

SERIES FSX

USER MANUAL

Version: 1.5



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General recommendations

⚠ Please follow the recommendations for safe use described in this document:

- Some hazards can only be associated with the product after it has been installed on the machine/equipment. It is the responsibility of the end user to identify these hazards and reduce the risks associated with them.
- For information regarding the reliability of the components, contact Camozzi Automation.
- Read the information in this document carefully before using the product.
- Keep this document in a safe place and close at hand for the whole of the product's life cycle.
- Pass this document on to any subsequent holder or user.
- The instructions in this manual must be observed in conjunction with the instructions and additional information relating to the product described in this manual, which can be found using the following references:
 - Web site <https://shop.camozzi.com/store/camozzi/it/en/>
 - Camozzi General Catalogue
 - Camozzi Technical Assistance Service
- Assembly and commissioning must be performed exclusively by qualified and authorised personnel in accordance with these instructions.
- It is the responsibility of the designer of the system / machinery to correctly choose the most suitable component based on the necessary use.
- The use of appropriate protections is recommended to minimize the risk of injury to people.
- For all situations of use not covered in this manual and in situations in which there is the risk of potential damage to property, or injury to persons or animals, contact Camozzi first.
- Do not make any unauthorized modifications to the product. In this case, any damage caused to things, people or animals, is to be considered the responsibility of the user.
- It is recommended to comply with all safety regulations that apply to the product.
- Do not operate on the machine/system unless you have verified that the working conditions are safe.
- Before installation or maintenance, ensure that the specifically designated safety lock positions are activated, then disconnect the power supply (if necessary) and the pressure supply to the system, disposing of all residual compressed air present in the system and deactivating the residual energy stored in springs, capacitors, containers and gravity.
- After installation or maintenance, it is necessary to reconnect the pressure and power supply (if necessary) of the system and check the correct operation and sealing of the product. In case of leakage or malfunction, the product must not be put into operation.
- The product may be put into operation only in compliance with the specifications indicated. If these specifications are not respected, the product may be put into operation only after authorization by Camozzi.
- Avoid covering the devices with paints or other substances that reduce heat dissipation.

1.1 Product transportation and storage

- Take all possible precautions to avoid accidental damage to the product during transport; use the original packaging if available.
- Observe the storage temperature range of $-10 \div 50$ °C.

1.2 Use

- Ensure that the power supply voltage and all operating conditions fall within the permissible limits.
- The product may be used only in compliance with the specified parameters. If these specifications are not met, the product may only be used with prior authorization from Camozzi.
- Comply with the information provided on the identification label.

1.3 Limitations of Use

- Do not exceed the technical specifications provided in this document and in the Camozzi general catalog.
- Do not install the product in environments where the air itself may cause hazards.
- Unless otherwise specified, do not use the product in environments where it may come into direct contact with corrosive gases, chemicals, salt water, water, or steam.

1.4 Maintenance

- Improperly performed maintenance operations may compromise the correct functioning of the product and cause risks to nearby personnel.
- Check the conditions to prevent the sudden release of components. Therefore, stop the power supply and allow residual voltages to discharge before intervening.
- Check the possibility of having the product serviced at an authorized technical support center.
- Never disassemble a powered unit.
- Electrically and pneumatically isolate the product before carrying out any maintenance.
- Always remove accessories before performing maintenance.
- Always ensure the use of appropriate personal protective equipment as required by local authorities and applicable legislation.
- In case of maintenance or replacement of worn parts, use original Camozzi kits only and ensure the operations are performed exclusively by authorized and qualified personnel. Otherwise, the product certification shall be considered void.

1.5 Ecological Information

- At the end of the product's life cycle, material separation is recommended to allow for proper recovery and recycling.
- Comply with local regulations regarding waste disposal in your country.

Chapter 1 General recommendations

- The product and its components comply with ROHS and REACH directives.

Device Description

The series FSX is the ideal solution for those looking for reliable, versatile and ready-to-integrate sensors in the fields of industrial automation, packaging, food processing and many other production processes.

Thanks to direct measurements and processing of derived quantities, the flow sensors series FSX are able to continuously monitor the efficiency of the system and its operational performance.

Available in multiple variants, with measurement capabilities up to 10,000 L/min (ANR), the sensors series FSX are designed to adapt to different application contexts, including the most complex environments.

The series FSX is the strategic choice to optimize production, improve quality control and ensure more efficient, reliable and sustainable processes.

⚠ The filter is an integral part of the device and cannot be separated.



Figure 2.1: Flow Sensor Series FSX

2.1 General Characteristics

In this chapter you will find the characteristics of the Camozzi flow sensors series FSX.

Table 2.1: General Characteristics

Characteristic	Value
Model	FSX
Measured flow range	20 ÷ 2000 l/min (ANR)
	50 ÷ 5000 l/min (ANR)
	100 ÷ 10000 l/min (ANR)
Medium	Compressed, filtered and non-lubricated air in class [7:4:4] according to ISO 8573-1:2010 Inert gases (Argon, CO ₂ , Helium, Nitrogen)
Flow direction	Unidirectional
Measurement method	Thermic
Operating pressure range	0 ÷ 10 bar
Fluid temperature	-5 ± 50 °C
Environmental temperature	-5 ± 50 °C
Filter element	25 µm
Warm-up time	10 min

2.1.1 Flow

Table 2.2: Flow characteristics

Characteristic	Value
Accuracy of measured flow	±3% of F.S. (2000-5000 l/min ANR)
	±4% of F.S. + 4% RDG (10000 l/min ANR and working pressure below 2 bar)
	±4% of F.S. (10000 l/min ANR and working pressure between 2 and 4 bar)
	±3% del F.S. (10000 l/min ANR and working pressure over 4 bar)
Repeatability	±1% del F.S.
Temperature characteristic	Outside nominal temperatures ±0.25% of the measured value every °C
Response time	1s

⚠ Response time refers to the time necessary to update the data in the supported protocols.

2.1.2 Pressure

Table 2.3: Pressure characteristics

Characteristic	Value
Range	0 ÷ 10 bar
Accuracy	±0.25% del F.S.

2.1.3 Temperature

Table 2.4: Temperature characteristics

Characteristic	Value
Range	-5 ÷ 60 °C
Accuracy	±1°C

2.1.4 Relative humidity

Table 2.5: Relative humidity characteristics

Characteristic	Value
Range	0 ÷ 100% RH
	±3% of F.S. (0-10%)
Accuracy	±7% of F.S. (10-25%)
	±10% of F.S. (25-50%)

⚠ Only for versions with relative humidity sensor.

2.1.5 Mechanics

Table 2.6: Mechanical characteristics

Characteristic	Value
Connection	G1/2" (F.S. 2000 e 5000 l/min (ANR)) G1" (F.S. 10000 l/min (ANR))
Protection class	IP64

2.1.6 Electronics

Table 2.7: Electronic characteristics

Characteristic	Value
Output signal	Ethernet - MQTT and OPC UA
Ethernet connection	M12 D-coded 5-pin, female
Power Connection	M8 5-pin, male
Power supply	24V DC $\pm 10\%$
Maximum consumption	150 mA

2.2 Commercial codification

Below you will find a coding example and in the table 2.8 you will find the complete description.

FSX - 212Y - E050 - EPTU0 - 0R00

Table 2.8: Codifica commerciale

Esempio	Caratteristica	Valore
FSX	Series	Flow sensor
2	Size	2 = Sensor on MX2 base 3 = Sensor on MX3 base
Y	Port size	12 = MX2 G1/2 thread 10 = MX3 G1 thread 38 = MX2 G3/8 thread 34 = MX3 G3/4 thread 11 = NPTF 1 thread 13 = NPTF 1/2 thread 39 = NPTF 3/8 thread 35 = NPTF 3/4 thread
Y	Bracket	X = Central clamp type X "without fixing" (only for versions 10, 12) Y = Central clamp type Y "with wall fixing flange" (only for versions 10, 12) Z = Central clamp type Z "with through-bolt fixing" (only for versions 10, 12) H = Side clamps without fixing and side flanges K = Side clamps for wall fixing and side flanges J = Side clamps for fixing with through-bolts and side flanges
E	Display	E = Without Display
050	Flow rate range	020 = 2000 l/min (ANR), only size 2 050 = 5000 l/min (ANR) 100 = 10000 l/min (ANR), only size 3
E	Output specifications	E = Ethernet (OPC UA e MQTT)
PTU	Sensor reading	PT0 = Pressure, temperature PTU = Pressure, temperature, relative humidity
0	Closed loop flow	0 = Without proportional flow valve

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Table 2.8 – *Continua dalla pagina precedente*

Esempio	Caratteristica	Valore
0	Draining of condensate	0 = Semiautomatic-manual drain 3 = Automatic drain
R	Flow direction	R = Flow direction from left to right L = Flow direction from right to left
00	Certification	00 = None

2.3 Direct measurements

The flow sensors series FSX are designed to provide accurate and continuous monitoring of key parameters of the passing fluid.

Equipped with high-precision internal sensors, these devices perform a range of direct measurements essential for effective control and optimization of industrial processes.

All measurements are performed using sensors embedded in the body of the device, eliminating the need for external modules. This reduces installation space, simplifies setup, and ensures greater long-term reliability.

The direct sensor integration also enables real-time data acquisition, supporting advanced process control, diagnostics, and energy optimization functions.

Table 2.9 lists all available direct measurements, which are accessible through the supported communication interfaces.

Table 2.9: Direct measurements

Measure	Unit of measurement	Description
Flow rate	l/min(ANR) m ³ /h(ANR) ft ³ /min(ANR)	Real-time measurement of the fluid quantity passing through the sensor; this is the main parameter for managing and regulating flow in pneumatic systems.
Pressure	bar kPa PSI	Detection of fluid pressure within the circuit, essential for monitoring operating conditions and identifying potential performance drops or leaks.
Temperature	°C °F	Measurement of the fluid temperature, useful for verifying the thermal state of the system and preventing out-of-range operating conditions.
Relative humidity	%	Monitoring of the relative humidity level in the fluid, particularly relevant in applications where air or gas quality is a critical parameter.

▲ Relative humidity measurement is optional and depends on the version of the flow sensor used. See the corresponding chapter for details. 2.2.

▲ The flow sensor is capable of measuring fluid in the reverse direction as well; therefore, during certain operations, such as the machine discharge, a positive flow may be detected.

2.4 Derived quantities

In addition to direct measurements, flow sensors series FSX are capable of processing a range of derived quantities in real time based on the values acquired by the internal sensors.

Chapter 2 Device Description

These advanced parameters allow for deeper analysis of system performance and serve as valuable tools for energy optimization and consumption control.

All derived quantities are calculated in real time and made available through the communication interface. They are listed in Table 2.10.

