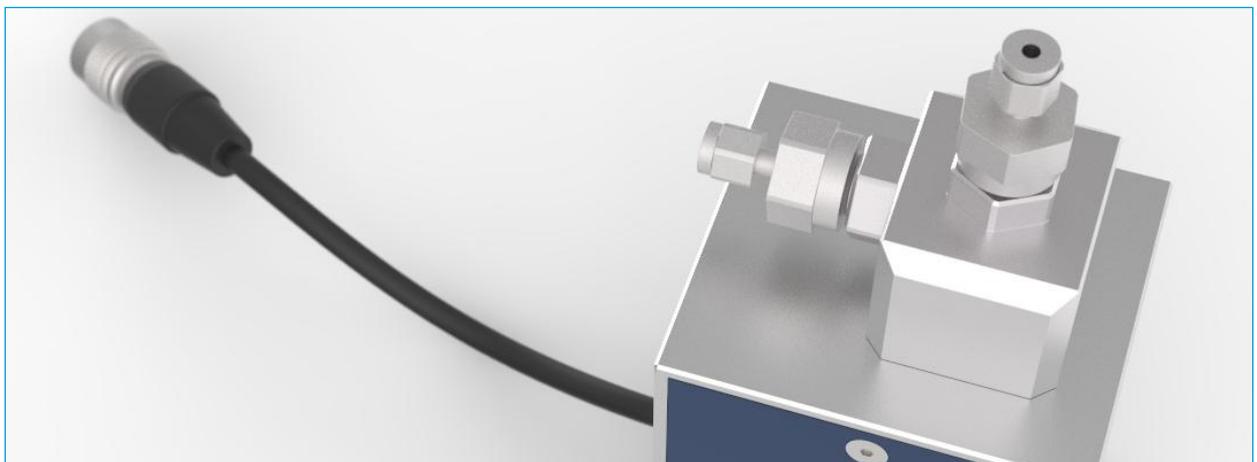


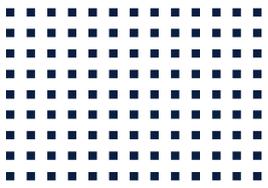


# CETONI

## **CE** Pressure Sensor Manual and Reference



ORIGINAL INSTRUCTIONS 1.12- OCTOBER 2016



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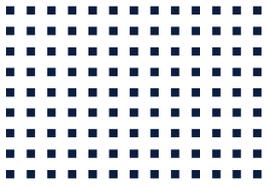
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## 1.2 Change History

<b>REV</b>	<b>DATE</b>	<b>CHANGE</b>
1.00	13.05.2011	Creation of the manual
1.10	23.09.2015	Revision of the device and the manual
1.11	19.04.2016	Revision Guide Design
1.12	07.10.2016	Wrong image exchanged

# 2 Introduction

## 2.1 Foreword

Thank you for deciding to purchase a CETONI product. We would like to support you with this handbook as far as possible in your interaction with the Pressure Sensor. We are directly available for any questions or suggestions that you may have.

The Pressure Sensor may only be taken in operation after carefully reading and understanding this manual. We wish you much success in your work with the Pressure Sensor.

## 2.2 Symbols and Key Words Used

The following symbols are used in this manual and are designed to aid your navigation through this document:



**HINT.** Describes practical tips and useful information to facilitate the handling of the software.



**IMPORTANT.** Signifies important hints and other useful information that may not result in potentially dangerous or harmful situations.



**CAUTION.** Identifies a potentially harmful situation. Failure to avert this situation may result in damage to the product or anything in its proximity.



**ATTENTION.** Indicates a potentially dangerous situation. Failure to avert this situation may result in light or minor injuries or property damage.

## 2.3 Norms and Guide Lines



CETONI GmbH declares under its sole responsibility, that the Pressure Sensor complies with the health and safety requirements of the relevant European directives.

## 2.4 Application Purpose

### 2.4.1 General Description of the Device

The Pressure Sensor is a pressure measuring device that converts the pressure into an electrical voltage signal which can be evaluated by the operating software.

### 2.4.2 Intended Use

The Pressure Sensor is used for measuring the pressure in fluidic systems. With the software the measuring signal can be used for process control. Depending on the installed sensor, pressures up to 4568 psi can be measured.

Application usually takes place in laboratory-like rooms.

### 2.4.3 Reasonably Foreseeable Faulty Application

A use for applications distinct from the intended purpose can lead to dangerous situations and is to be omitted.



