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## **1. PURPOSE**

UFM Manager is a piece of PC software that allows communication between the FGM160 flare gas meter and a service computer. This document describes how to use UFM Manager at Basic and Operator level.

## **2. TERMS AND DEFINITIONS**

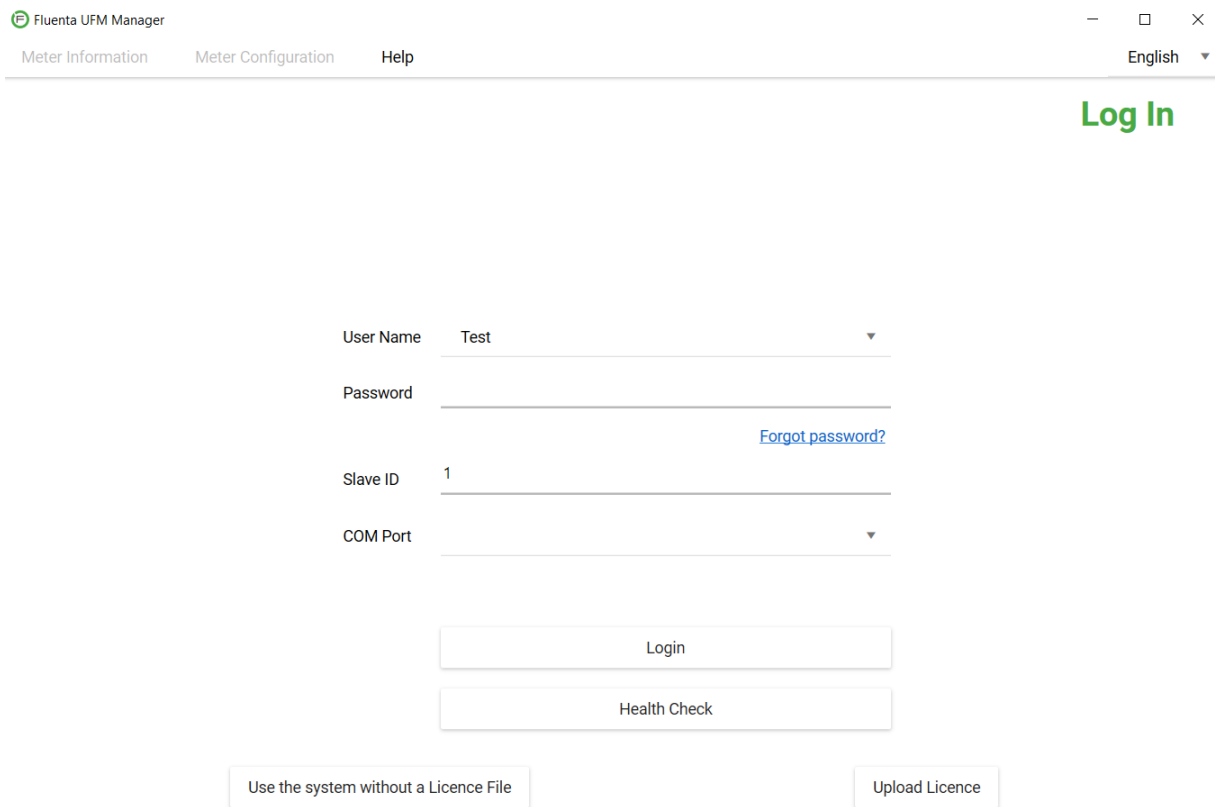
FGM160 – Fluenta Flare Gas Meter Model 160

## **3. RESPONSIBILITY**

The Service Manager takes overall responsibility for this manual. This includes validity of the document, as well as for informing all required resources about its meaning, significance and any changes that are made to it. All service engineers within the Fluenta organization are responsible for proper usage of UFM Manager.

## **4. UFM MANAGER – LOGGING IN**

When run for first time, UFM Manager asks for a license. A license file is issued by Fluenta, allowing the user to create a new account. Once a new account has been set up, a new user can be created. To do this, please input a name, password and confirm the level of access (either basic or operator). Access level can be found on the license file. Before login, the user's PC should be physically connected to FGM. To log in one needs a slave ID for the FGM and a COM port (default slave ID is 1, the COM port number depends on RS485 port settings).



The screenshot shows the UFM Manager login page. At the top left, there is a logo for 'Fluenta UFM Manager' and navigation links for 'Meter Information', 'Meter Configuration', and 'Help'. At the top right, there are window control icons and a language dropdown set to 'English'. A prominent green 'Log In' button is located in the upper right area. The main form contains four input fields: 'User Name' with the value 'Test', 'Password', 'Slave ID' with the value '1', and 'COM Port'. A blue link for 'Forgot password?' is positioned to the right of the password field. Below the form are two buttons: 'Login' and 'Health Check'. At the bottom, there are two buttons: 'Use the system without a Licence File' and 'Upload Licence'.

Figure 1: Example of UFM Manager login page

## 5. UFM MANAGER – BASIC LEVEL

Basic level gives access to the following options:

- Dashboard
- 10-day totalizers
- Data logging
- System configuration
- Help/About Fluenta UFM Manager

## 5.1 Dashboard

The dashboard gives an overview of the basic live flow parameters and system indicators.

