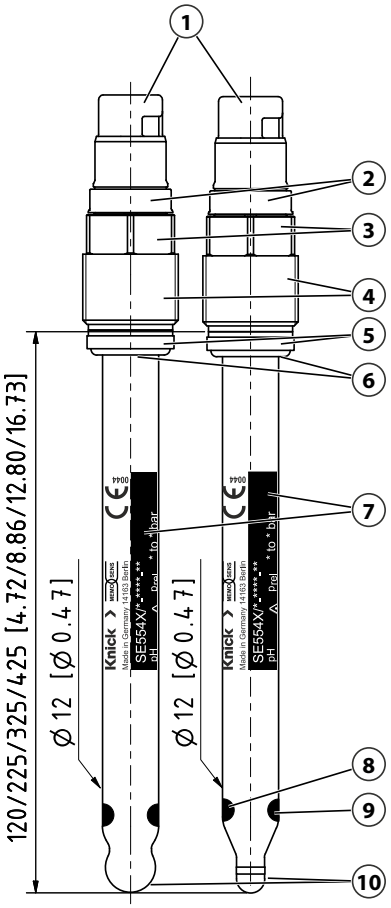
Knick

User Manual

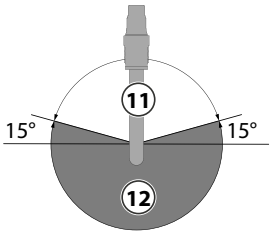
# SE554

pH Sensor




All dimensions in millimeters [inches]

Installation orientation




| | |
|---|---|
| 1 | Memosens connector |
| 2 | Ring for Ex marking |
| 3 | Hexagon screw A/F 19 with serial number |
| 4 | PG13.5 thread |
| 5 | PVDF compression ring |
| 6 | O-ring 11.9 x 2.6 mm EPDM FDA |
| 7 | Nameplate |
| 8 | Junction |
| 9 | Platinum electrode (SE554X/*-AMSN-**) |
| 10 | Sensor tip |
| 11 | Permitted installation orientation |
| 12 | Prohibited installation orientation |

Read before installation.
Keep for future use.

## Safety

This document contains important instructions for the use of the product. Always follow all instructions and operate the product with caution. If you have any questions, please contact Knick Elektronische Messgeräte GmbH & Co. KG (hereinafter sometimes referred to as "Knick") using the information provided on the back page of this document.

Hazards due to pressure, temperature, aggressive media, or explosive atmospheres are possible, depending on the location of use.

### Intended Use

The SE554 sensor (hereafter also called "product") is used for continuous pH measurement in aqueous process media.

| | |
|---|---|
| SE554X/*-AMSN-** | Digital combined pH/ORP measurement |
| SE554X/*-NMSN-** | Digital pH measurement |

Use of the product is only permitted in compliance with the operating conditions stated in the Specifications.

The measurement data of the sensor are output via a suitable industrial transmitter.

**THE OPERATING COMPANY SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGES RESULTING FROM OR ARISING OUT OF AN UNINTENDED USE OF THE PRODUCT.**

### Personnel Requirements

The operating company shall ensure that any personnel using or otherwise interacting with the product is adequately trained and has been properly instructed.

The operating company shall comply and cause its personnel to comply with all applicable laws, regulations, codes, ordinances and relevant industry qualification standards related to product.

### Hazardous Substances

**IN THE EVENT OF ANY CONTACT WITH HAZARDOUS SUBSTANCES OR OTHER INJURY HEREUNDER, SEEK IMMEDIATE MEDICAL ATTENTION OR FOLLOW APPLICABLE PROCEDURES TO ADDRESS HEALTH AND SAFETY OF PERSONNEL. FAILURE TO SEEK IMMEDIATE MEDICAL ATTENTION MAY RESULT IN SERIOUS INJURY OR DEATH.**

In certain situations, e.g., sensor replacement or cleaning, personnel may come into contact with the following hazardous substances:

- Process medium
- Cleaning medium

The operating company is responsible for conducting a job hazard analysis.

See the relevant manufacturers' safety datasheets for hazard and safety instructions on handling hazardous substances.

### Operation in Hazardous Locations

The SE554X sensor is certified for operation in hazardous locations.

Memosens Ex sensors are marked by an orange-red ring.

Observe all applicable local and national codes and standards for the installation of equipment in explosive atmospheres. For further guidance, consult the following:

- IEC 60079-14
- EU directives 2014/34/EU and 1999/92/EC (ATEX)
- NFPA 70 (NEC)
- ANSI/ISA-RP12.06.01

The electrical and thermal parameters of the sensors must be adhered to.

### Electrical and Thermal Parameters

| Certificate Number | Marking |
|---|---|
| IECEx DEK 22.0019X | Ex ia IIC T6…T3 Ga<br>Ex ia IIIC $T_{200}$135 °C Da |
| JPEx DEK 24.0039X | Ex ia Ga IIC T4 |

The electrical and thermal parameters as well as the special conditions for installation and operation in hazardous locations are indicated on the enclosed Control Drawing 213.215-066.