Table 2.10: Derived quantities

Quantity	Unit of measurement	Description
Total consumption	l(ANR) m ³ (ANR) ft ³ (ANR)	Measurement of the total volume of air consumed since the device was activated, providing a comprehensive overview of the accumulated consumption
Partial consumption A and B	l(ANR) m ³ (ANR) ft ³ (ANR)	Two separate and independent counters allow the operator to flexibly monitor consumption over defined time intervals. They can be manually reset for the analysis of individual cycles, production batches, or work shifts
Pneumatic power	kW	Calculation of the effective power generated by the moving fluid, providing a useful indicator to assess system efficiency
Total pneumatic energy	kWh MJ	Quantifies the total energy delivered by the compressed fluid, providing a valuable tool to assess energy consumption and system efficiency
Partial pneumatic energy A and B	kWh MJ	As with consumption, pneumatic energy is divided into two partial counters, which are useful for targeted monitoring of individual operating phases or production areas. Each counter can be independently reset by the user

Continue on the next page

Table 2.10 – *Continue from previous page*

Quantity	Unit of measurement	Description
Dew point	°C °F	Calculation of the temperature at which the moisture present in the air begins to condense. This parameter is critical in sensitive applications where the presence of condensation can compromise process quality or damage components
Total cost	€ \$	Calculate the total cost spent to obtain the fluid used
Partial cost A and B	€ \$	Calculates the partial cost spent to obtain the fluid used in a single phase. Each counter automatically resets with the partial energy reset command (if a compressor is present) or with the partial consumption (if a gas cylinder is present)
Total kgCO ₂	kg lb	Calculate the total kg of CO ₂ produced
kgCO ₂ partial A and B	kg lb	Calculates the partial kg of CO ₂ produced in a single phase. Each counter is reset with the partial energy reset command (if a compressor is present), while it remains null if a gas cylinder is present

▲ The dew point parameter is optional and depends on the specific version of the flow sensor in use. Refer to the relevant chapter 2.2 for further information.

▲ The flow sensor can detect consumption in the reverse direction as well; therefore, during certain operations, such as the machine discharge, consumption may be measured.

2.4.1 Cost Calculation

For cost calculation, it is necessary to distinguish whether a compressor or a gas cylinder is used. This is determined by the parameter that sets the unit of measurement for the energy cost.

If a compressor is present, the following formula applies:

$$\text{Cost} = \text{Energy} \times \text{Energy Cost} \times \frac{100}{\text{Efficiency}}$$

- **Energy:** Pneumatic energy calculated by the device.
- **Energy Cost:** Cost of energy expressed in € or \$ per kWh or MJ.
- **Efficiency:** Efficiency of the compressor.

If a gas cylinder is present, the following formula applies:

$$\text{Cost} = \text{Consumption} \times \text{Energy Cost} \times \frac{100}{\text{Efficiency}}$$

- **Consumption:** Consumption calculated by the device.
- **Energy Cost:** Cost of energy expressed in € or \$ per l(ANR), m³(ANR), ft³(ANR).
- **Efficiency:** Efficiency of the gas cylinder.

2.4.2 CO₂ Emissions Calculation

The CO₂ emissions in kilograms are calculated only when a compressor is present. In the case of a gas cylinder, the supplier is responsible for specifying the amount of CO₂ produced per cylinder.

The formula is as follows:

$$\text{kgCO}_2 = \text{Energy} \times \text{CO}_2 \text{ Conversion Factor} \times \frac{100 - \text{Green Energy Percentage}}{\text{Efficiency}}$$

- **Energy:** Pneumatic energy calculated by the device.
- **CO₂ Conversion Factor:** Conversion factor expressed in kilograms of CO₂ per kWh or MJ.
- **Green Energy Percentage:** Percentage of electrical energy used to power the compressor that comes from renewable sources.
- **Efficiency:** Compressor efficiency.

2.5 Configurable parameters

The device allows the user to modify a range of parameters in order to adapt its behavior to specific application requirements.

Chapter 2 Device Description

These settings affect both the internal operation of the sensor and the communication mode.

The parameters can be grouped into three main categories:

- **Device parameters:** include settings related to the internal operation of the sensor, [2.11](#).
- **Communication parameters:** cover all configurations related to network and active protocols, [2.12](#).
- **Variable control parameters:** allow real-time control of variables using threshold values, [2.13](#).

Table 2.11: Device Parameters

Parameter	Value	Description
Device name	Text	User-editable text field (up to 17 characters). Default: Flow_sensor
Fluid media type	Air Argon CO ₂ He N ₂ O ₂	Sets the type of gas to be measured
Temperature unit	°C °F	Sets the unit of measurement for temperature
Flow unit	l/min (ANR) m ³ /h (ANR) ft ³ /min (ANR)	Sets the unit of measurement for flow rate
Consumption unit	l (ANR) m ³ (ANR) ft ³ (ANR)	Sets the unit of measurement for volume consumption
Pneumatic energy unit	kWh MJ	Sets the unit of measurement for pneumatic energy
Pressure unit	bar kPa PSI	Sets the unit of measurement for pressure

Table 2.12: Communication Parameters

Parameter	Default Value	Description
DHCP	Disable	Enables or disables the DHCP
IP address	192.168.0.10	Device IP address
Subnet mask	255.255.255.0	Device subnet mask
Gateway address	0.0.0.0	Gateway address
UVIX address	192.168.0.100	IP address of the UVIX server
UVIX port	1555	Port number for UVIX communication
OPC UA enable	Disable	Enables or disables OPC UA communication
MQTT enable	Disable	Enables or disables MQTT communication
Broker MQTT address	192.168.0.100	IP address of the MQTT broker
Broker MQTT port	1883	MQTT broker communication port

Table 2.13: Variable Control Parameters

Parameter	Range	Description
Media temperature low threshold	-5 ÷ 60 °C	Minimum threshold for monitoring flow temperature
Media temperature high threshold	-5 ÷ 60 °C	Maximum threshold for monitoring flow temperature
Pressure low threshold	0 ÷ 10 bar	Minimum threshold for monitoring pressure
Pressure high threshold	0 ÷ 10 bar	Maximum threshold for monitoring pressure
Relative humidity low threshold	0 ÷ 100 %	Minimum threshold for monitoring relative humidity level
Relative humidity high threshold	0 ÷ 100 %	Maximum threshold for monitoring relative humidity level
Flow low threshold	0 ÷ Full scale	Minimum threshold for monitoring flow rate
Flow high threshold	0 ÷ Full scale	Maximum threshold for monitoring flow rate
Dew point low threshold	-20 ÷ 60 °C	Minimum threshold for monitoring dew point
Dew point high threshold	-20 ÷ 60 °C	Maximum threshold for monitoring dew point
Pneumatic power low threshold	0 ÷ 50 kW	Minimum threshold for monitoring pneumatic power
Pneumatic power high threshold	0 ÷ 50 kW	Maximum threshold for monitoring pneumatic power

2.6 Communication

The flow sensors series FSX are designed to integrate seamlessly into modern industrial systems, supporting the main communication standards for automation and data analysis.

Thanks to advanced connectivity, the devices provide easy and reliable access to both measured values and derived quantities, enabling remote control, diagnostics, and process optimization.

2.6.1 Supported Protocols

The device is compatible with the following communication protocols:

- **MQTT:** A lightweight, publish/subscribe-based protocol widely used in IIoT applications.
- **OPC UA:** A robust and secure client/server-based protocol designed for industrial data exchange.

This dual compatibility makes the flow sensor suitable for all levels of industrial architecture—from field data acquisition to integration with advanced management systems.

For further information on commissioning the flow sensor using these protocols, refer to chapters 4.2 and 4.3.

2.6.2 Configuration Tools

To simplify initial setup and operational management, the device offers the following tools:

- **Integrated HTTP server:** Accessible via a browser (default address: <http://192.168.0.10/>), it allows for quick and intuitive configuration directly from the local network, without the need for additional software.
- **Connection to Camozzi UVIX software:** A proprietary tool developed for the configuration and monitoring of Camozzi devices. UVIX provides a complete overview of the device, allowing parameter reading and writing, real-time diagnostics, and configuration backup.

For more details on configuring this device, refer to Chapter 4.1 for the integrated HTTP server and chapter 6 for the UVIX software.

Installation

This chapter provides all the necessary information for proper mechanical, pneumatic, and electrical integration of the device, ensuring commissioning in accordance with the technical specifications. All connections must be carried out by qualified personnel, in compliance with applicable regulations and the instructions provided in the following sections.

3.1 Dimensions

The dimensions of the flow sensor vary depending on the sensor size and the type of clamp used. Figure 3.1 shows the dimensions of size 2 with the available clamp options (dimensions are expressed in mm).

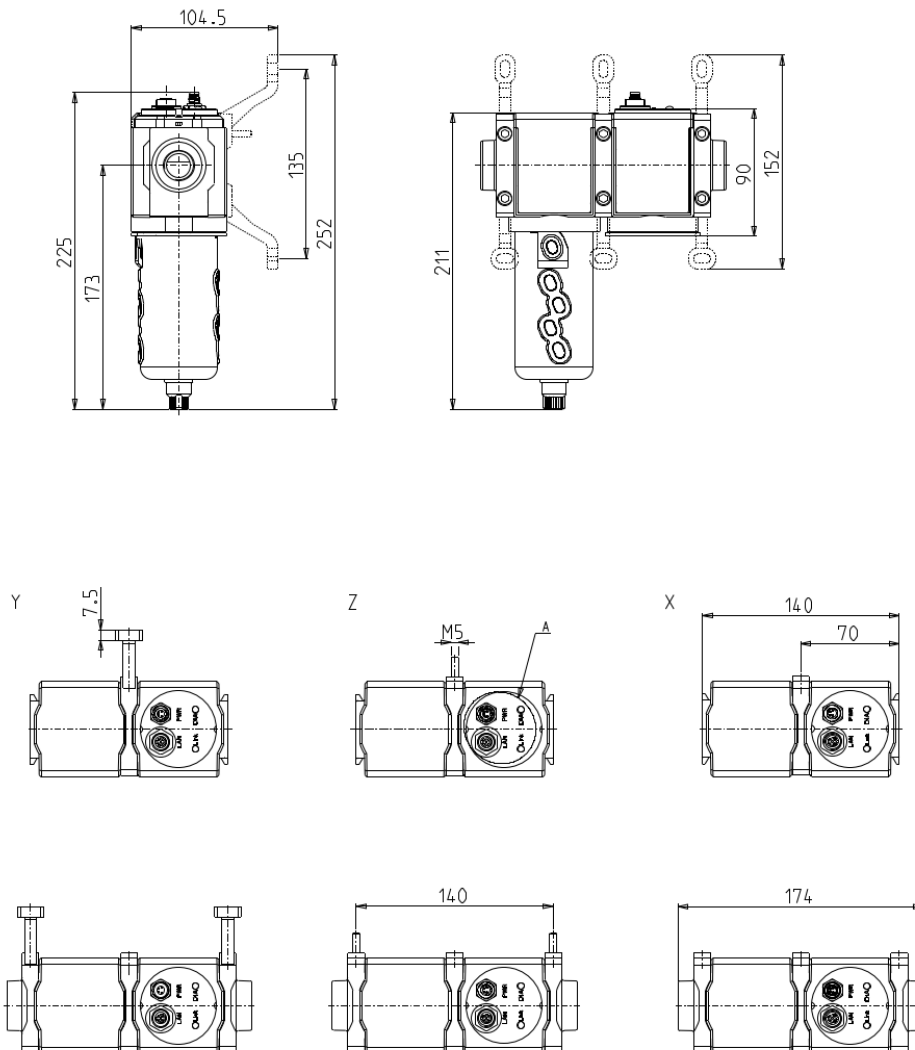


Figure 3.2 shows the dimensions of size 3 (dimensions are expressed in mm).