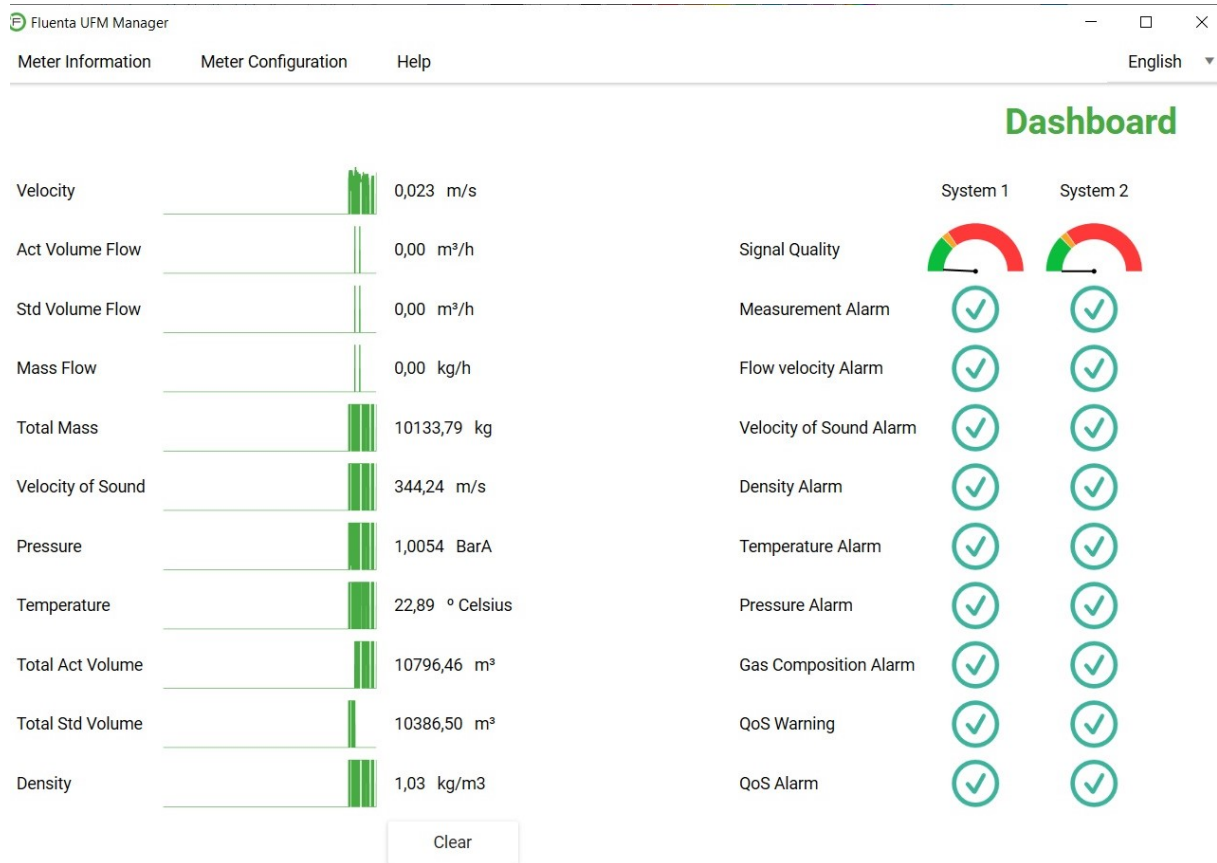


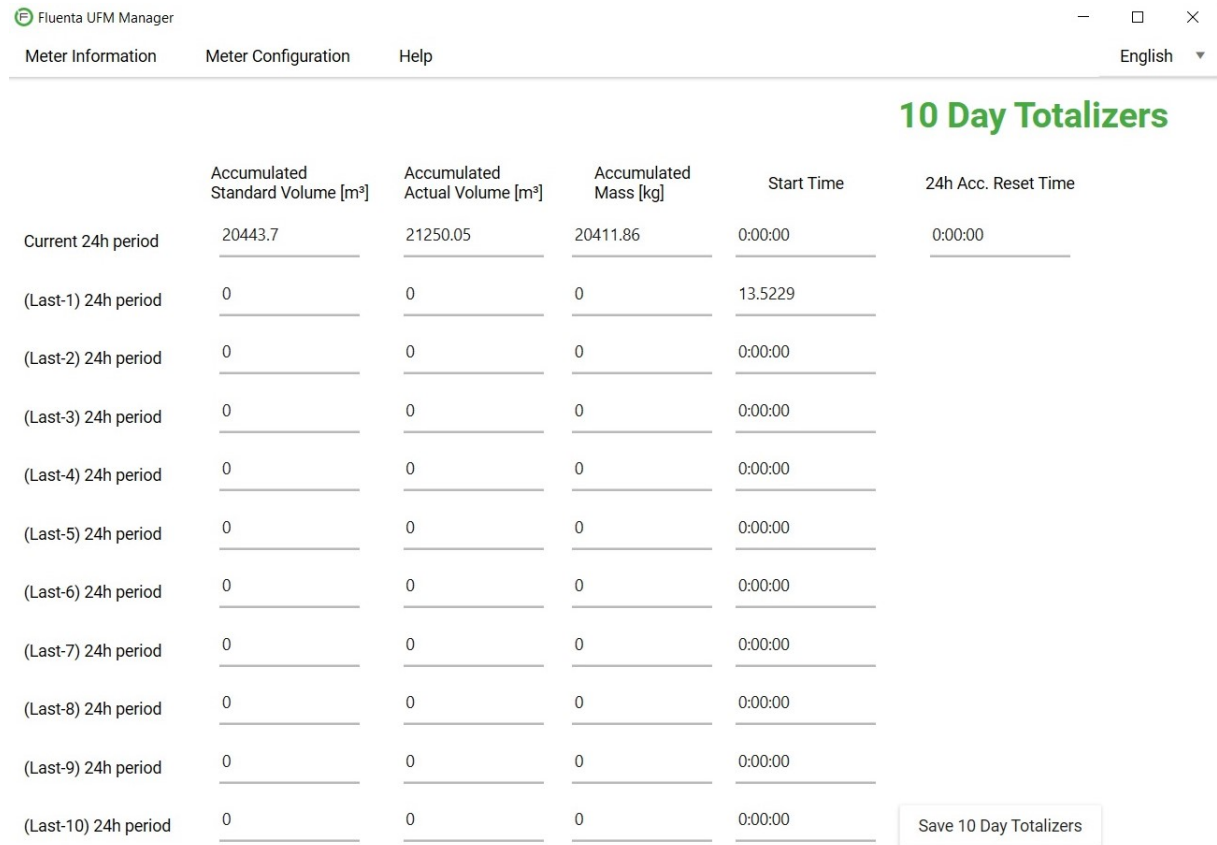
Figure 2: Example of the UFM Manager dashboard

## 5.2 10-day Totalizers

The 10-day totalizers screen gives you an overview of last 10 days of accumulated:

- Standard volume
- Actual volume
- Mass

It is also possible to save the 10-day totalizers to a CSV file with a button on the bottom of the screen.