**ATTENTION.** The unit must not be used as a medical device or for medical purposes.

### 2.4.4 Safety Advice

The safety of the user and a failure-free operation of the devices are assured only if original parts are used. Only original accessories may be used. Warranty claims will not be accepted for damage due to the use of alien accessories or expendables.

The devices have been developed and constructed in such a way as to largely rule out hazards due to its intended use. Nevertheless, you must observe the following security measures in order to exclude any remaining hazards:

- CETONI GmbH points out the responsibilities of the operator for the operation of the devices. The laws and regulations of the place of installation must be observed while operating the devices! To ensure a safe work routine, operators and users must assume responsibility for adhering to regulations.
- The devices must not be used as a medical device or for medical purposes.
- Before operating the unit, the user must at all times ensure the operational reliability and the adequate and orderly condition of the unit.
- The user must be familiar with the operation of the devices and the software.
- The devices and pipes must be checked for damage before operation. Damaged pipes and plug devices must be replaced immediately.
- Cables must be laid in a way that avoids any risk of stumbling.
- It is not allowed to use the devices in an explosive atmosphere or with potentially explosive substances.
- The device is designed and approved to work in fluidic systems, which fall within the scope of Article 4 Paragraph 3 of the Pressure Equipment Directive 2014/68/EU. This means that the system may not exceed a maximum volume of 1 liter. With the use of fluids from Group 1 according to Article 13 of the Pressure Equipment Directive 2014/68/EU, the maximum allowable system pressure is 200 bar. For fluids from Group 2 it is 1000 bar. If different, product-specific values for the maximum pressure are given in the section "Technical Data", these values must be complied with. Regarding the maximum operating temperature, the specification from the section "Technical Data" must be observed.

CETONI GmbH is not liable for consequences that may arise if the user expands the system by peripheral devices, such that one of the values or both values are exceeded.

The device XY is not a safety accessory in accordance with the Pressure Equipment Directive 2014/68/EU.

It is the user's responsibility to become familiar with the mentioned Pressure Equipment Directive and to comply with the prevailing requirements.

- Wear protective glasses if you are working with corrosive, hot or otherwise dangerous substances during assembly work on the device.
- Transportation, storage or operation of the devices below 0°C with water in the fluid passages may cause damage to the modules.

## 2.4.5 Measures for Safe Operation

### 2.4.5.1 ELECTROMAGNETIC EMISSIONS

The Qmix system is intended for use in any type of facility, connected directly to the public power supply network that supplies buildings used for domestic purposes.

### 2.4.5.2 ELECTROSTATIC DISCHARGE

Floors should be made of wood, concrete, or ceramic tiles. If the flooring is made of a synthetic material; the relative humidity must be at least 30%.

### 2.4.5.3 ELECTRIC DISCURBANCES

The quality of the supply voltage should be to the standard of a typical business or hospital environment.

### 2.4.5.4 MAGNETIC DISTURBANCES

Do not place power connector cables, even of other appliances, in close proximity of the devices and their cables. Mobile communication devices may not be used in closer proximity of the devices or their cables than the recommended safety distance!

## 2.4.6 Safety Devices on the System

The complete system can be switched off at any time in an emergency using the mains switch on the Base Module (rocker switch on the side of the housing); this will cause no damage to the unit.

## 2.4.7 Condition of the Devices

Irrespective of the faultless manufacture of the devices, damage can occur whilst the unit is in operation. With this in mind, always carry out a visual check of the components mentioned before use. Pay particular attention to crushed cables, damaged tubing, and deformed plugs. If you should notice any damage, please do not use the devices and inform CETONI GmbH without delay. CETONI will put your devices back to an operational condition at the earliest. Do not attempt to repair the devices yourself.

## 2.5 Warranty and Liability

The devices left our company in perfect condition. Only the manufacturer is permitted to open the devices. All guarantee and liability entitlements, particularly damage entitlements due to personal injuries, are void if the devices are opened by an unauthorized person.

The duration of the warranty is 1 year from the day of delivery. It is not extended or renewed due to work carried out under warranty.

CETONI GmbH considers itself responsible for the devices with regard to safety, reliability and function only if assembly, new settings, changes, extensions and repairs are carried out by CETONI GmbH or an authorized centre, and if the devices have been used in accordance with the instruction manual.

The device conforms to the basic safety regulation standards. Industrial property rights are reserved on the circuits, methods, names, software programs, and units.