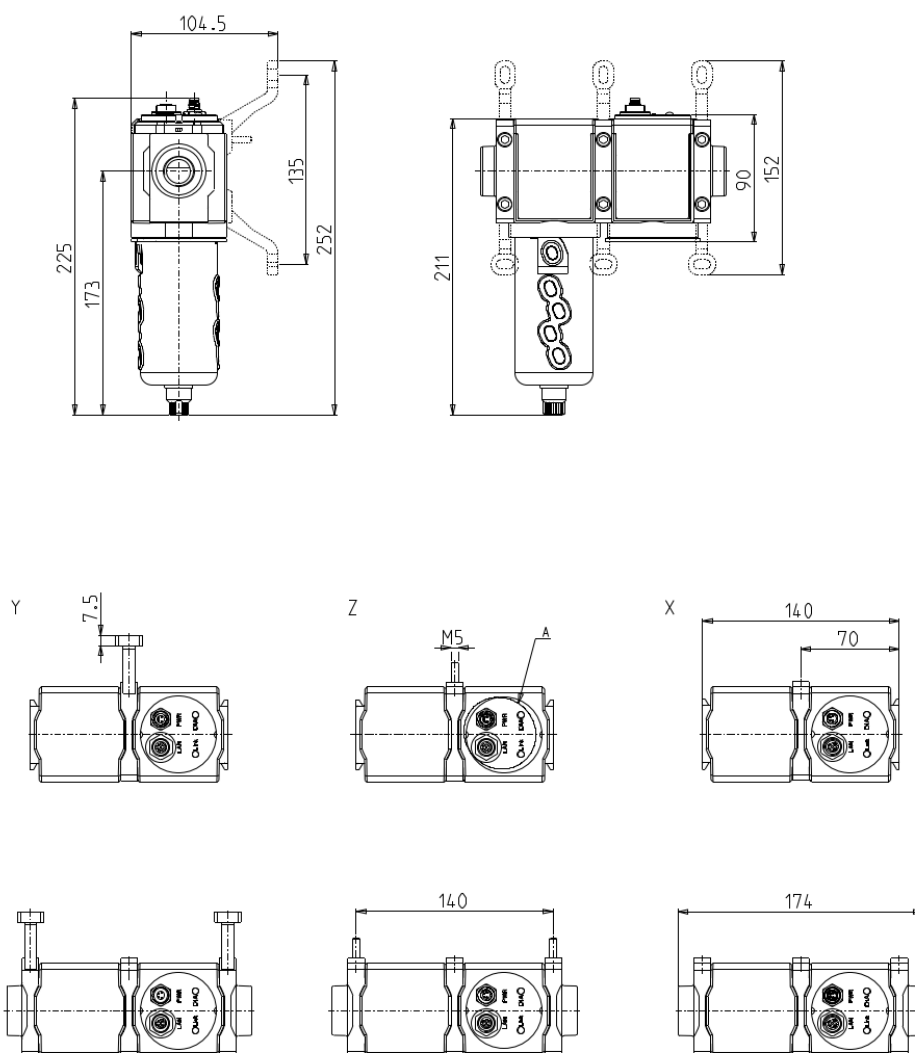


Figure 3.2: Dimensions of flow sensor series FSX3

3.2 Pneumatic Connections

The following pneumatic connection options are available for the flow sensor:

- **Direct connection:** does not require the use of accessories. The pneumatic line is connected directly to the sensor body.
- **Flange connection:** flanges are fixed to the sensor through a clamp.
- **Connection to Camozzi MX air treatment unit:** the sensor is directly integrated into the Camozzi air treatment unit series MX.

3.2.1 Direct Connection

The direct connection does not require any additional accessories, but the diameter of the pneumatic line must be the same as the sensor's port:

- G1/2" for 2000 and 5000 l/min (ANR) versions

Chapter 3 Installation

- G1" for the 10000 l/min (ANR) version

3.2.2 Flange Connection

Through the use of flanges (that can be ordered separately), the flow sensor can be connected to pneumatic lines with different thread sizes: G3/8, G1/2, G3/4, or G1.

In addition, the clamp used to fasten the flange also offers alternative mechanical mounting options for the flow sensor.

To install the flange, follow the steps below:

1. Insert the nuts **1** into the appropriate slots in the clamp **4**.
2. Insert the sealing O-ring **2** into the slot on the side of the flange **6**. On the opposite side, the slot is located in the sensor body.
3. Bring the flange close to the sensor until they touch.
4. Slide the quick clamp **4** into the corresponding rail.
5. Insert the tightening screws **5** into the holes in the clamp **4** and tighten. The recommended tightening torques are:
 - 1.5 ± 0.5 Nm for size 2
 - 3 ± 0.5 Nm for size 3

⚠ If a clamp type Z is used, the longer screw must be inserted into the upper hole of the clamp, applying the same tightening torques as indicated above.

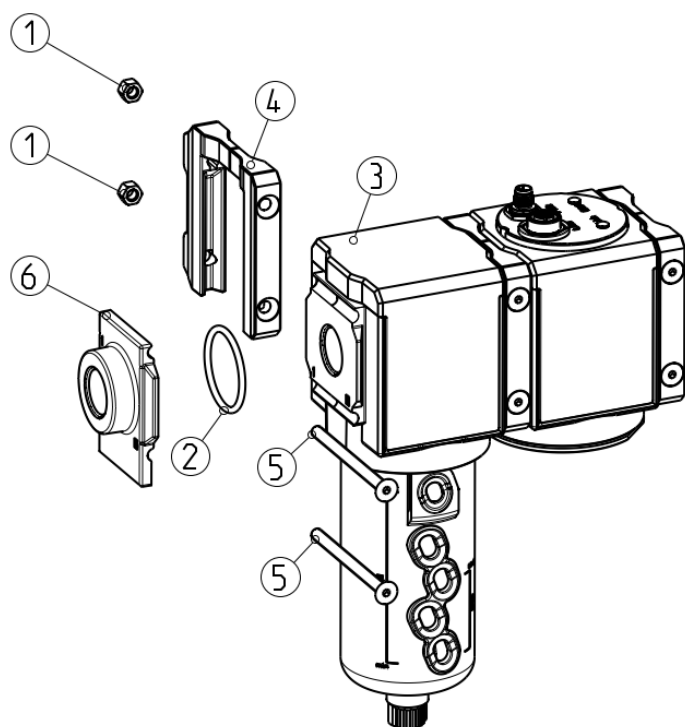


Figure 3.3: Pneumatic connection with flanges

3.2.3 Connection to Air Treatment Unit Series MX

It is possible to integrate the flow sensor directly into the air treatment unit Series MX.

To connect the sensor to the unit, follow the steps below:

1. Insert the nuts **1** into the special slots on the clamp **4**.
2. Insert the sealing O-ring **2** into the slot on the side of the air treatment unit MX **6**. On the opposite side, the slot is located on the sensor body.
3. Bring the air treatment unit MX close to the sensor until they touch.
4. Slide the quick clamp **4** into the appropriate guide rail.
5. Insert the tightening screws **5** into the holes of the clamp **4** and tighten. The recommended tightening torques are:
 - $1.5 \pm 0.5 \text{ Nm}$ for size 2
 - $3 \pm 0.5 \text{ Nm}$ for size 3

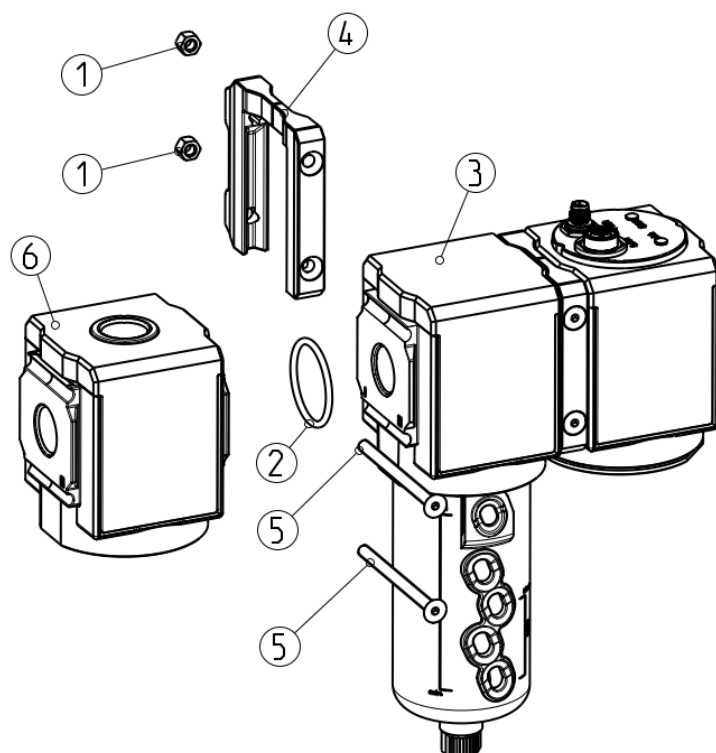


Figure 3.4: Pneumatic connection with air treatment unit Series MX

3.2.4 Replacement of Filter Element and Condensate Drainage

If the flow sensor is equipped with a filter, ensure that excessive condensate does not accumulate and monitor the condition of the filter element.

To drain the condensate, follow the steps below:

1. In manual mode, rotate ring (A) clockwise and push it upward.
2. Once the drainage is complete, release ring (A) and rotate it counterclockwise.
3. In semi-automatic mode, condensate is drained every time the system is depressurized. It is also possible to drain condensate under pressure by pushing ring (A) upward.
4. To switch from semi-automatic to manual mode, rotate ring (A) clockwise; to return to semi-automatic mode, rotate it counterclockwise.

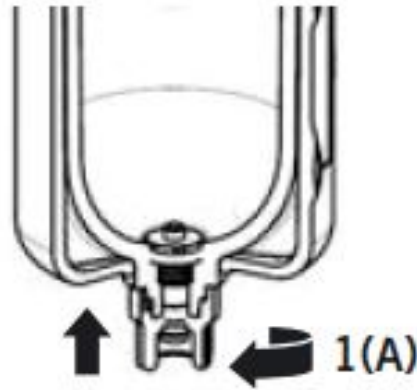


Figure 3.5: Semi-automatic/manual condensate drainage

3.2.5 Replacement of Filter Element

1. While holding the release clip (A), rotate the bowl clockwise until it stops, then pull it downward to remove it from the body.
2. Unscrew the bottom part of the filter (C). The filter element can now be removed.
3. Insert a new filter and reattach the previously removed filter end cap (C).
4. Reinsert the bowl (B) and rotate it counterclockwise until it locks in place. Tightening torque for the filter: $0.7 \pm 0.1 \text{ Nm}$. Over time, filters may become clogged; regular replacement is recommended.

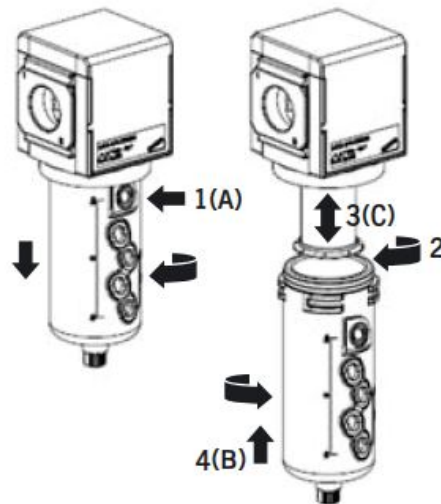


Figure 3.6: Replacement of Filter element

3.3 Electrical Connections

The electrical connection of the flow sensor series FSX is common to all available versions and designed to ensure fast, safe integration in compliance with industrial standards.

The device is equipped with two separate connectors (see Figure 3.7):

- **M8 4-pin male connector:** for power supply.

- **M12 D-coded 5-pin female connector:** industrial standard for Ethernet data transmission, compatible with supported communication protocols (MQTT and OPC UA).

