000 cable, the appropriate wire for the pins can be recognised by the insulation colour:

Pin 1 is blue, Pin 2 is black, Pin 3 is brown and Pin 4 is white

This creates two relays, one for the **warning** signal and one for the **full alarm** signal, which based on the insulation colour would be:

Warning = Blue + Black

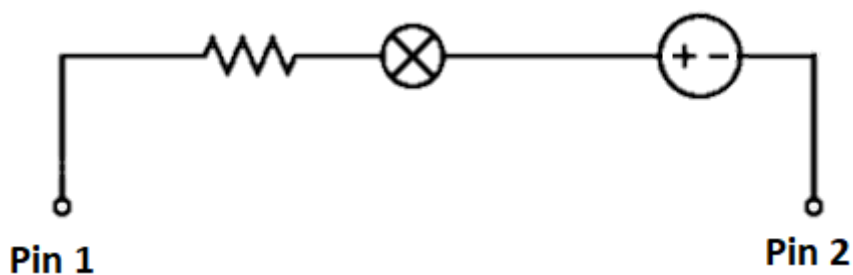
Alarm = Brown + White

When connecting the relays to an alarm indicator, whether it is a signal light, horn or any different device, make sure to check that the electrical properties of the power supply are appropriate for the signal, and use appropriate resistors if necessary to protect your equipment

We recommend a basic layout as shown below. The example contains a resistor, a light and a DC power supply in the same circuit as the FS-7100, connected to the two appropriate alarm/warning pins.

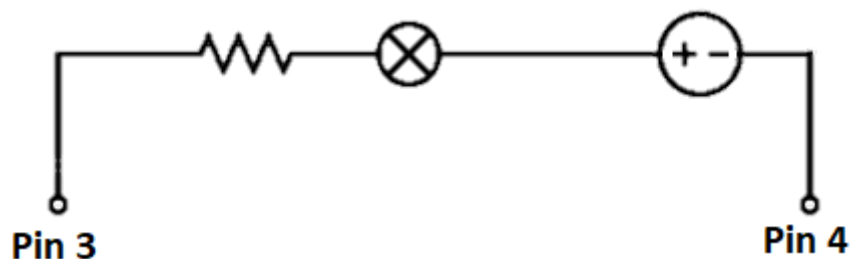
Warning circuit

Relay 1 is Pins 1 and 2, which send a signal when the Flosense system reaches a warning state (**Amber**).



Alarm circuit

Relay 2 is Pins 3 and 4, which send a signal when the Flosense system reaches a full alarm state (**Red**).