Fluenta UFM Manager

Meter Information    Meter Configuration    Help    English ▾

### 10 Day Totalizers

	Accumulated Standard Volume [m³]	Accumulated Actual Volume [m³]	Accumulated Mass [kg]	Start Time	24h Acc. Reset Time
Current 24h period	20443.7	21250.05	20411.86	0:00:00	0:00:00
(Last-1) 24h period	0	0	0	13.5229	
(Last-2) 24h period	0	0	0	0:00:00	
(Last-3) 24h period	0	0	0	0:00:00	
(Last-4) 24h period	0	0	0	0:00:00	
(Last-5) 24h period	0	0	0	0:00:00	
(Last-6) 24h period	0	0	0	0:00:00	
(Last-7) 24h period	0	0	0	0:00:00	
(Last-8) 24h period	0	0	0	0:00:00	
(Last-9) 24h period	0	0	0	0:00:00	
(Last-10) 24h period	0	0	0	0:00:00	

Save 10 Day Totalizers

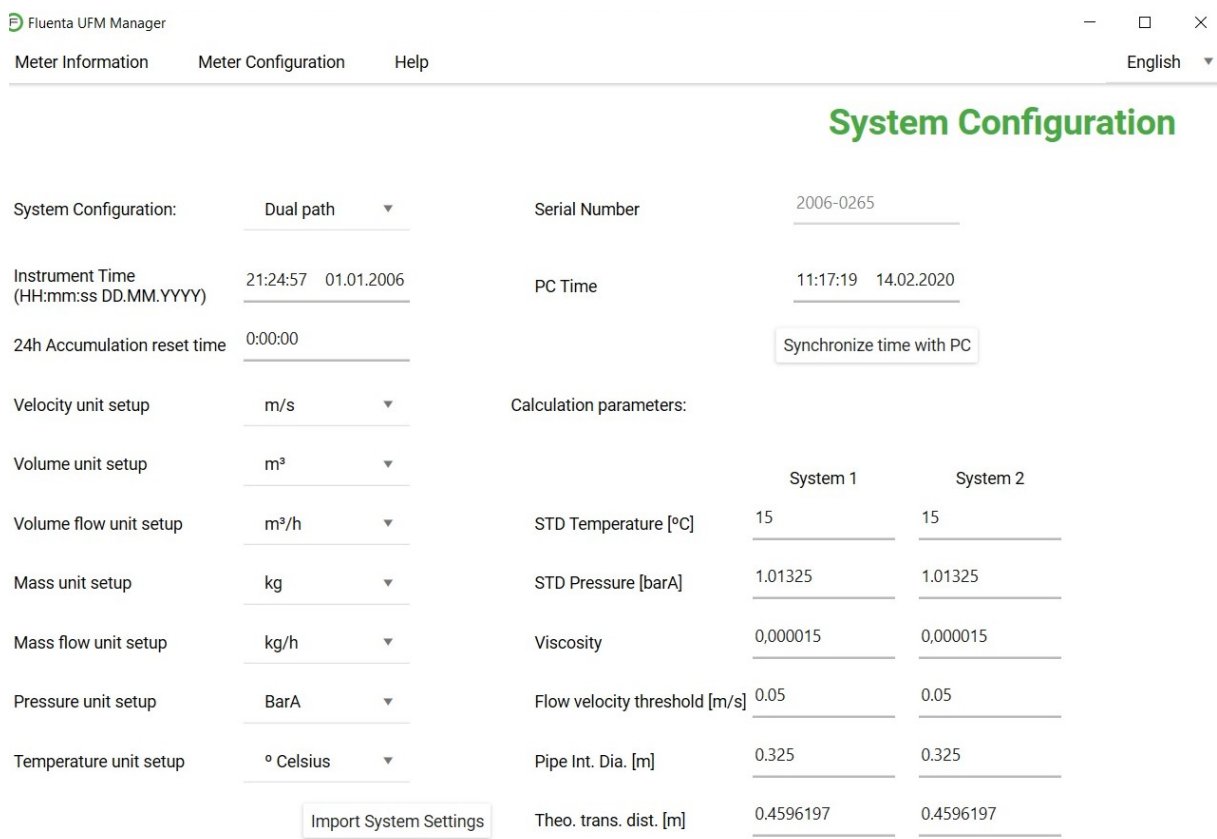
**Figure 3: Example of the 10-day totalizers screen**

### 5.3 System Configuration

This page allows you to change:

- System configuration (single, dual)
- Instrument time (this can be set manually, or synchronized with PC)
- Units used for flow values
- Pipe internal diameter
- Theoretical transducer distance
- Standard temperature
- Standard pressure

It is also possible to import system settings as a config file.



System Configuration		Serial Number	2006-0265	
System Configuration:	Dual path	Instrument Time (HH:mm:ss DD.MM.YYYY)	21:24:57	01.01.2006
		PC Time	11:17:19	14.02.2020
24h Accumulation reset time	0:00:00	<input type="button" value="Synchronize time with PC"/>		
Velocity unit setup	m/s	Calculation parameters:		
Volume unit setup	m³		System 1	System 2
Volume flow unit setup	m³/h	STD Temperature [°C]	15	15
Mass unit setup	kg	STD Pressure [barA]	1.01325	1.01325
Mass flow unit setup	kg/h	Viscosity	0,000015	0,000015
Pressure unit setup	BarA	Flow velocity threshold [m/s]	0.05	0.05
Temperature unit setup	° Celsius	Pipe Int. Dia. [m]	0.325	0.325
	<input type="button" value="Import System Settings"/>	Theo. trans. dist. [m]	0.4596197	0.4596197

**Figure 4: Example of system configuration settings**

## 5.4 Help/About Fluenta UFM Manager

This page shows helpful information including: System information, license information, system users and software information.

