SensoScope

Pressure Meter
with highly visible Display
for Vacuum Monitoring

User Manual

2025-11-08

Document Rev. 1.3-en

ELMICRO COMPUTER

ELMICRO Computer GmbH & Co. KG
Hohe Str. 9, 04107 Leipzig, Germany
Tel: +49-341-9104810

Tech Support: support@elmicro.com
Web: https://elmicro.com

Contents

1 Introduction

SensoScope is a configurable vacuum pressure gauge which continuously measures, monitors and displays the operating pressure in a milking system or other vacuum systems.

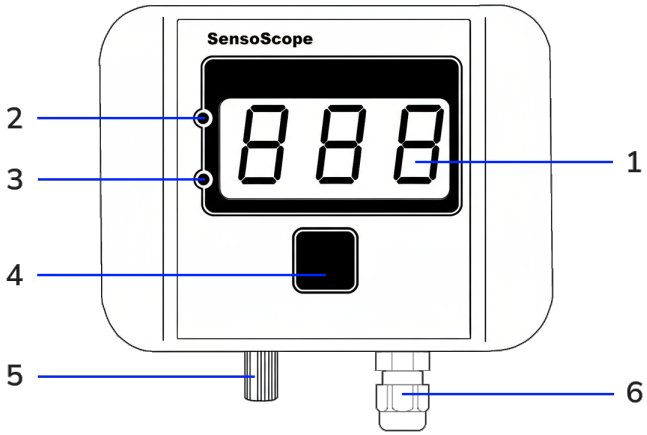
The vacuum level is the most important physical system parameter at a milking parlour. Recognizing and avoiding deviations from the setpoint is important both for maintaining animal health and for increasing the efficiency of the milking process. Therefore, the operational vacuum should be visible to the staff from every point in the cattle shed.

To provide the most reliable results, SensoScope utilizes a state-of-the-art monolithic differential silicon pressure sensor with integrated signal conditioning and temperature compensation.

Providing a large, brightly lit three-digit LED display, SensoScope ensures optimum readability even from a distance of several meters. This is a clear advantage over LCD-based solutions.

2 Getting Started

2.1 Overview



1. measured value display (kPa)
2. vacuum higher limit indicator LED
3. vacuum lower limit indicator LED
4. push button
5. vacuum connector
6. cable gland (electrical connections incl. power supply)

2.2 Installation

Connect your vacuum system to the SensoScope using a suitable vacuum pipe. The connection piece at the bottom of the unit has a diameter of 9 mm.

For electrical connections, a cable gland is provided allowing cable diameters of 3..6,5 mm.

2.3 Power Supply

SensoScope requires an external DC power supply delivering a voltage in the range from 8 to 30 V. This wide range enables the use of common supply voltages such as 24 V or 12 V.

The power supply is connected to these terminals:

- X2/5: Power Supply Input (-)
- X2/6: Power Supply Input (+)

2.4 Alarm Output

Depending on the application, an external warning light, electrical horn, motor or power relay can be activated by the alarm output of the SensoScope.

The alarm output is connected to these terminals:

- X2/7: Alarm Output (+)
- X2/8: Alarm Output (-)

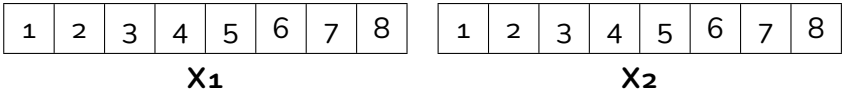
For details about the connectors, please refer to the tables below.

3 Electrical Connection Details

To establish the necessary electrical connections, there are two connectors inside the device labelled X1 and X2. To get access to these connectors, the device must be opened by sliding the upper side covers outwards and loosening the four screws underneath.

Inside the device two eight-pin screw terminals become visible. In addition to the designations X1 and X2, the position of pin 1 of each of the two connectors is also clearly marked on the circuit board.

The connectors are arranged side-by-side as shown here:



The following tables show the pin assignment of the connectors:

X1 Auxiliary/optional Functions

1	4..20mA Input (+) (Option)
2	4..20mA Input (-) (Option)
3	KTY Sensor Input (+) (Option)
4	KTY Sensor Input (-) (Option)
5	n.c.
6	n.c.
7	CAN_H (Option)
8	CAN_L (Option)

X2 Power Supply and Alarm Output

1	GND
2	+5V (for possible additional digital control units)
3	GND
4	+Vout Power Supply Output (derived from +Vin)
5	GND
6	+Vin Power Supply Input
7	+Vout Power Supply Output (derived from +Vin)
8	Alarm Out (switch to GND)

4 Configuration

4.1 Single Button Operation

The button on the front cover of the device has to be pressed for at least one second to confirm an action. This is called a long press in this manual, while a normal (quick) key press is called a short press.

If the button is not pressed for longer than 5 seconds, the display returns to the previous state. This timeout behaviour repeats until the initial state is reached (display of the measured value).

4.2 Entering Setup Mode

Long press the button to enter Setup Mode in order to configure the SensoScope.

The display now shows parameter number 1 as `P-1`

Use a short press to cycle through the parameter numbers.

To change the displayed parameter, apply a long press.

4.3 Parameter Settings

4.3.1 Vacuum Upper Limit (P-1)

To change the upper limit value of the vacuum monitoring, long press the button while P-1 is displayed. The display shows the current setting and the least significant digit is blinking. Short press (one or multiple times) to change the value of that digit. Long press to go to the next digit. Await timeout to return to main menu. The new value is stored automatically at this time.

4.3.2 Vacuum Lower Limit (P-2)

After entering Setup Mode, P-1 is displayed. Short press to change to P-2. Now you can long press to start editing the lower limit of the vacuum monitoring. The further operating sequence is the same as described above for P-1.

4.3.3 Limit Violation Response (P-3)

After entering Setup Mode, short press two times to change to P-3. This parameter specifies the response of the signalling LEDs and the alarm output in case of a limit violation. Short press to change the number. Wait to confirm the selection.

The following function combinations are available to select from:

	1	2	3	4	5
Upper & Lower Limit LEDs	-	✓	✓	✓	✓
Upper Limit Alarm Output	-	-	✓	-	✓
Lower Limit Alarm Output	-	-	-	✓	✓

4.3.4 Display Brightness (P-4)

After entering Setup Mode, short press three times to change to P-4. This parameter ranges from 1 (= darkest) to 5 (= brightest).

5 Technical Data

- Measuring range (vacuum): 0..60 kPa
- Resolution: 0.1 kPa
- Accuracy: +/-2.5%
- Display: bright 7-segment LED (red), 3 digits, digit height 2 cm
- Limit warning: two bright LEDs to indicate min/max violations
- Control button, covered by front sheet film
- Operating voltage: 8..30 VDC
- Alarm output: max. 30 VDC / 700 mA (allowing inductive loads, such as motors or relays)
- Calibration and parameter setting can still be performed after installation
- Operating temperature range: 0..50 °C
- Mech. dimensions: approx. 118 x 88 x 50 mm
- Protection class: IP65