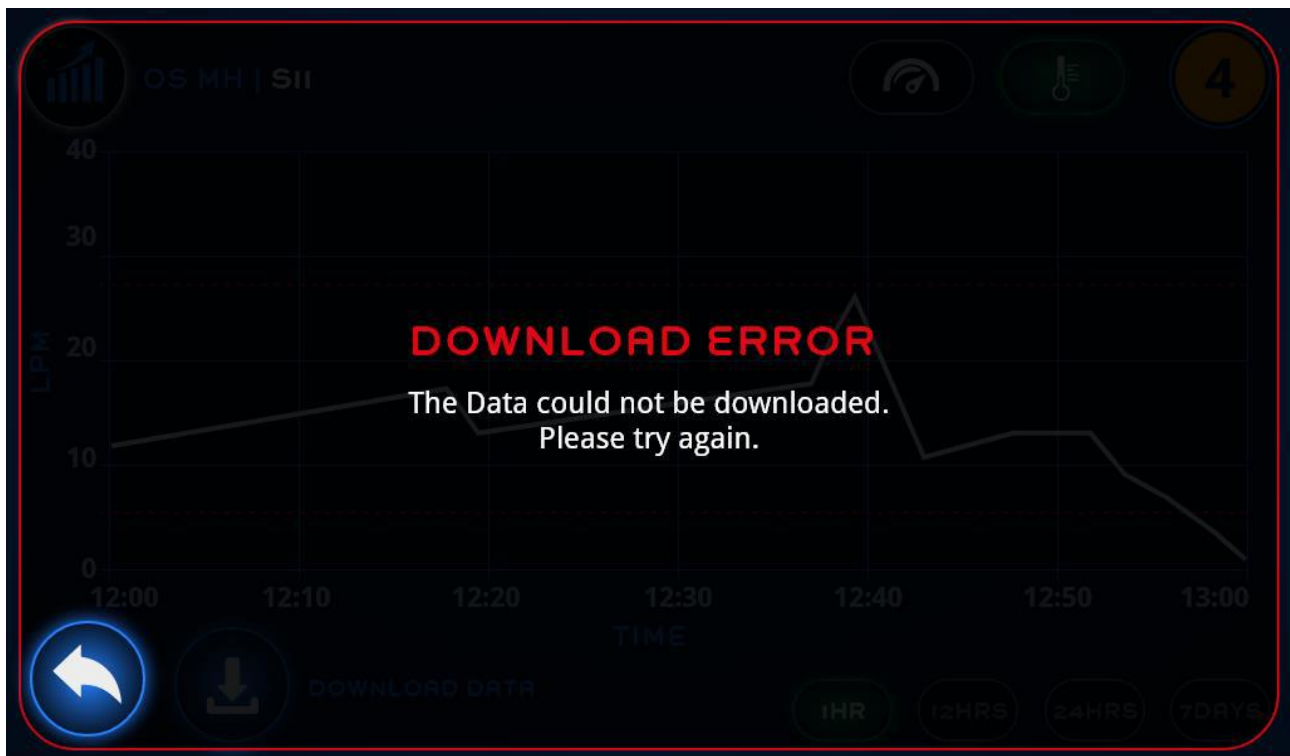


9. Troubleshooting

This section covers common errors or issues, that may occur during the use of the software.

9.1. Download error

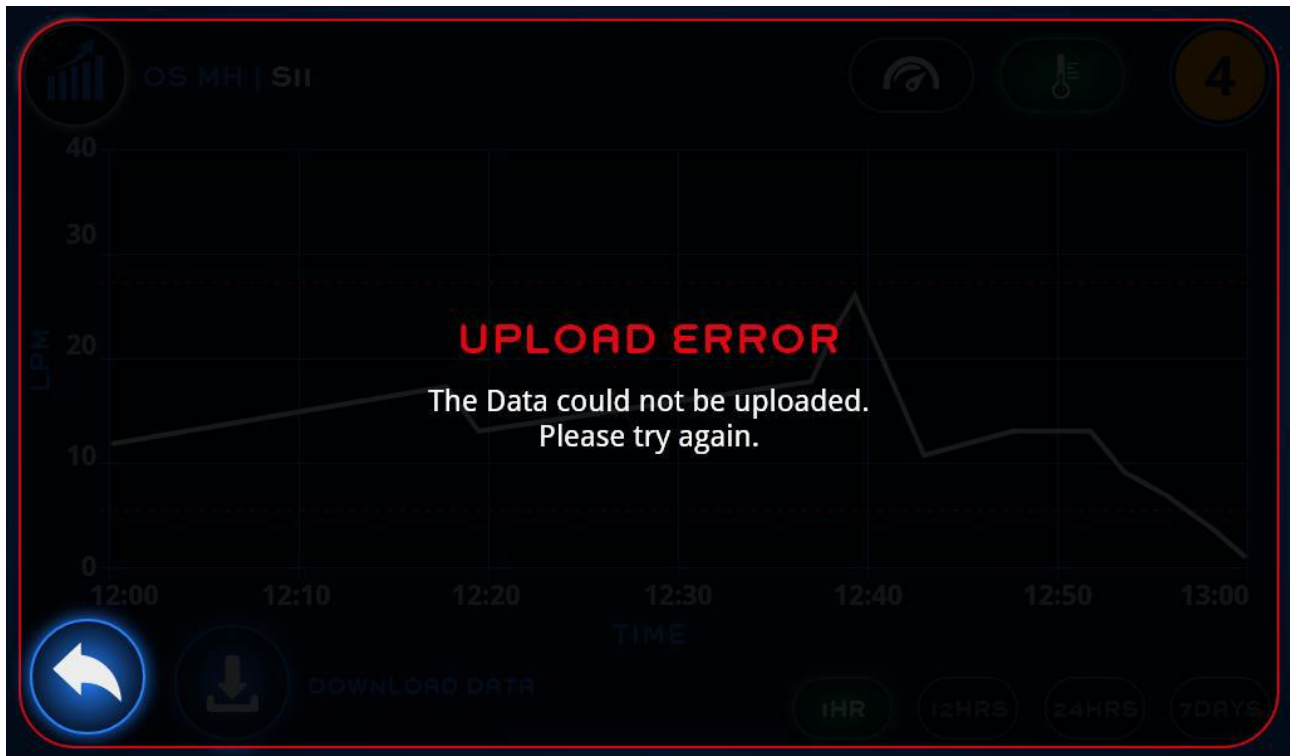
This error occurs when an attempt to download data is made, and the software is unable to do so.