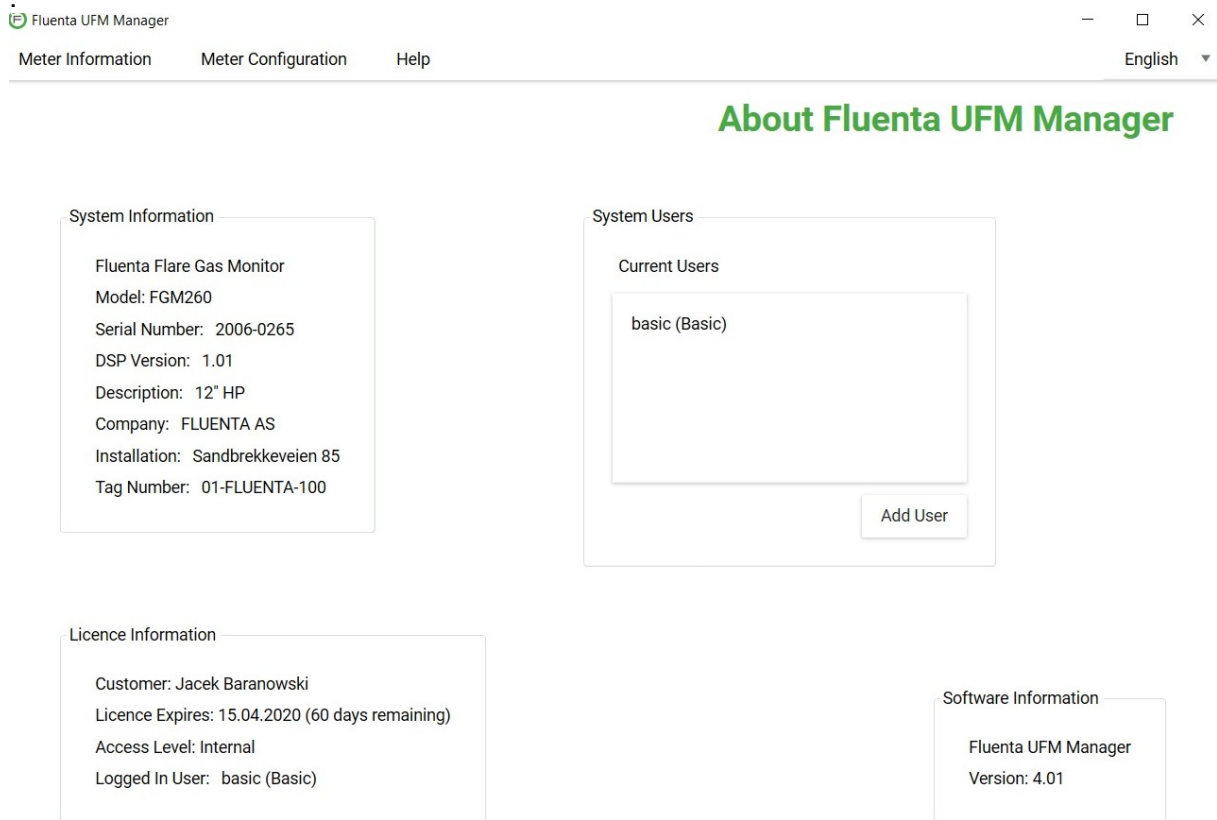


Figure 5: Example of the help page



## 6. UFM MANAGER – OPERATOR LEVEL

Operator level is an expansion of Basic level with some additional options.

These include:

- Analog outputs
- Input configuration
- Flowmeter alarms
- Modbus configuration
- Other outputs
- Graphs and live data

### 6.1 Analog Outputs

This page gives you the possibility to configure and set the values of the analogue outputs. Each output can be configured according to user’s requirements.

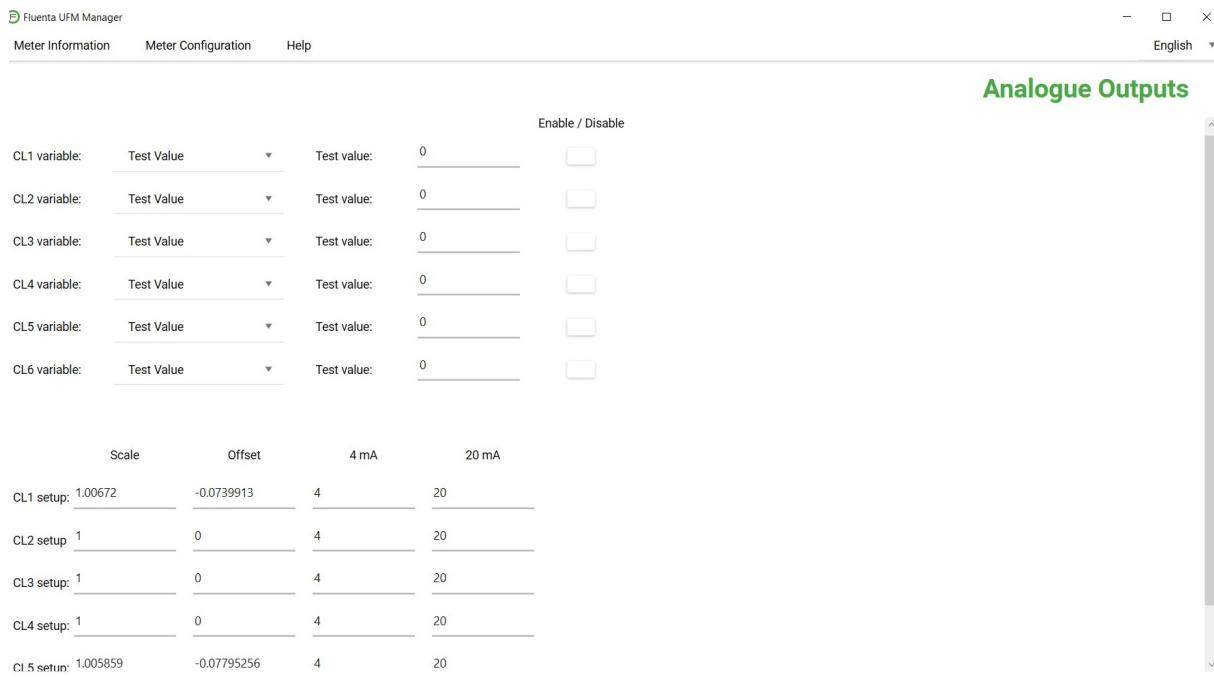


Figure 6: Example of the Analogue Outputs page

## 6.2 Input Configuration

This page allows you to set up the type of pressure and temperature inputs (HART, current loop, or fixed at standard). Each input can be set up according to requirements. For HART inputs, it is possible to set different input modes for the transmitters (single, dual, or double).