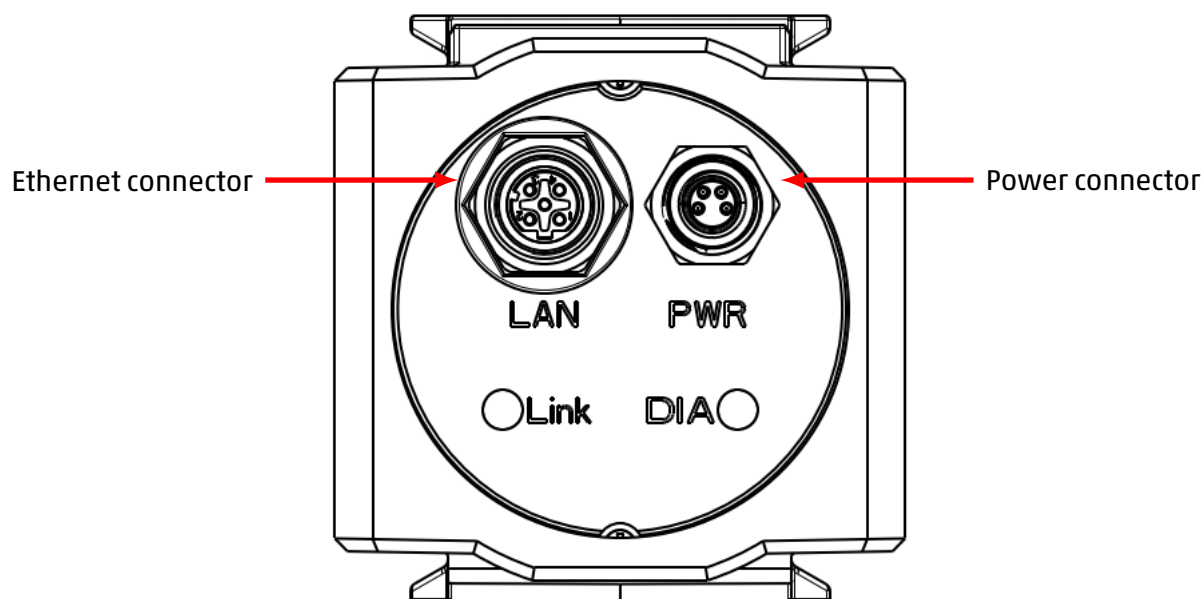


Figure 3.7: Electrical connection – flow sensor series FSX

All electrical connections must be performed by qualified personnel in compliance with applicable standards and regulations.

3.3.1 Power Supply Connection

To connect the power supply, use the 4-pin male M8 connector, indicated as PWR (Figure 3.8) on the device cover.

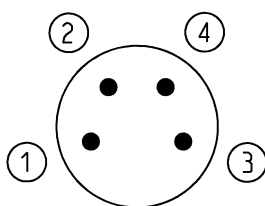


Figure 3.8: 4-pin male M8 connector for power supply

Table 3.1: Power supply connector pinout

PIN	Signal	Description
1, 2	VDC	Positive supply voltage (referenced to GND)
3, 4	GND	Ground reference

⚠ Pins 1 and 2, as well as pins 3 and 4, are internally short-circuited within the device. Do not leave wires connected to these pins with open ends, or ensure appropriate electrical insulation is provided.

3.3.2 Ethernet Connection

For data communication, the device is equipped with a 5-pin female M12 D-coded connector, compliant with industrial standards for Ethernet connections (Figure 3.9).

The connector is indicated as LAN on the sensor cover.

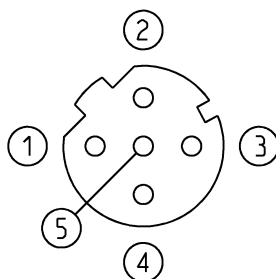


Figure 3.9: 4-pin male M12 D-coded connector for Ethernet connection

Table 3.2: Pin configuration of Ethernet connector

PIN	Signal	Description
1	TD+	Transmit data positive
2	RD+	Receive data positive
3	TD-	Transmit data negative
4	RD-	Receive data negative
5	NC	Not connected

Commissioning

As described in Chapter 2.6, the flow sensor series FSX supports various communication protocols: MQTT and OPC UA for data transmission, and HTTP and UVIX for device configuration. At first power-up, it is necessary to access the integrated HTTP server to perform the initial configuration—see Chapter 4.1.

Through this interface, users can configure network settings, enable communication protocols, and define the operational behavior of the device.

The UVIX software, in addition to replicating all functionalities available through the HTTP server, provides advanced tools for real-time monitoring, read/write parameters and management of saved configurations (for further details, refer to Chapter 6).

4.1 Configuration via Integrated HTTP Server

To access the integrated HTTP server, open a web browser and enter the device's IP address in the address bar (default: <http://192.168.0.10>).

⚠ Ensure that the PC used to access the device is configured with an IP address compatible with the device's subnet.

Once the homepage is displayed (Figure 4.1), navigation between the main sections is available through the top menu bar.

Info	Value
Device name	Flow_sensor
Firmware version	1.01
Device Number	0271000000000000
MAC address	0:0:0:0:0:0
Commercial code	FSX-2X-E050-PTU0-12GR00
Display	Not present
Humidity sensor	Present

Data	Measure unit	Value
Flow	l/min (ANR)	0
Pressure	bar	0.02
Flow temperature	°C	0
Humidity	%	46
Power	kW	0
Total consumption	l (ANR)	1000
Total energy	MJ	3600
Dew point	°C	0
Partial consumption A	l (ANR)	0
Partial consumption B	l (ANR)	0

Figure 4.1: "Data" page of the integrated HTTP server

The available pages are:

- **Data:** The homepage displaying general device information and real-time updated measurements. See Chapter 4.1.1.
- **Setup:** Section dedicated to configuring the operational parameters of the device. See Chapter

4.1.2.

- **Alarm:** Diagnostic page for monitoring the device status and displaying any active alarms. See Chapter 4.1.3.
- **About:** Informational section with general details and useful contacts. See Chapter 4.1.4.

4.1.1 Data

The "Data" page (Figure 4.1) displays the following information:

- **Device name:** A user-defined text field, freely editable.
- **Firmware version:** The current firmware version installed on the device.
- **Device number:** The unique identifier of the device.
- **MAC address:** The device's MAC address.
- **Commercial code:** The commercial code of the device. See Chapter 2.2.
- **Display:** Indicates whether a display is present or not.
- **Relative humidity sensor:** Indicates whether a relative humidity sensor is integrated or not.
- **Flow sensor data:** Displays real-time values of all direct measurements and derived quantities.

4.1.2 Setup

On the "Setup" page (Figure 4.2), you can configure the parameters described in Chapter 2.5.

The parameters are organized into groups, each with a "Send" button that allows you to apply and save any changes made.

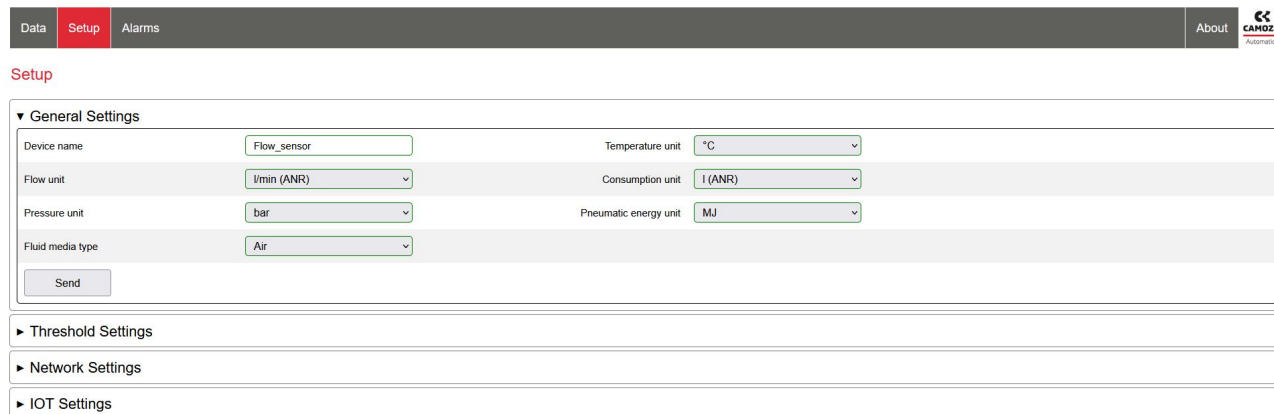


Figure 4.2: "Setup" page of the integrated HTTP server

4.1.3 Alarms

The "Alarms" page displays all active alarms, including their type (error or warning) and a brief description to help with identification.

For more details on alarms and device diagnostics, refer to Chapter 5.

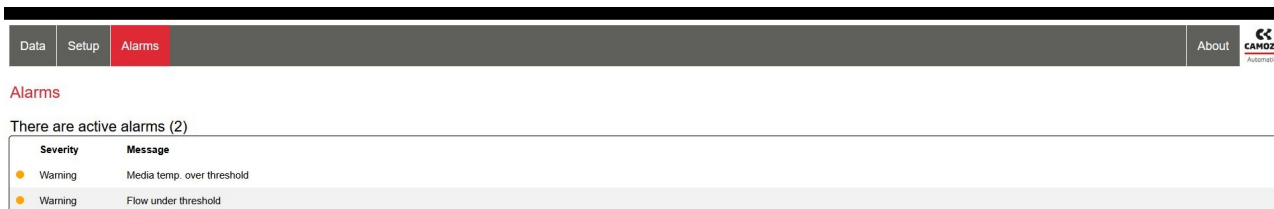


Figure 4.3: "Alarms" page of the integrated HTTP server

4.1.4 About

The "About" page contains general information and contact details (Figure 4.4).

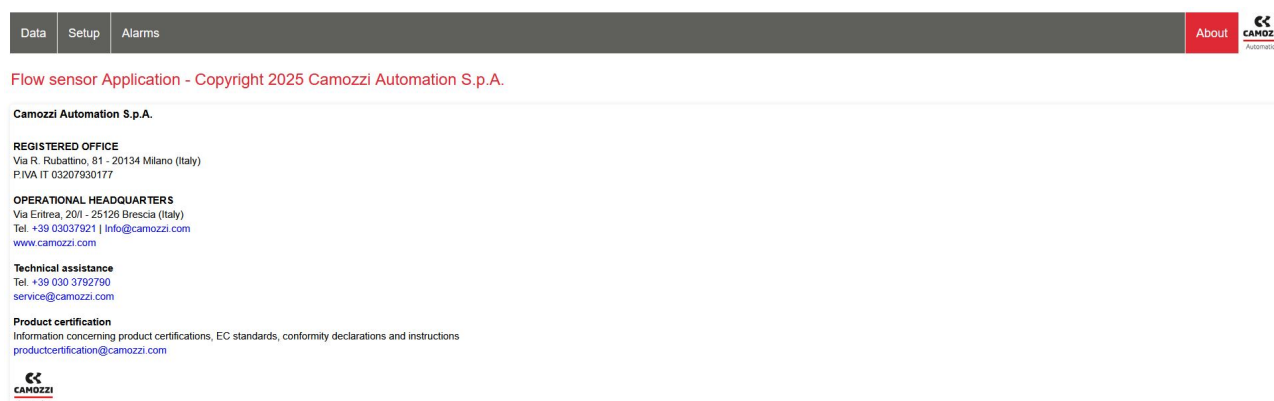


Figure 4.4: "About" page of the integrated HTTP server

4.2 OPC UA Communication

The OPC UA (Open Platform Communications Unified Architecture) protocol is an Ethernet-based communication standard designed to ensure secure and reliable data exchange in industrial environments. First released by the OPC Foundation in 2008, OPC UA has been widely adopted by hardware and software manufacturers in the industrial automation sector.

Thanks to its flexibility, platform independence, and built-in security features, it is now one of the key standards for interoperability in modern industrial systems.



Figure 4.5: OPC UA protocol logo

4.2.1 Architecture and Data Structure

The OPC UA (Open Platform Communications Unified Architecture) standard defines two main communication architectures: Client-Server and Publish-Subscribe.

The flow sensor series FSX implements the Client-Server architecture (Figure 4.6).