## 2.6 Scope of Supply

The delivery should be in accordance with the order and include the following items in any case:

Pressure Sensor with the measuring range as ordered



Hardware-manual



# 3 Technical Data & Handling



**IMPORTANT.** Please carefully read this manual and the associated software manual in their entirety before starting up your Pressure Sensor.

## 3.1 Technical Data

### 3.1.1 Environment

<b>OPERATING TEMPERATURE</b>	-20°C bis 70°C
<b>STORAGE TEMPERATURE</b>	-20°C bis 70°C
<b>OPERATING AIR HUMIDITY</b>	20% bis 90%, non-condensing
<b>STORAGE AIR HUMIDITY</b>	20% bis 90%, non-condensing

### 3.1.2 Interfaces

<b>12-PIN PLUG</b>	connection to neMESYS syringe pumps
--------------------	-------------------------------------

### 3.1.3 Mechanical Data

<b>WEIGHT</b>	≈ 450g
<b>DIMENSIONS (L X W X H)</b>	62 x 55 x 104 mm

### 3.1.4 Fluidic Data

<b>WETTED MATERIALS</b>	Stainless Steel 1.4404, 1.4301, 1.4542
<b>MEDIA TEMPERATURE</b>	-40°C to +105°C
<b>MAX. PRESSURE</b>	see name plate
<b>DN</b>	2 mm



**CAUTION.** Before using the neMESYS Pressure Sensor, please check the chemical resistance of the wetted materials against the fluid to be used.



**CAUTION.** Transportation, storage or operation of the modules below 0°C with water in the fluid passages may cause damage to the module.

## 3.2 Maintenance and Care

When used as intended, the device is maintenance-free. In case of problems that you cannot fix yourself or that require opening the device, please contact CETONI GmbH to coordinate any further actions. The device may be opened only by CETONI GmbH or authorized service personnel. Failure to adhere to this rule will void the warranty.

The software manual includes detailed information about malfunctions with respect to the operating software.

After use with aggressive fluids please thoroughly cleanse the pressure sensor with water followed by, if possible, drying with compressed air, in order to avoid any deposits on the inside.

Wipe the device with a moist (not wet) cloth in such way that no liquids get into the inside. In case of heavy soiling you may use some detergent or alcohol.

## 3.3 Electrical Connection

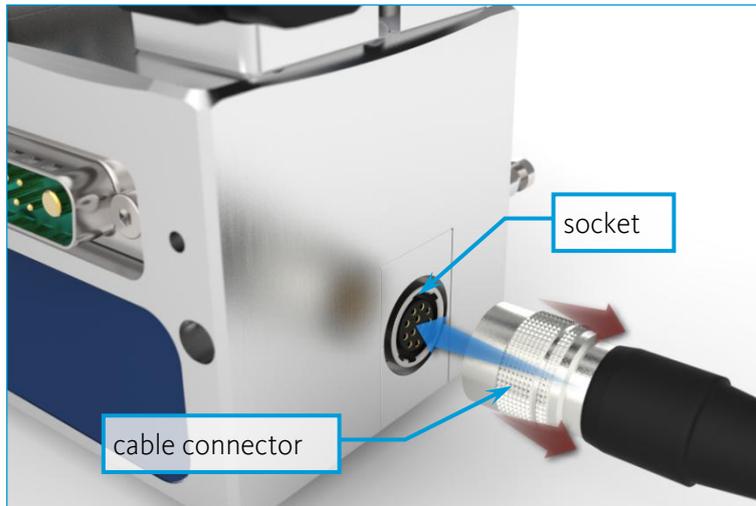


**IMPORTANT.** Please read and observe the respective section of the associated software manual before connecting the device.

The Pressure Sensor can be connected to all neMESYS devices that are fitted with the corresponding 12-pin connector.

Plug the cable connector of the Pressure Sensor into the socket of the device, until it snaps into place (blue arrow). Please note that the plug will fit only in one orientation!

To remove it, pull on the metal sleeve of the plug. Thereby, the lock is released and the plug can be easily removed. (red arrows)



**CAUTION.** Danger of stumbling due to connecting cables! Place cables and tubing in such way as to avoid any danger of stumbling!

## 3.4 Fluidic Connections

Screw-in fittings with a Swagelok® tube fitting are used for fluidic connection. They are suitable for using capillaries made from metal (e.g. stainless steel, titanium) and plastic (e.g. PTFE, PEEK). Please refer to information provided by the respective manufacturer with respect to maximum pressure.