Meter Information   Meter Configuration   Help English ▾

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Input Configuration

Pressure input type	HART ▾	
Temperature input type	HART ▾	
Current loop pressure setup	Scale <input type="text" value="0.9916852"/>	Offset <input type="text" value="-0.005748735"/>
Current loop pressure range [barA]	4 mA <input type="text" value="0"/>	20 mA <input type="text" value="3"/>
Current loop temperature setup	Scale <input type="text" value="0.9959522"/>	Offset <input type="text" value="0.002277897"/>
Current loop temperature range [K]	4 mA <input type="text" value="273.15"/>	20 mA <input type="text" value="373.15"/>
HART pressure input setup	Single-Transmitter 1 (poll addr. 1) ▾	
HART temperature input setup	Single-Transmitter 1 (poll addr. 2) ▾	
Dual sensor variable selector:	Primary Variable ▾	Secondary Variable ▾
P and T fallback values	P fallback value [barA] <input type="text" value="1.01325"/>	T fallback value [K] <input type="text" value="293.15"/>
Enable CL Pressure	<input type="checkbox"/>	
Enable CL Temperature	<input type="checkbox"/>	

**Figure 7: Example of the Input Configuration page**

### 6.3 Flowmeter Alarms

This page allows configuration of the flow meter alarms. The user can configure the range for temperatures [K], pressure [BarA], sound velocity [m/s], flow velocity [m/s], quality of signal warning threshold, and quality of signal alarm threshold.

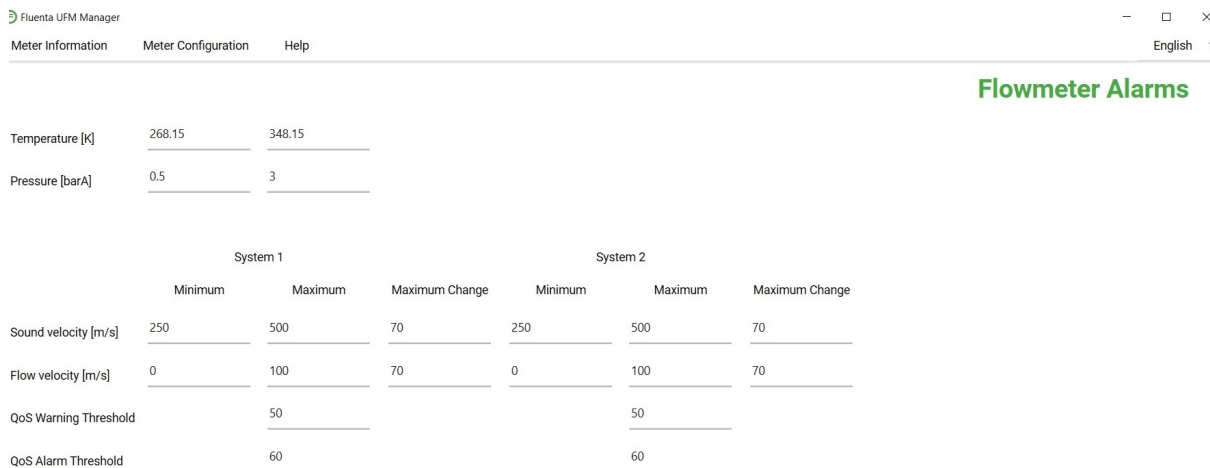


Figure 8: Example of Flowmeter Alarms page

### 6.4 Modbus configuration

This page allows the user to configure the DCS Modbus port. All settings can be altered so that they match the DCS Modbus link.

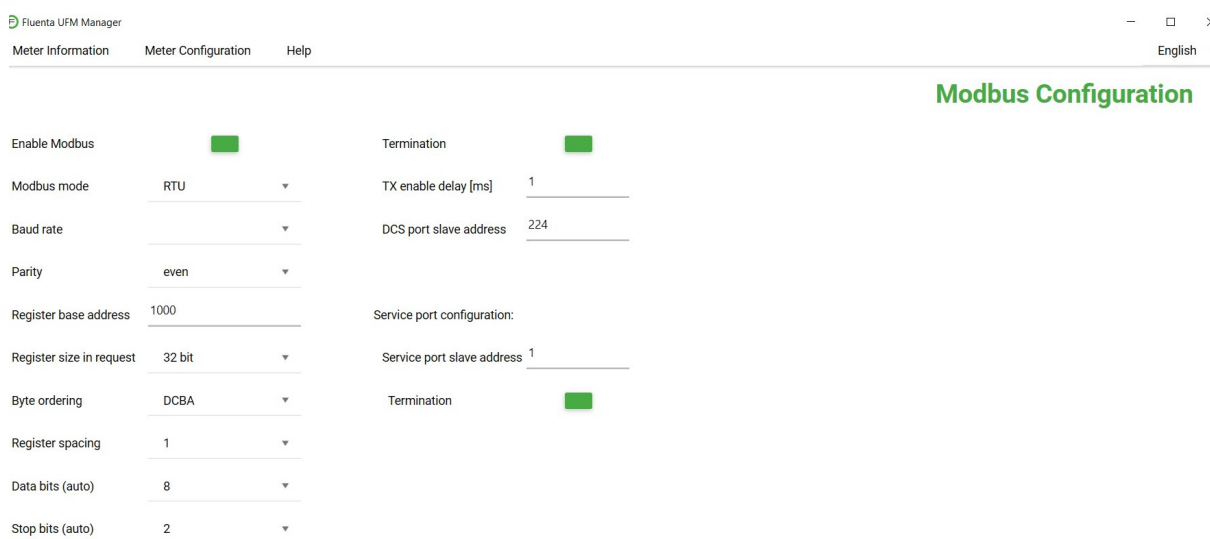


Figure 9: Example of the Modbus Configuration page

## 6.5 Other outputs

This section allows for the configuration of all additional outputs. These include pulse, frequency, or HART. Available parameters for pulse/frequency are: scale, offset, range scale, range offset, and test value. For HART, it is possible to choose four different process variables and HART output addresses.