This error can be seen in the plot graph screen (Section 3.6) if the log file cannot be downloaded. It can also occur if a set of configurations (Section 4.8) cannot be downloaded. This is most commonly the case if no USB drive is plugged in. Try connecting a USB drive to the micro-USB port by using a USB to micro-USB adaptor.

9.2. Upload error

This error occurs when an attempt to download data is made, and the software is unable to do so.



This error can be seen if a set of configurations (Section 4.8) cannot be uploaded. This is most commonly the case if no USB drive is plugged in. Try connecting a USB drive to the micro-USB port by using a USB to micro-USB adaptor.

9.3. Config not compatible

If you attempt to activate a configuration which does not match the current settings, you will get a config not compatible error.

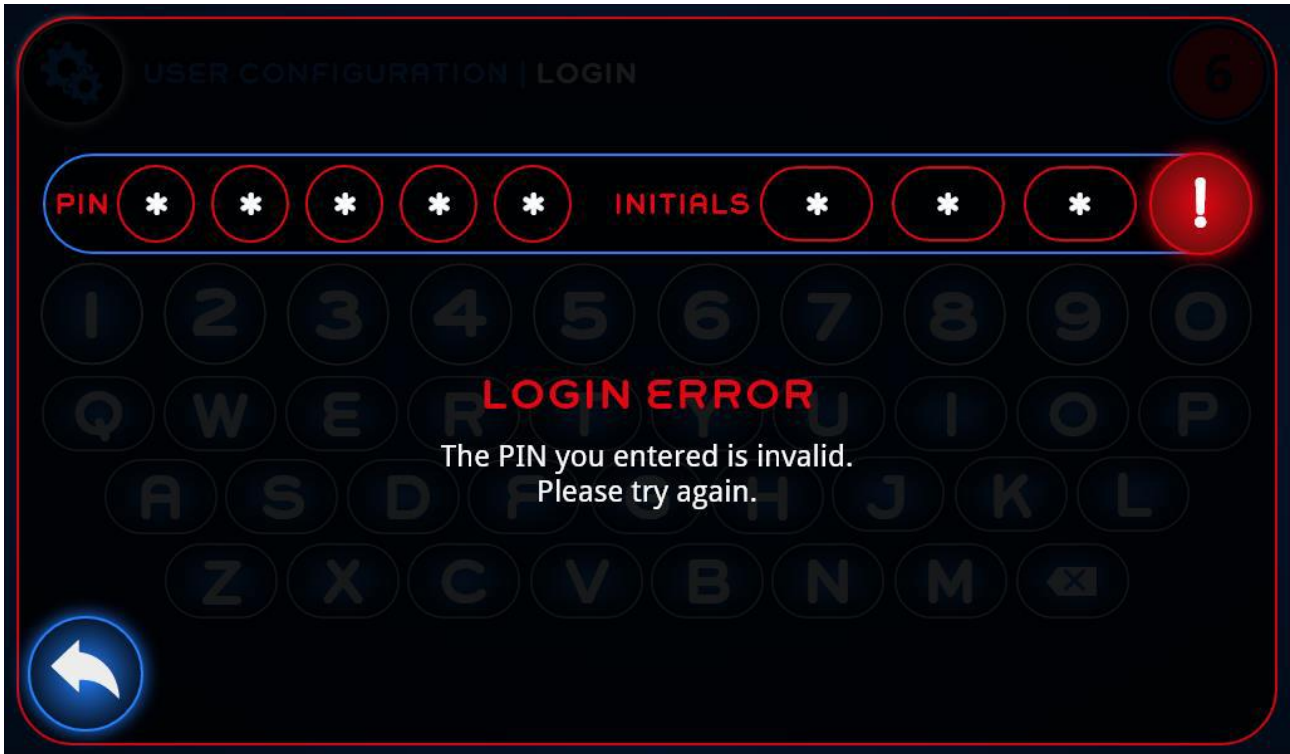


This is the case either because the number of manifold or sensors currently registered does not match the number of manifold or sensors saved in the configuration. If you wish to use this configuration, you need to connect the appropriate manifold and sensors before you can activate the configuration.

If you have the correct number of manifold and sensors connected, you may need to perform a scan on the Home page (Section 3) before attempting to activate the configuration again.

9.4. Login Error

This error occurs when an invalid pin has been entered. If the correct pin is entered, this error should not appear.

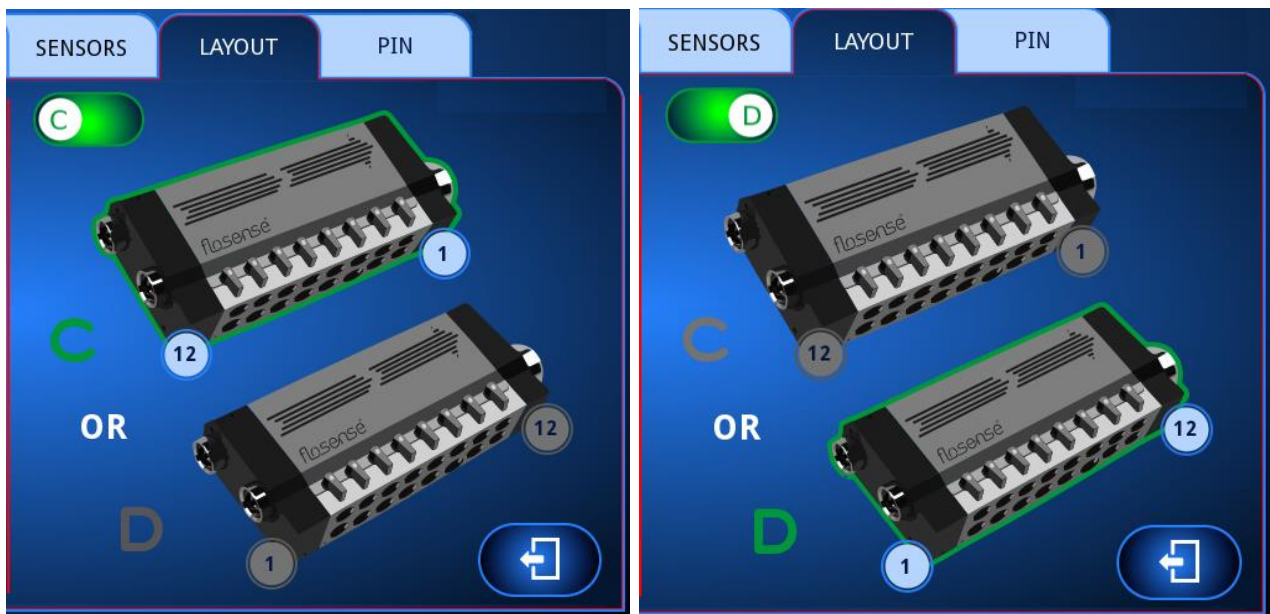


9.5. Disconnected sensor

Explain why a sensor will disconnect and how you find the error source.