- **Server:** the entity that exposes the data. In the case of the FSX, the flow sensor acts as an OPC UA server.
- **Client:** the entity that requests and receives data. This is typically monitoring software such as a PLC, SCADA system, or industrial PC.

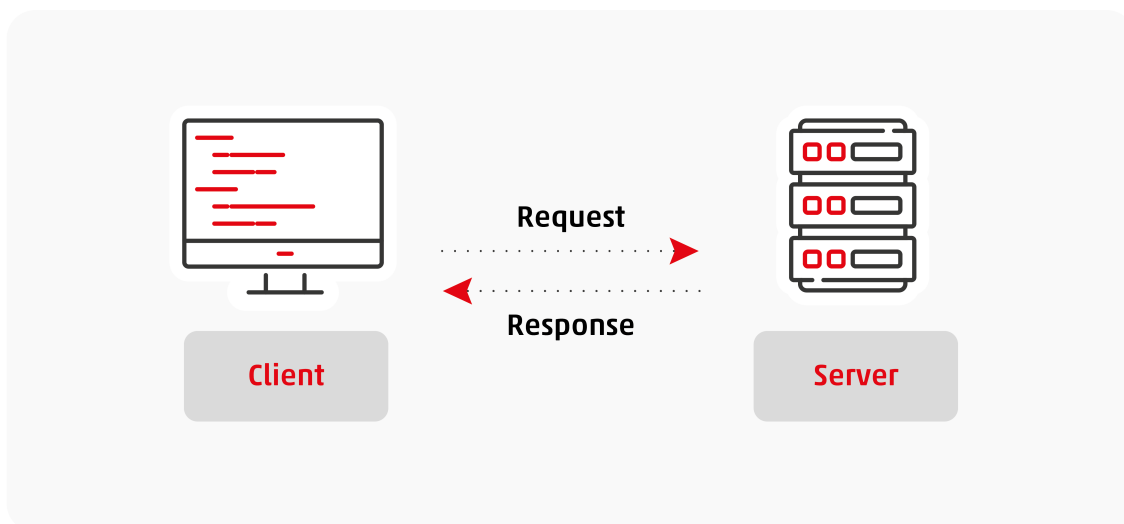


Figure 4.6: Client-Server communication model of the OPC UA protocol

The user must have an OPC UA client installed on the monitoring system, such as a PLC, PC, or industrial server.

The OPC UA server address corresponds to the IP address of the device, while the communication port is fixed and set to 4840.

⚠ The connection and navigation procedures may vary depending on the client software used; for more details, refer to the respective client documentation.

OPC UA uses a data representation model based on a tree structure composed of interconnected nodes. Using an OPC UA client, users can explore this structure to access both raw sensor measurements and derived quantities.

It is also possible, via the client, to enable cyclic updates of a user-defined group of variables (up to a maximum of twenty), with a fixed update rate of one second.

4.2.2 FSX Flow Sensor Nodes

Once communication between client and server has been established, the user can access the data structure exposed by the device by browsing the available nodes and reading their associated variables (data is updated every second).

An example of a client interface connected to the sensor is shown in Figure 4.7, where two main nodes can be identified:

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- **Flow_sensor**: Device-specific node containing all information provided by the sensor. The name of this node corresponds to the “Device name” parameter (Table 2.11).
- **Server**: Standard node defined by the OPC UA specification, containing general system data. For further details, refer to the official documentation of the OPC Foundation.

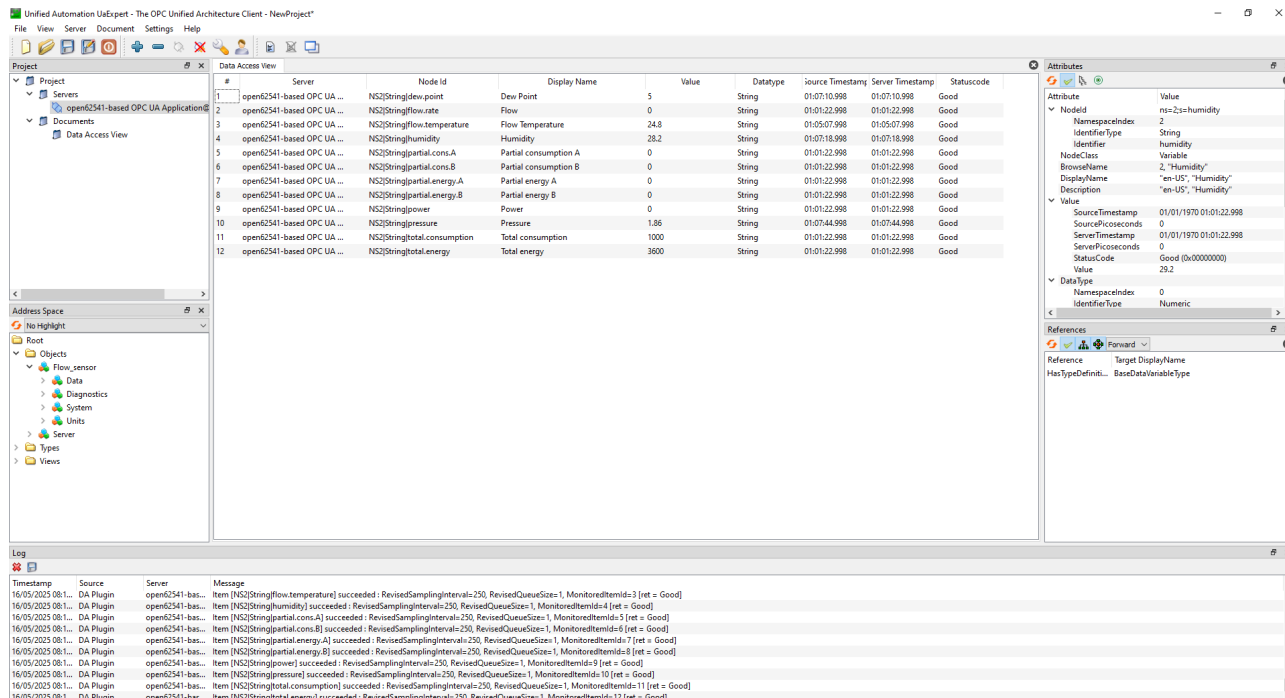


Figure 4.7: Example of OPC UA client interface connected to the FSX sensor

The `Flow_sensor` node is structured as follows:

- **Data**: Contains all direct measurements and derived quantities acquired by the device. See Sections 2.3 and 2.4.
- **Diagnostics**: Includes sensor diagnostic information, such as active alarms and operating status. See Section 5.3.
- **System**: Contains the device's identification data. The available variables are listed in Table 4.1.
- **Units**: Displays the measurement units associated with the variables in the Data node. For more information on the available options, refer to Table 2.11.

Table 4.1: System Node Variables

Variable	Description
Commercial code	Commercial product code
Display presence	Display availability
FW version	Firmware version
Relative humidity sensor presence	Relative humidity sensor availability
Serial Number	Device unique serial number

4.3 MQTT Communication

The MQTT protocol (Message Queuing Telemetry Transport) is an open standard developed by OASIS and internationally recognized (ISO/IEC 20922). It is specifically designed for environments with scarce resources and low-bandwidth networks.



Figure 4.8: MQTT Protocol Logo

4.3.1 Architecture and Data Structure

MQTT is based on a publish/subscribe communication model (Figure 4.9), which involves three main components:

- **Publisher:** the device that sends messages.
- **Subscriber:** the device that receives messages of interest.
- **Broker:** the intermediary that manages the distribution of messages between publishers and subscribers.

In this model, publishers send messages on specific topics to the broker, which in turn forwards them to all subscribers registered for those topics (subscribers can subscribe to one or more topics).

This approach enables asynchronous communication without the need to establish a direct connection, improving both scalability and system flexibility.

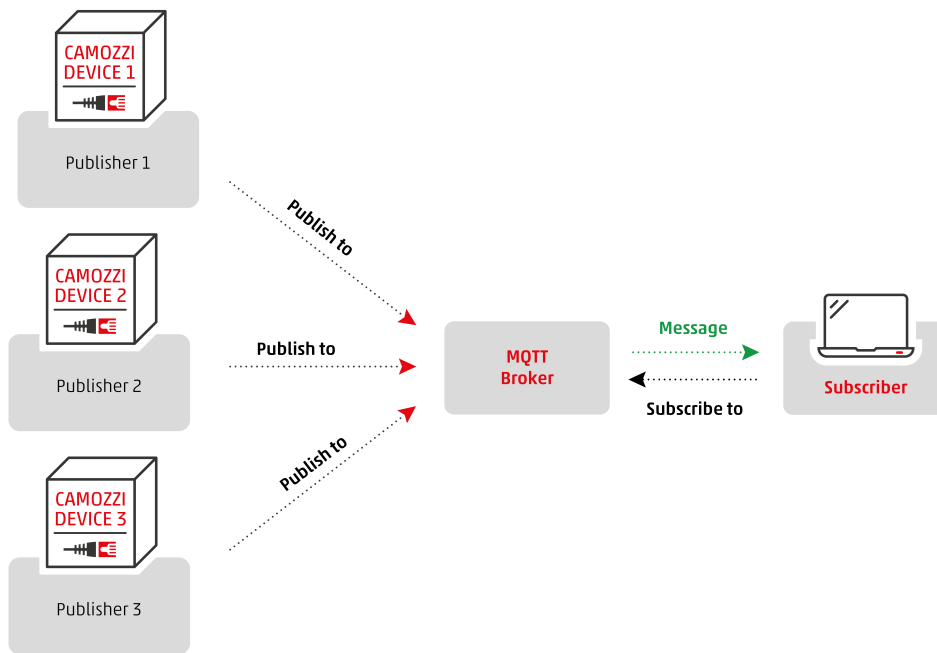


Figure 4.9: Publish/Subscribe Architecture

The flow sensor publishes data on a single topic named `FlowSensorData/"SerialNumber"`, where the second part of the topic corresponds to the device's unique serial number, allowing identification in case multiple flow sensors are present within the same network.

Within this topic, the device publishes two messages:

- `flow_sensor_system`: Message sent only at the beginning of communication, containing the device's identification data.
- `flow_sensor_data`: Periodic message (sent every second) containing all measurement data from the device.

Regarding the data structure, MQTT does not enforce a specific format for message payloads; however, JSON (JavaScript Object Notation) is commonly used due to its light weight and easy readability.