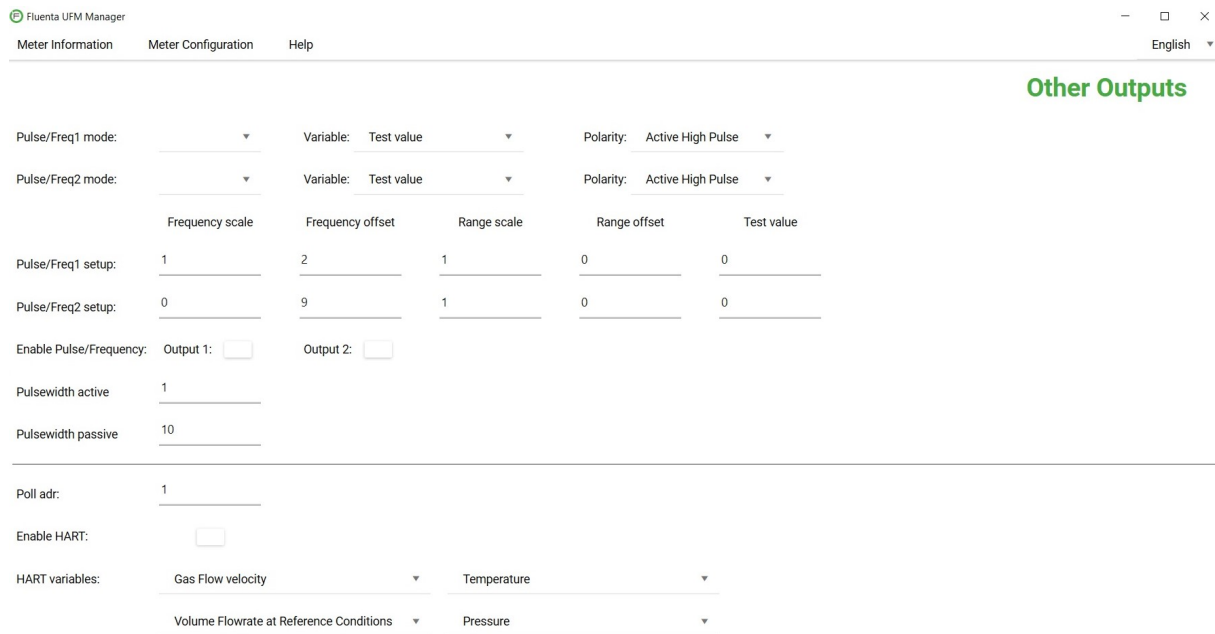


Figure 10: Example of the Other Outputs page

## 6.6 Graphs and live data.

This section allows users to collect ultrasonic signals from the flow computer. The obtained signals can then be saved as text files for further troubleshooting. This can be done for both single and dual-path systems. It is also possible to plot up to four process variables in real time.

To save a signal graph to a file, click 'save to file'. The default save location is the installation folder for UFM Manager).

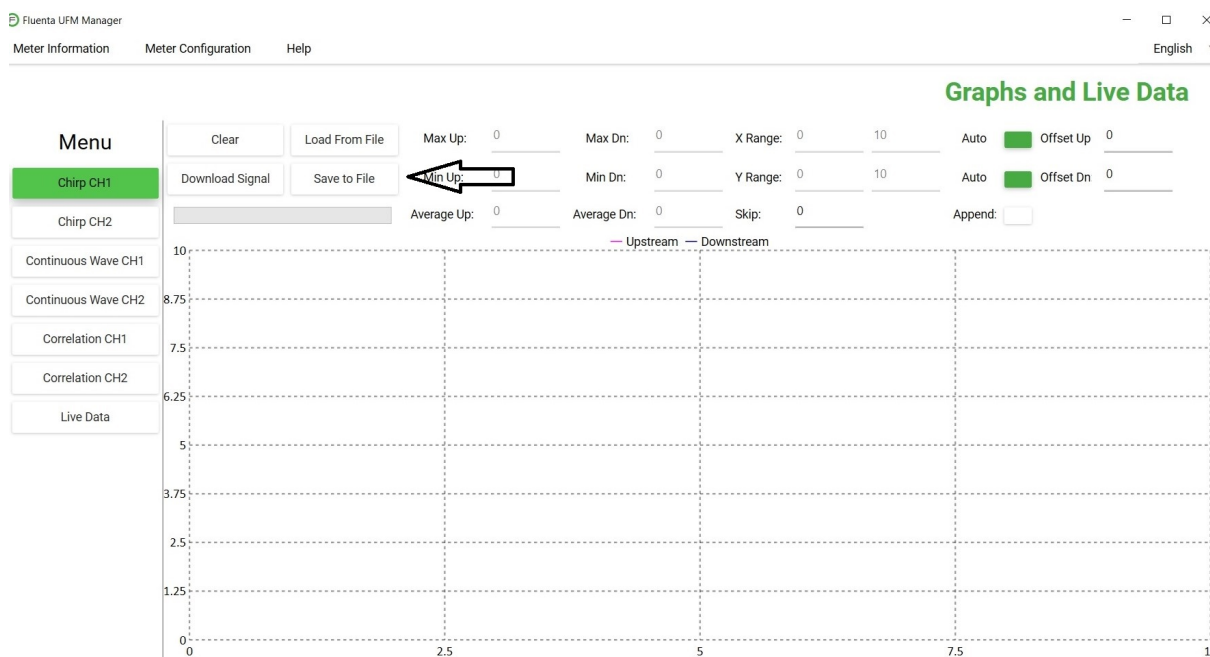


Figure 11: Example of the graphs and live data page, with the 'save to file' button highlighted

## 6.7 Health Check

An automatic module allows user to collect flow meter data that can be used for health assessment and troubleshooting of the flow computer. The Health Check requires an Operator or higher level of access. The module is enabled via log in page.