If a sensor ever disconnects, whether it is because the sensor is defect, has been removed from the manifold, or if the rules about the connected number of manifolds are not followed (section 3.1), the system will show the disconnected sensor, and all sensors connected after the disconnected sensor as being disconnected as well.

How this is shown in the manifold will depend on the Layout settings C & D (section 4.6.1), and there are two different ways it can be seen.



The image above shows the C & D settings in the layout menu

If setting C has been selected for an 8-zone manifold, where sensor S7 has been removed, it will show sensor S7 and all sensors after it being disconnected. This means that sensor S8 will also be shown as red and disconnected, and one of the pressure sensors will be disconnected, so the ΔP will be missing.



If setting D has been selected for the same 8-zone manifold, where the same sensor has been removed as in the previous case, it will show the same sensors as being disconnected, however it will be shown in a different order. Instead of them being sensors S7 & S8, it will now be sensors S1 & S2 which are disconnected.



One thing to note about the two situations however, is that the sensors will keep their names (the bar below the sensor), regardless of the settings, so naming the sensors yourself will make troubleshooting a disconnected/defect sensor much easier. Especially if you scan after a sensor disconnects

The image below shows the previous system with Layout settings D on the 8-zone manifolds. Not that sensors S1-S6 are still named Sensor 8 – Sensor 3, because this was their given name on the 8-zone manifold.



10. Known Issues

Below you will find a list of known issues which will be fixed in the upcoming version of the software.

Date: 18-08-2023

Software Version: 5.0.0.507

Sensor interface Firmware version: 1.10

10.1. Stability issue – Resolved in 5.0.0.489 or newer

Due to issues with the cache memory, the device can freeze if left to operate for extended periods of time.

In order to allow operation of existing system, we have added an automatic reboot interval, which asks the user to reboot the system occasionally, in order to ensure stable operation.

While the reboot may be delayed a few times, if the device is not rebooted it can risk freezing up completely, so we have added a forced reboot if it reaches a critical state.

10.2. Boot-up failure – Resolved 5.0.0.495 or newer

After updating software, the display could fail to boot up if the USB was left in the port for too long. This would leave the device unable to boot up again.

The issue has been resolved and a prompt will now pop up to ask the user if they want to update the unit, when a USB with a software file is inserted into the mini-USB port.

Change log

Date of change	Change	Version
29-04-2020	Product release	001
16-06-2020	Firmware and software update that improves stability and added some missing features. All updates are listed in section 10h	002
11-09-2020	Updated Section 7	003
09-10-2020	Updated multiple figures and added info on VNC, OPCUA and downloading logged data	004
18-12-2020	Updated multiple figures to reflect minor changes that were made for visual clarity	005
26-03-2021	Major updates to Sensors & Alarms settings. Other minor changes in settings. Changes to how the manifold recognizes manifolds and handles errors.	006
18-01-2023	Flosense 2.0 was included as part of the software Section 10 was removed and updates can now be found in the Flosense release notes Renamed from <i>Flosense 3 & 4 Software guide</i> to <i>User Guide – Flosense 2-4 Software</i> Added new features: Screenshot, Reboot and Alarm Delay of 5 sec	007
18-08-2023	Resolved bugs that caused failure to boot up or complete freeze of the display. Added new OPC-UA protocol (EM82.1). Added possibility to select which OPC-UA protocol to use. Added alarm circuit section	008