4.3.2 JSON Message Format

An example of the JSON message sent through the `FlowSensorSystem` topic is shown below:

```
{
  "flow_sensor_system": {
    "tick": 41022,
    "name": "Flow_Sensor",
    "serial": "027100000000000000",
    "type": "Fsxx",
    "subtype": "F2",
    "fw_version": "00.02",
    "commercial_code": "FSX00-0000-0000000-0000000S00",
  }
}
```

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```

    "display": "Not present",
    "humidity_sensor": "Not present"
  }
}

```

The contained data fields are:

Table 4.2: MQTT Communication Parameters

Variable	Description
tick	Counter indicating the time in milliseconds since the last device power-up
name	User-editable text (up to 17 characters), default is FlowSensor
serial	Unique serial number of the device
type	Device type; for the flow sensor, this is FSXX
subtype	Device subtype
fw_version	Firmware version
commercial_code	Commercial product code of the device
display	Display presence
humidity_sensor	Relative humidity sensor presence

The JSON message sent on the topic "FlowSensorData" is structured as follows:

```

{
  "flow_sensor_data": {
    "tick": 41022,
    "name": "FlowmeterCCC",
    "serial": "0271000000000000",
    "data": {
      "flow": 0,
      "flowUnit": "l/min (ANR)",
      "pressure": 0.02,
      "pressureUnit": "bar",
      "flow_temp": 26.4,
      "dew_point": 6,
      "temperatureUnit": "degC",
      "humidity": 25.7,
      "humidityUnit": "%",
      "power": 0,
      "powerUnit": "kW",
      "total_consumption": 1000,
      "partial_consumption_A": 0,
      "partial_consumption_B": 0,
      "consumptionUnit": "l (ANR)",

```