Once started, the module requires user to select the COM port and a path to the directory that will store all data (this means that the location must be usable for the program). After that, an automatic process can start. This will run each test in an order and collect the data. Every step progress is described in the log window. It is also possible to run manually each of the steps or only the selected ones. Once the test is passed and finished, a checkbox will appear next to the test indicating it is finished. The automatic process takes around 15 minutes, after that the program will indicate that the data must be zipped and sent to [support@fluenta.com](mailto:support@fluenta.com) for evaluation.

Tests run during health check:

- Communication test – tests if the flow computer is online and reachable
- Configuration – the program collects config data
- History – the module collects config changes history
- Signals – the program will attempt to collect and plot ultrasonic signals, there will be 3 sets of signals collected
- Log data – the program will collect 10 minutes of flow measurement data to assess the performance
- Live data – collects current live data for the process

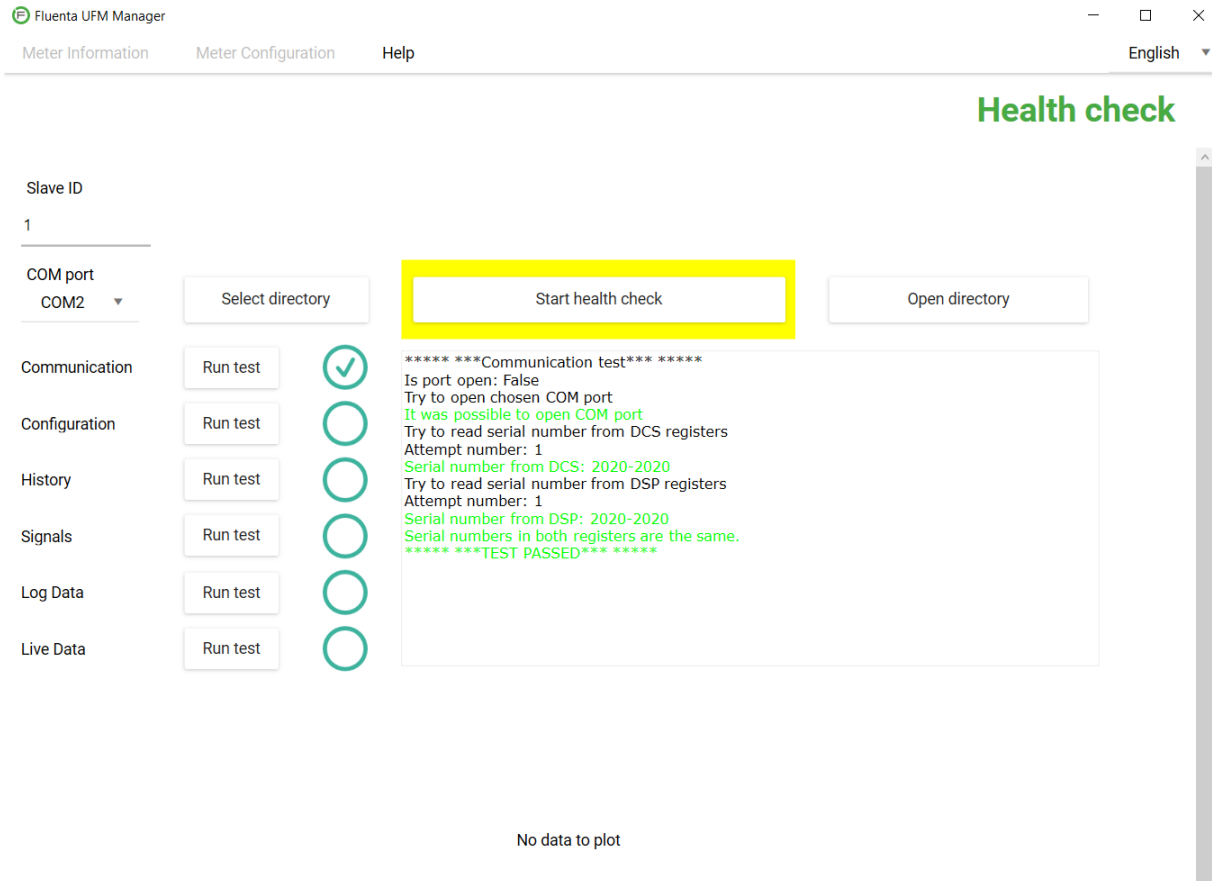


Figure 12. Health check module

## 7. HOW TO

This section instructs the user how to perform common tasks with the UFM Manager software.

### 7.1 Obtaining a Service Connection

In order to obtain a service connection, the RS485 port must be used. In order to do this, a USB to RS485 converter is needed. A COM port number must then be specified according to Windows Device Manager. It is important to make sure the COM port is set to RS485 with correct mode (two or four wires). It is also important to observe correct wiring. The Tx and Rx pairs/wires must be crossed and the COM port connection must be wired according to the serial converter manufacturer instructions.