### 3.4.1 Assembly of the Fittings

For the assembly and disassembly of the fittings you need a 14 mm- and a 9/16"-open-end wrench. The 14 mm-key is used for countering the hexagon on the pressure sensor housing and the 9/16" wrench is used to loosen or tighten the fittings. Place the stainless steel ring (pictured bluish) in the tapped hole before mounting the fittings. Then screw in the fittings and tighten them to a torque of about 45 Nm.

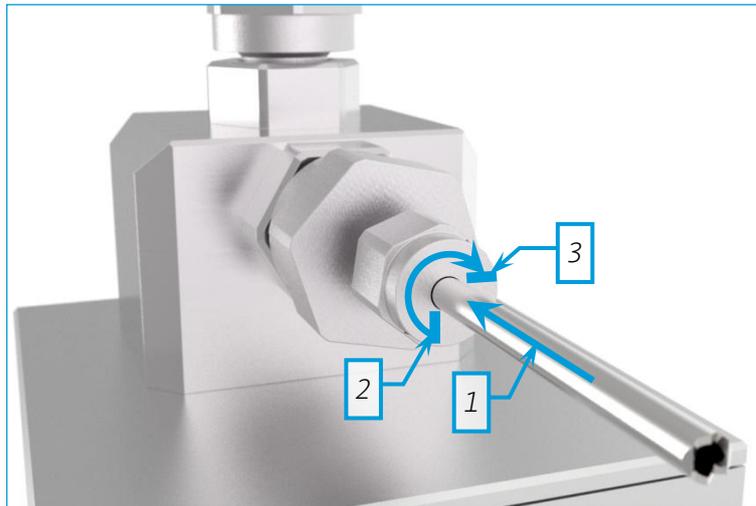


Depending on the type of tube fitting, capillaries with an external diameter of 1/16" or 1/18" can be used. For the Assembly or Disassembly of the tube fittings of the 1/16" version, you need a 5/16" open-end wrench and for the 1/8" version you need a 7/16" open-end wrench.

The operation of the tube fitting is explained in the following sections:

## 3.4.2 First-Time Installation

- (1) Fully insert the tube / hose into the fitting and against the shoulder; rotate the nut finger-tight.
- (2) Mark the nut at the 6 o'clock position.
- (3) Tighten the nut three-quarters turn to the 3 o'clock position with an open-end wrench.

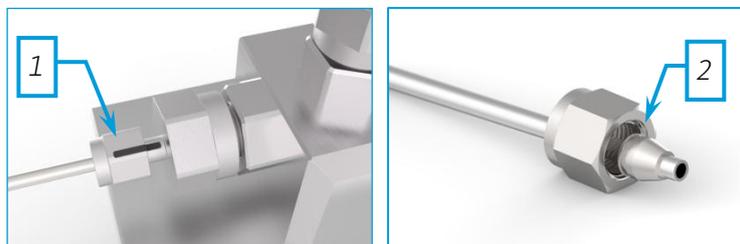


## 3.4.3 Disassembly



**CAUTION.** Release pressure from the system before loosening the fittings.

- (1) Before dismantling, draw a marker line across the nut and the fitting body. In this way you create a reference for retightening the cap nut to exactly the same position it was in before.
- (2) Pull out the capillaries. The nut and the ferrules remain on the capillary.



## 3.4.4 Reassembly

- (1) To reassemble, insert the capillary with preassembled ferrules into the fitting body until the front ferrule seats against the fitting body.
- (2) Rotate the nut with open-end wrench to the previously pulled-up position as indicated by the marks you made before; at this point you will feel a significant increase in resistance.
- (3) Retighten the nut slightly. Done!



**IMPORTANT.** Only use capillaries approved for the anticipated pressure levels.



**CAUTION.** After connecting, check the tightness of all fluidic connections on a regular basis.

## 3.4.5 Spare-Parts

You can purchase Spare-parts for the tube fittings directly from Swagelok.

DESCRIPTION	1/16"	1/8"
Complete Fitting	SS-100-1-2RS	SS-200-1-2RS
Union nut and ferrule set	SS-100-NFSET	SS-200-NFSET
Ferrule set	SS-100-SET	SS-200-SET

# 4 Disposal

Please send your old devices back to CETONI GmbH. We will take care of proper disposal according to electric devices regulations.

If necessary, please decontaminate the device before sending it back and attach a completed decontamination declaration with your shipment.