```
        "total_energy": 3600,  
        "partial_energy_A": 0,  
        "partial_energy_B": 0,  
        "energyUnit": "MJ",  
        "mediaType": "Air"  
    },  
    "diagnostics": {  
        "Status": "Ok",  
        "Errors": "0x0000",  
        "Warnings": "0x0000"  
    },  
  }  
}
```

From this example, the following can be observed:

- The fields `tick`, `name`, and `serial` are the same as those in the "FlowSensorSystem" topic, already described in Table 4.2.
- The "data" section contains all measurement variables along with their corresponding units, as described in Chapters 2.3, 2.4, and 2.5.
- The "diagnostics" section provides sensor diagnostic information, including current alarms and operational status. Refer to Chapter 5.3 for more details.

Diagnostics

The flow sensor series FSX integrates a set of diagnostic functions designed to support users in continuously monitoring the device status and promptly identifying any anomalies.

Through the available communication interfaces, the sensor provides real-time information on operating conditions, active alarms and errors, improving the efficiency of both preventive and corrective maintenance.

A correct interpretation of this information increases system reliability and reduces machine downtime. Before exploring the diagnostic features in detail, it is useful to understand the possible operating states of the device, each indicating a specific sensor condition:

- **Init:** Initialization state, active during the first 10 seconds after power-up. During this phase, the device performs self-diagnostics and prepares the measurement modules for operation.
- **Work:** Normal operating state. The device is fully functional and all measurements are calculated and transmitted regularly.
- **Warning:** One or more warnings are active. The device continues to operate, although some secondary functions may not be guaranteed.
- **Error:** Error state. At least one critical alarm has been detected, preventing normal operation; the device interrupts data processing.

5.1 LED Indicators Description

The flow sensor features two LEDs:






- **DIA (green/red):** Indicates the operating status of the device.
- **Link (orange):** Indicates the status of the Ethernet connection, regardless of the communication protocol used.

The DIA LED provides a visual indication of the device status.

Although it does not identify the specific alarm, it allows users to distinguish between normal operation, warnings, or critical error conditions.

The possible DIA LED states are listed in Table 5.1:

Table 5.1: DIA LED States




Color	State	Description
	Off	Device not powered
	Blinking green (0.5 seconds)	Initialization
	Blinking green (1 second)	Normal operation (Work)
	Blinking red (1 second)	Warning state: one or more secondary functions not guaranteed
	Blinking red (0.3 seconds)	Error state: device not operational

Chapter 5 Diagnostics

The LINK LED provides information on the physical status of the Ethernet connection, regardless of the active communication protocol.

Its behavior follows the standard for network ports, as described in the following table:

Table 5.2: LINK LED States

Color	LED indication	Connection status
	Off	No connection detected
	Solid orange	Active connection without data transfer
	Blinking orange	Active connection with data transfer

5.2 Alarms

When one or more alarms are active, the DIA LED changes from green to red. The LED blinking pattern indicates the severity of the alarm, but not the specific event. To identify the alarm, it is necessary to use one of the available communication interfaces.

Table 5.3 lists all possible alarms that the device may generate. For each alarm, severity, description, and recommended solutions are provided.

If the alarm persists after performing the suggested actions, please contact Camozzi technical support.

Table 5.3: Alarms supported by the flow sensor series FSX

Alarm	Severity	Description	Possible Solutions
Supply voltage out of range	Warning	Supply voltage out of range	Ensure the power supply is providing the correct voltage
Loss of non-critical memory data	Warning	Read/write failure of non-critical data	Verify and save configuration using one of the available configuration tools
Humidity sensor communication failure	Warning	Communication with the relative humidity sensor failed	Restart the device
Fluid temperature below minimum threshold	Warning	Fluid temperature below set threshold	Check measured value and set threshold
Fluid temperature above maximum threshold	Warning	Fluid temperature above set threshold	Check measured value and set threshold
Pressure below minimum threshold	Warning	Pressure below set threshold	Check measured value and set threshold

continued on next page

Table 5.3 – continued from previous page

Alarm	Severity	Description	Possible Solutions
Pressure above maximum threshold	Warning	Pressure above set threshold	Check measured value and set threshold
Humidity below minimum threshold	Warning	Relative humidity below set threshold	Check measured value and set threshold
Humidity above maximum threshold	Warning	Relative humidity above set threshold	Check measured value and set threshold
Flow below minimum threshold	Warning	Flow below set threshold	Check measured value and set threshold
Flow above maximum threshold	Warning	Flow above set threshold	Check measured value and set threshold
Dew point below minimum threshold	Warning	Dew point below set threshold	Check measured value and set threshold
Dew point above maximum threshold	Warning	Dew point above set threshold	Check measured value and set threshold
Pneumatic power below minimum threshold	Warning	Pneumatic power below set threshold	Check measured value and set threshold
Pneumatic power above maximum threshold	Warning	Pneumatic power above set threshold	Check measured value and set threshold
Internal error – DAC communication failure	Error	Internal error	Restart the device
Internal error – Sensors ADC error	Error	Internal error	Restart the device
Internal error – Power monitoring ADC error	Error	Internal error	Restart the device
Internal error – Air temperature out of range	Error	Internal error	Restart the device
Internal error – Flow sensor out of range	Error	Internal error	Restart the device
Critical memory data lost	Error	Read failure of critical memory data	Restart the device

continued on next page

Table 5.3 – continued from previous page

Alarm	Severity	Description	Possible Solutions
Internal error – Flow sensor power supply out of range	Error	Internal error	Restart the device
Pressure sensor communication failure	Error	Communication with pressure sensor failed	Restart the device
Flow estimation error	Error	Flow estimation failed	Restart the device
Internal error – Invalid serial number or MAC address	Error	Internal error	Restart the device

5.3 Reading Alarms via OPC UA and MQTT

The OPC UA and MQTT protocols transmit diagnostic data in real time, enabling continuous monitoring of the device status.

The following variables are exposed:

- **Status:** Indicates the current operating status of the device. The value corresponds to one of the statuses described at the beginning of this chapter (Init, Work, Warning, Error).
- **Warnings:** A two-byte hexadecimal value. Each bit represents an active warning; the bitmask therefore allows multiple simultaneous warnings to be identified.
- **Errors:** Uses the same format as the *Warnings* field and reports the currently active errors (two-byte hexadecimal bitmask).

Tables 5.4 and 5.5 list the bit positions for all warnings and errors transmitted by the sensor.

Encoding is handled by a two-byte bitmask in which position 0 corresponds to the least significant bit.

Table 5.4: Warning bit positions

Bit	Warning
0	Supply voltage out of range
1	Loss of non-critical memory data
2	Humidity-sensor communication failure
3	Fluid temperature below minimum threshold
4	Fluid temperature above maximum threshold
5	Pressure below minimum threshold
6	Pressure above maximum threshold
7	Humidity below minimum threshold
8	Humidity above maximum threshold
9	Flow below minimum threshold
10	Flow above maximum threshold
11	Dew point below minimum threshold
12	Dew point above maximum threshold
13	Pneumatic power below minimum threshold
14	Pneumatic power above maximum threshold

Table 5.5: Error bit positions

Bit	Error
0	Internal error – DAC communication failure
1	Internal error – Sensor’s ADC error
2	Internal error – Power-monitoring ADC error
3	Internal error – Air-temperature out of range
4	Internal error – Flow sensor out of range
5	Loss of critical memory data
6	Internal error – Flow-sensor power-supply out of range
7	Pressure-sensor communication failure
8	Flow-estimation error
9	Internal error – Invalid serial number or MAC address

5.3.1 Decoding Example

Warnings and error codes are transmitted by the sensor as two-byte hexadecimal values in the *Warnings* and *Errors* fields.

Each bit within these two bytes represents a specific condition, as shown in Tables 5.4 and 5.5.

The bit position (0 to 15) corresponds to the alarm index, starting from the least significant bit (LSB).

Example 1

- Received value: Warnings = 0x000A
- Binary conversion: 0000 0000 0000 1010
- Active bits:
 - Bit 1 = 1 → Loss of non-critical memory data
 - Bit 3 = 1 → Fluid temperature below minimum threshold

Example 2

- Received value: Errors = 0x0122
- Binary conversion: 0000 0001 0010 0010
- Active bits:
 - Bit 1 = 1 → Internal error – Sensor's ADC error
 - Bit 5 = 1 → Loss of critical memory data
 - Bit 8 = 1 → Flow estimation error

UVIX Software

UVIX is the software developed by Camozzi for configuration, monitoring, and diagnostics of the smart devices in our range.

It provides an intuitive and comprehensive interface for accessing all available functions, simplifying device management.

With UVIX, you can:

- Perform the complete configuration of the flow sensor, including network settings, communication protocols, measurement units, and alarm thresholds.
- Display real-time data acquired by the device (flow rate, pressure, temperature, relative humidity, power, energy).
- Run advanced diagnostics, checking alarms, operating states, and internal variables.
- Save and load configurations for fast, repeatable management of multiple devices.
- Carry out maintenance operations such as resetting partial quantities or performing firmware updates (where supported).

This chapter describes the functions available for the flow sensor series FSX. For further details on the software, refer to the dedicated UVIX manual.

6.1 Connection

To establish communication between the flow sensor and UVIX, the device must first be configured via the integrated HTTP interface.

Proceed as follows:

1. Access the device's HTTP server (see Chapter 4.1).
2. Open the **Setup** page and select the **Network Setting** section.
3. Set the **UVIX address**: the IP address of the PC (or server) on which UVIX is installed. The communication port is pre-set to 1555.
4. Save the changes by clicking **Send**.

After configuration, the device will automatically attempt to connect to UVIX at every start-up.

Once communication is established, the device can be added to the software as shown in Figure 6.1.

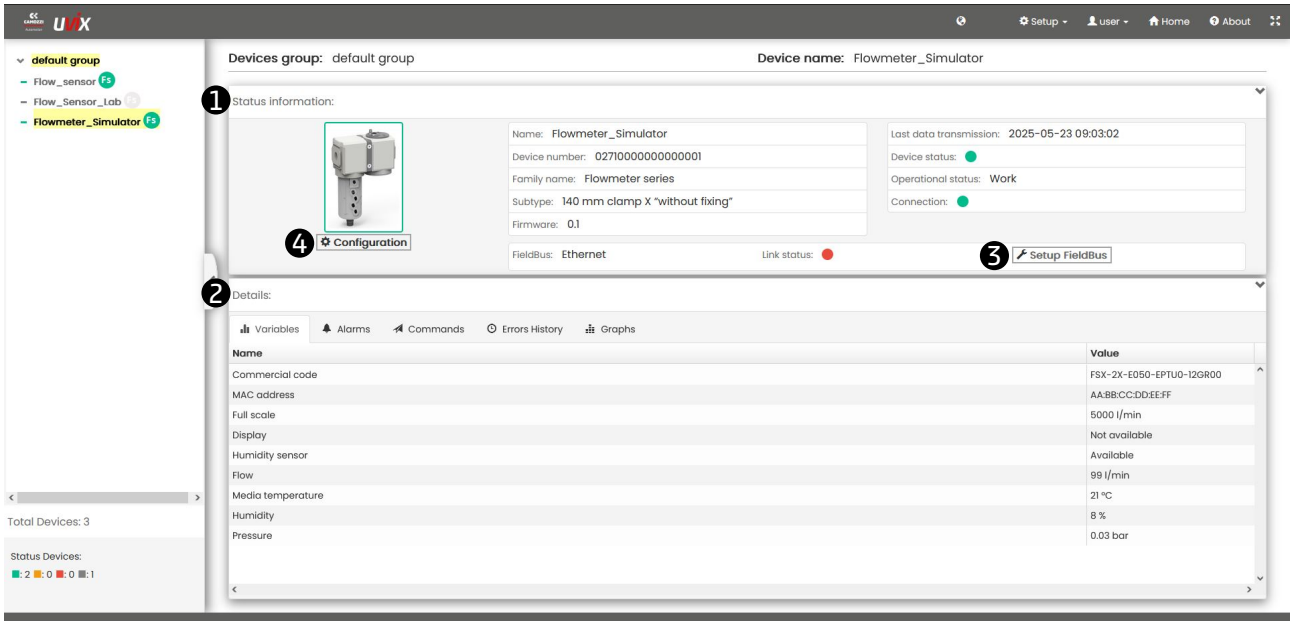


Figure 6.1: UVIX software home page

- ❶ **Status information:** Section displaying general device data (operating state, commercial code, firmware version, etc.). See Chapter 6.2.
- ❷ **Details:** Area showing detailed device information. See Chapter 6.2.
- ❸ **Setup FieldBus:** Command for accessing connection-setup parameters. See Chapter 6.4.
- ❹ **Configuration:** Command for entering the full device-configuration section. See Chapter 6.5.

6.2 General Information

This section contains information common to all Camozzi devices connected to UVIX.

The UVIX software and its dedicated manual can be downloaded from <https://shop.camozzi.com/store/camozzi/it/en/documentations/software>.

The data shown provide a quick overview of the device status, useful for rapid identification and operational verification.

Table 6.1: Data shown in the “Status Information” section

Item	Description
Name	Device name set by the user when the unit is added. It can be synchronised with the <i>Device name</i> in the Configuration page.
Device number	Unique serial number of the device.
Family name	Device family name.
Subtype	Identifies size and type of clamp according to the commercial coding (see Chapter 2.2).
Firmware	Currently installed firmware version.
Last data transmission	Timestamp of the last data received from the device.
Device status	Device state: grey (disconnected), green (OK), orange (warning), red (error).
Operational status	Operating state of the device. Possible values are described in Chapter 5.
Connection	Status of the link between device and UVIX: green = active, red = disconnected.
FieldBus	Type of FieldBus (communication interface) used by the device.
Link status	Physical Ethernet link status: green = linked, red = not linked.

6.3 Details

The *Details* section of the UVIX software provides a complete overview of the device’s operating information, updated in real time.

From this screen, the user can access variables, active alarms, available commands, and the error history recorded by the sensor.

These data are essential for monitoring, analysis, and prompt action in the event of anomalies.

The section is organised into the following areas:

- **Variables:** Displays the current values of all measured variables. See Chapter 6.3.1.
- **Alarms:** Lists the alarms currently active on the device, including severity and description. See Chapter 6.3.2.
- **Command:** Commands available for direct interaction with the device. See Chapter 6.3.3.
- **Errors History:** Historical log of detected errors, useful for diagnostic and maintenance analysis. See Chapter 6.3.4.
- **Graphs:** Graphic display of the main variables, useful for trend analysis over time. See Chapter 6.3.5.

6.3.1 Variables

The *Variables* subsection provides additional configuration information and shows, in real time, the values of the quantities measured by the device.

These data are fundamental for monitoring system performance and analysing operating conditions.



Name	Value
Commercial code	FSX-2X-E050-PTU0-12GR00
MAC address	0:0:0:0:0
Hardware version	0
Full scale	2000 l/min
Display	Not available
Humidity sensor	Available
Total power-on count	81
Device power supply	23.3 V
Flow	0 l/min
Media temperature	25 °C
Humidity	42 %
Pressure	0.01 bar

Figure 6.2: *Variables* subsection within the *Details* section

Table 6.2: Data available in the *Variables* subsection

Item	Description
Commercial code	Device commercial code
MAC address	Device MAC address
Full scale	Sensor full-scale value
Display	Indicates whether a display is present
Humidity sensor	Indicates whether a relative humidity sensor is present
Total power-on count	Total number of power-on cycles, used in the error history (see Chapter 6.3.4)
Device power supply	Device supply voltage
Flow	Real-time flow measurement
Media temperature	Real-time fluid temperature
Humidity	Real-time relative humidity value (if the sensor is present)
Pressure	Real-time pressure value

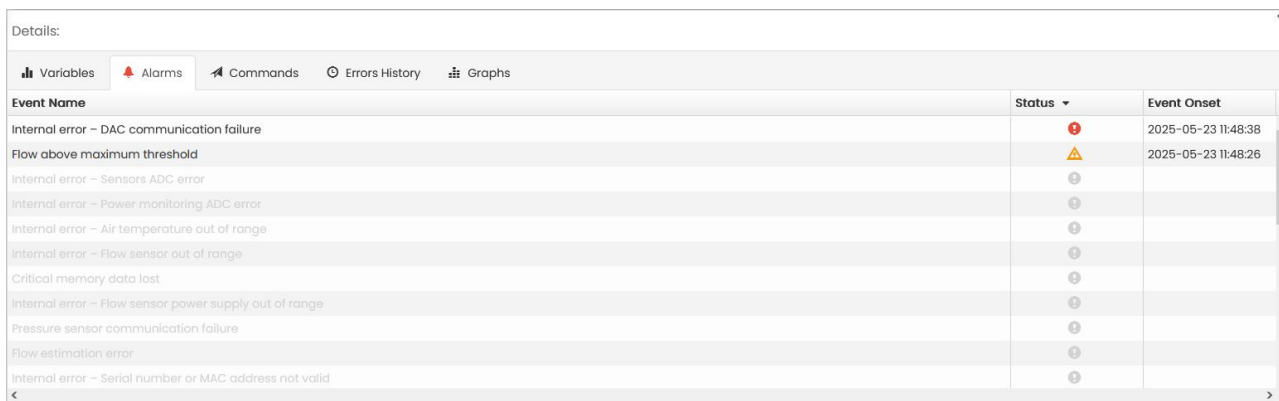
6.3.2 Alarms

The *Alarms* subsection lists all active alarms detected by the device.

Each alarm comes with a description, allowing rapid identification of anomalies and prompt corrective action to ensure operational continuity.

For every alarm, the following information is provided:

- **Event Name:** Alarm name. For details, refer to Table 5.3.
- **Status:** Severity (warning or error).
- **Event Onset:** Date on which the alarm was triggered.



Event Name	Status	Event Onset
Internal error - DAC communication failure	❌	2025-05-23 11:48:38
Flow above maximum threshold	⚠️	2025-05-23 11:48:26
Internal error - Sensors ADC error	❌	
Internal error - Power monitoring ADC error	❌	
Internal error - Air temperature out of range	❌	
Internal error - Flow sensor out of range	❌	
Critical memory data lost	❌	
Internal error - Flow sensor power supply out of range	❌	
Pressure sensor communication failure	❌	
Flow estimation error	❌	
Internal error - Serial number or MAC address not valid	❌	

Figure 6.3: *Alarms* subsection within the *Details* section

6.3.3 Commands

The *Commands* subsection allows the user to send commands to the device. Specifically, partial consumption and energy counters can be reset.

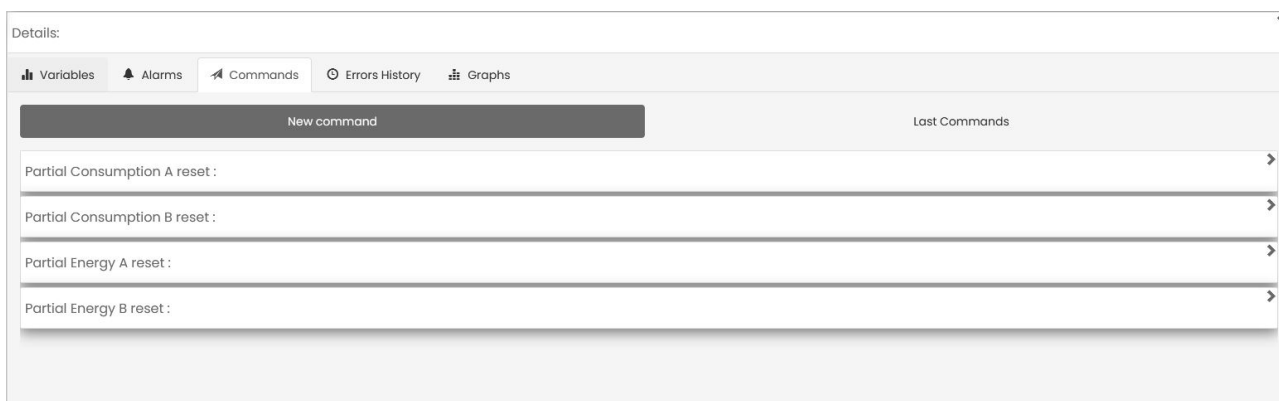


Figure 6.4: *Commands* subsection within the *Details* section

6.3.4 Alarm History

The *Errors History* subsection provides a chronological log of previously detected alarms (up to seven entries).

Each entry contains detailed information about the event, facilitating trend analysis and the planning of preventive maintenance.

For every alarm, the following data are shown:

- **Event Name:** Alarm name. For details, refer to Table 5.3.
- **Count Power On:** The power-on count at which the event occurred. The total number of power-on cycles is shown in the *Variables* subsection (Chapter 6.3.1).
- **Error time [ms]:** Time in milliseconds between the indicated power-on cycle and the appearance of the event.

Details:

Variables Alarms Commands Errors History **Graphs**

Event Name	Count	Power On	Error time [ms]
Pressure sensor communication failure	80		3948910
Not critical memory data lost	80		3948910
Not critical memory data lost	80		3948908
Not critical memory data lost	80		3948906
Not critical memory data lost	80		3948904
Not critical memory data lost	80		3948902
Not critical memory data lost	80		3948900

Figure 6.5: Errors History subsection within the Details section

6.3.5 Graphs

The *Graphs* subsection provides graphical representations of all direct measurements and derived quantities monitored by the device.



Figure 6.6: Graphs subsection within the Details section

This feature is an advanced tool for operational analysis: it allows real-time verification of system behaviour, facilitating trend detection, fault diagnosis, and optimisation of process parameters.

The clear, intuitive interface enables the user to:

- Select specific variables to display, tailored to the application.
- Export acquired data in .csv format for in-depth analysis with external tools.
- Set the sampling frequency, thereby adjusting the time window shown.
- Enable automatic data export—ideal for continuous monitoring and long-term analysis.

6.4 Communication Configuration

By clicking the *Setup FieldBus* command in the *Status Information* section, you can access the communication-configuration page, shown in Figure 6.7.

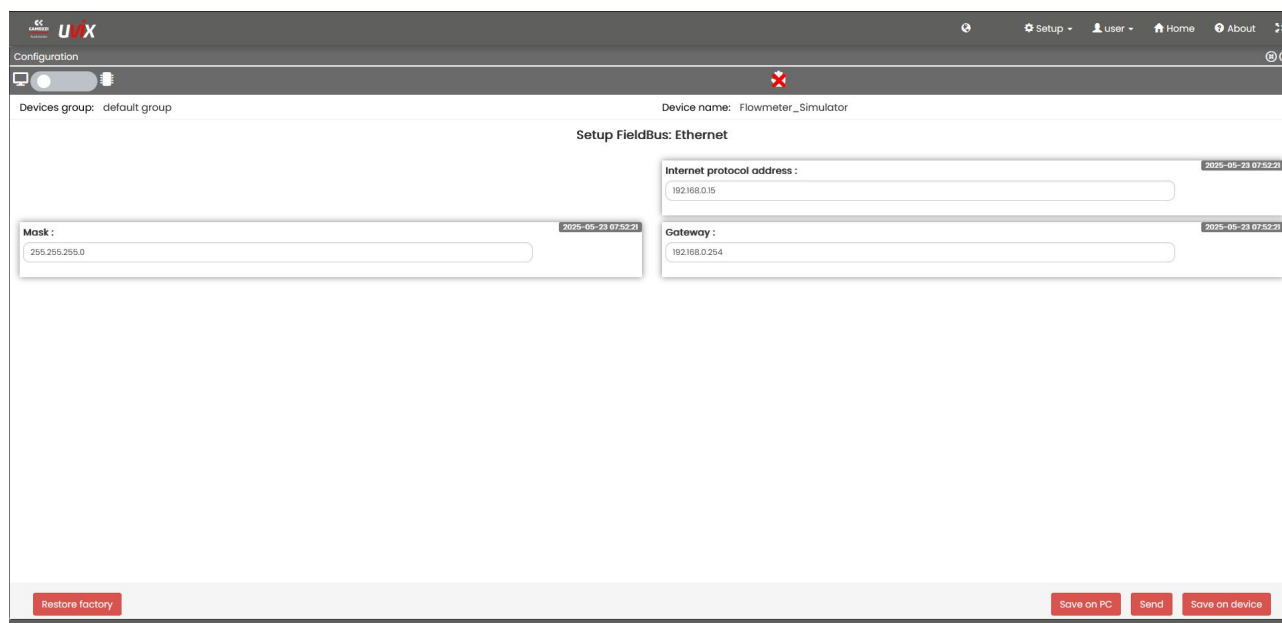


Figure 6.7: *Setup FieldBus* page

Table 6.3: Parameters available in the *Setup FieldBus* page

Item	Description
DHCP	Enables or disables the DHCP
Internet protocol address	Device IP address
Mask	Subnet mask
Gateway	Address of the gateway, if present

6.5 Device Configuration

This page—accessible via the *Configuration* command in the *Status Information* section—allows the device to be configured and adapted to specific application requirements.

The available parameters are grouped into three main sections:


- **Device parameters:** General device parameters.
- **Communication parameters:** Communication-related settings.
- **Variables checks:** Threshold and monitoring parameters for the variables.

6.5.1 Device parameters

This section displays and allows modification of the basic device parameters listed in Table 2.11.

⚠ It is recommended to align the *Device name* parameter with the name assigned to the device when it was added to UVIX.

To simplify this task, the software highlights any mismatch with the icon **⚠**; after that, the user can proceed in one of the following ways:

1. Click the  icon to update the name in UVIX according to the value stored in the device.
2. Alternatively, edit the name directly in UVIX and use the **Send** and **Save on device** commands (bottom left of the page) to transmit the new name to the device and overwrite the current one.

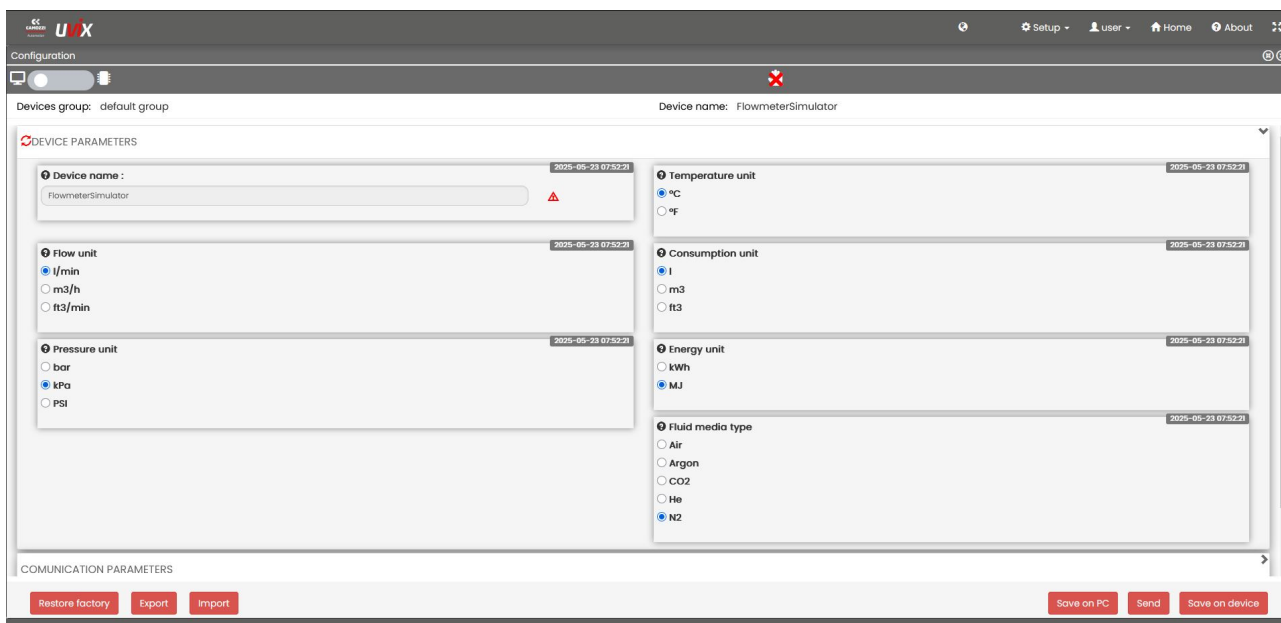


Figure 6.8: Device parameters

6.5.2 Communication parameters

In this section you can configure the communication protocols supported by the device, such as OPC UA, MQTT, or UVIX.

The user can enable or disable individual interfaces, set ports and IP addresses, and define the parameters required for data transmission and reception.

All available parameters are listed in Table 2.12.

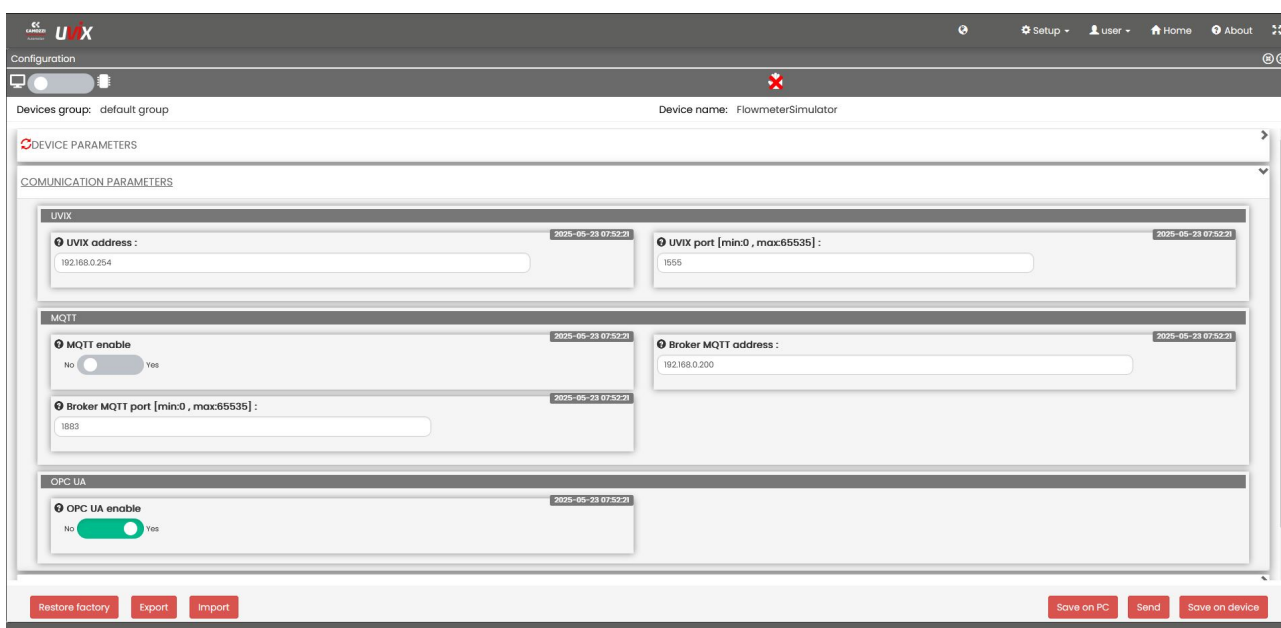


Figure 6.9: Communication parameters

6.5.3 Variables checks

This section allows to set threshold limits for the device variables.

The user can define minimum and maximum values for each quantity; when these limits are exceeded, a warning is generated.

This feature is useful for implementing customised alarm logic and for ensuring that the system operates within safe limits.

The available parameters are listed in Table 2.13.

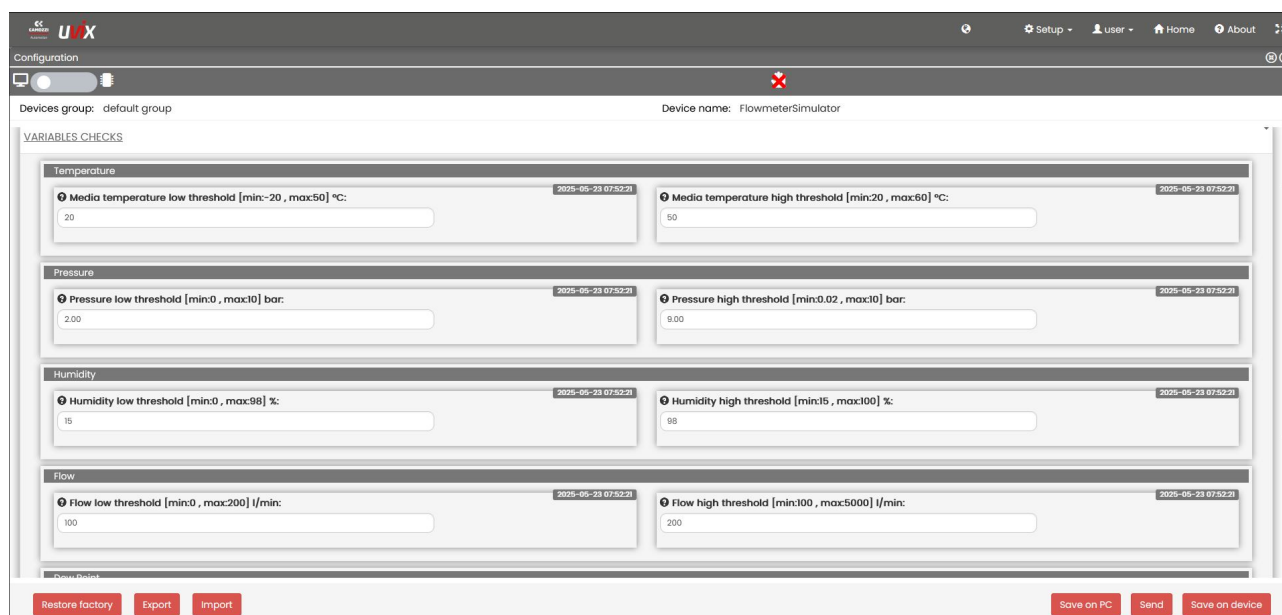


Figure 6.10: Variable-check parameters

6.6 Firmware upgrade

Firmware upgrades can be carried out using the *Camozzi Gateway USB* utility, supplied with the UVIX package.

⚠ Firmware files are not publicly available for download. They are provided directly by Camozzi technical support, who will assess whether an update is necessary for the specific case.

For further information, please contact Camozzi technical support.



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