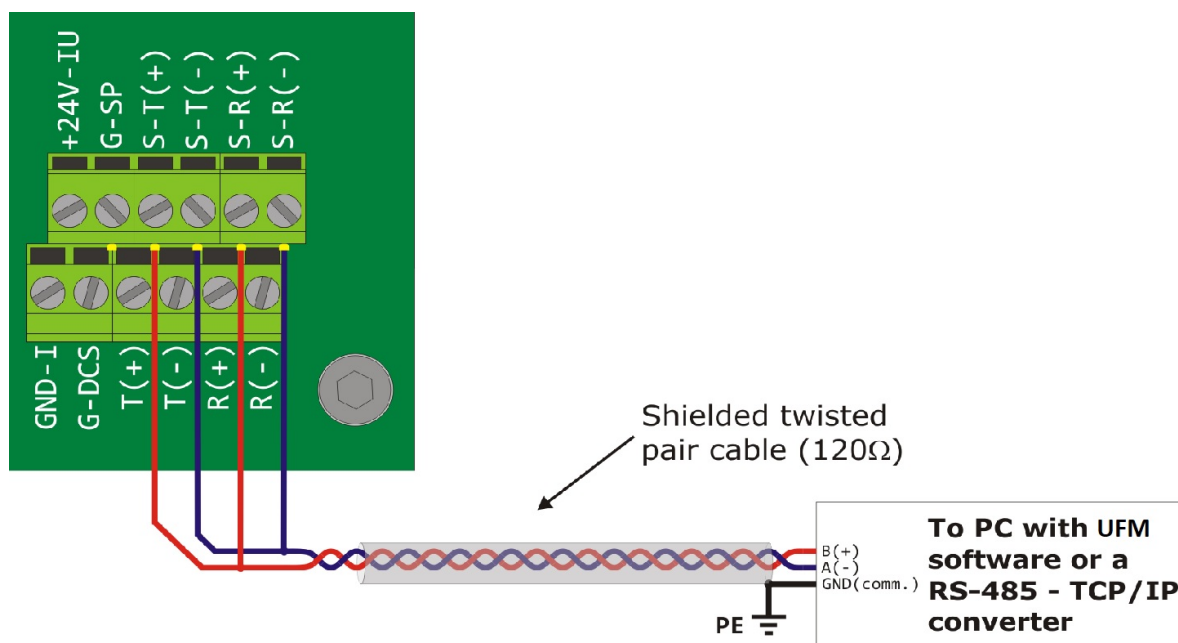


Figure 13: Service connection with FGM160 – two wire connection

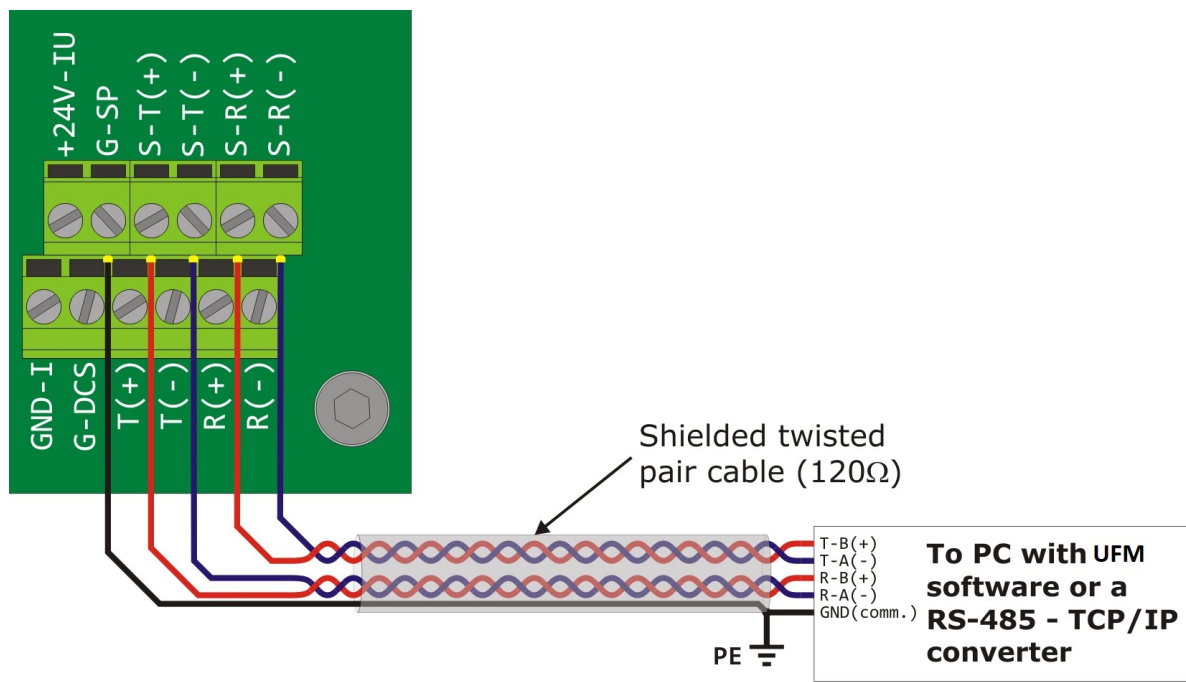


Figure 14: Service connection with FGM160 - four wire connection.

## 7.2 Configuring and Analogue Output

Each analogue output needs to be set with a parameter selected from the drop-down list. The field enable/disable option allows you to activate the output. This will be green when active. Each active output needs a minimum and maximum range, which should be entered in the appropriate fields.

## 7.3 Configuring an Analogue Input

When the temperature and pressure transmitters are connected to the FGM, the type of connection must be chosen from the drop-down list (HART, current loop, or fixed at standard). For analogue input, an option “Enable CL pressure” or/and “Enable CL temperature” should be switched on (green colour). For analogue input it is also important to set the range that matches the transmitters (pressure is in bars and temperature is in Kelvins).

### Gauge Pressure

If a customer installs a gauge pressure transmitter instead of absolute, the pressure range must be offset by 1.01325 bar in order to obtain absolute reading. This is important as the FGM160 uses only absolute readings. By applying the offset, the pressure reading is then treated as absolute. Please note that this workaround will affect the accuracy of the meter as the offset value is constant, where gauge pressure is the difference between ambient and process.



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## 7.4 Changing Modbus Parameter

Most modbus parameters can be selected from the drop-down list. It is important to match the settings of the modbus port with the DCS serial link.

## 7.5 Troubleshooting the Service Connection

If there is no service connection with the FGM160, the following checks must be performed:

- FGM is physically connected to your PC/laptop
- FGM is energized
- Proper connection was chosen (2- or 4- wire) for your adapter in system settings (this will depend on physical connection)
- COM port chosen for UFM is not used by any other application
- The license for UFM Manager is valid
- Proper slave address for FGM160 was chosen (default is 1)

## 8. REFERENCES

72.120.304 – FGM 160 Functional description

62.120.001 – FGM 160 Installation and Hook-up instructions