## Product

### Package Contents

- SE554 with watering cap
- User Manual
- Control Drawing
- Quality Certificate
- EU Declaration of Conformity

### Product Identification

SE554X/1 - NMSN - B1

- **Model designation**
- **Internal marking**
- **Glass material**
  N: Alpha glass
- **Connector**
  MS: Memosens connector
- **Pt electrode**
  A: with
  N: without
- **Length**
  1: 120 mm (4.72")
  2: 225 mm (8.86")
  3: 325 mm (12.80")
  4: 425 mm (16.73")
- **Ex approval**
  X: yes

### Product Characteristics

- Alpha glass, medium impedance, fluoride resistant sensor tip
- 2x open junction
- Solid electrolyte
- Integrated temperature detector

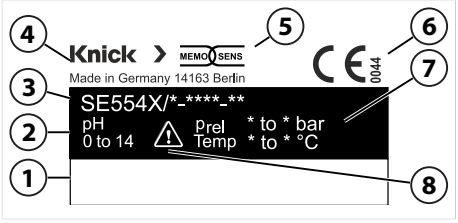
**Note:** The temperature detector measures the temperature as secondary measured value. This measurement is primarily intended for automatic compensation of the measured value and not for regulating and controlling the process temperature.

The sensor's identification and calibration data is stored in the Memosens connector. The data communication of the Memosens sensors takes place exclusively via a compatible meter.

### Nameplate

The SE554 sensor is labeled with a nameplate on the sensor body.

Example:




| | | | |
|---|---|---|---|
| 1 | Approval information[1] | 5 | Memosens logo |
| 2 | Measuring range | 6 | CE mark with test number |
| 3 | Product designation | 7 | Permitted pressure and temperature range |
| 4 | Manufacturer and address | 8 | Special conditions and danger points |

1) For details, see nameplate

**Knick**
**Elektronische Messgeräte**
**GmbH & Co. KG**

Beuckestraße 22
14163 Berlin
Germany
Phone: +49 30 80191-0
Fax: +49 30 80191-200
info@knick.de
www.knick-international.com



Version 1

This document was published on January 15, 2025.

The latest documents are available for download on our website under the corresponding product description.

TA-300.014-200-KNEN01

104154

Item number/serial number/product date in form ******/********/YYWW are printed on the packaging.

Refer to the packaging for more information on approvals and disposal.

## Installation

⚠ **CAUTION! Risk of cutting injuries from broken sensor glass.** Handle the sensor with care.

01. Check the SE554 sensor for damage.
    **Note:** Do not use damaged sensors.
02. Remove the watering cap.
03. Briefly rinse the sensor with pure water and pat dry.
    **Note:** Strong dry rubbing of the pH sensitive glass increases the response time of the sensor.
04. Remove air bubbles from the sensor tip by flicking the sensor upwards.
    **Note:** Air bubbles in the sensor tip distort the measurement result.
05. Install the sensor at the installation location.
    **Note:** Do not install the sensor upside down. See graphic for permitted installation position.
06. Align the junction in the process flow direction.
07. Connect the sensor to the sensor cable[2] and connect the sensor cable to a measuring device[3].

## Operation

When operating in a hazardous location, observe the electrical and thermal parameters of the Control Drawing.

01. Clean the sensor after every work cycle.
    **Note:** Adjust the cleaning intervals to the operating conditions.
02. During work breaks or interruptions in measurement, store the sensor in the watering cap filled with electrolyte (3 mol/l KCl).
    **Note:** Do not allow process media to dry on the sensor tip and junction.

## Cleaning

⚠ **CAUTION! Injury due to the use of aggressive cleaning agents.** Handle aggressive cleaning agents with care; wear protective equipment if necessary. Observe safety instructions.

Clean the sensor in case of soiling and deviations in slope, zero point, and/or response time.

01. Remove soiling with an appropriate cleaning agent.
02. Rinse the sensor with demineralized water.

### Recommended Cleaning Agents

| Contamination | Cleaning Medium |
|---|---|
| Water-soluble substances | Water |
| Greases and oils | Warm water and household dishwashing liquid |
| Lime and hydroxide deposits | Acetic acid (5 %) or hydrochloric acid (1 %) |
| Protein | Pepsin/HCl solution |
| Silver sulfide | Thiourea/HCl solution |

## Calibration

If necessary, remove the sensor SE554 before calibration. 2-point calibration is recommended for the pH measurement.

1-point calibration is recommended for ORP measurement.

Carry out the calibration in accordance with the operating instructions for the measuring device.

## Removal

⚠ **WARNING! For process media that contain hazardous substances: The sensor has direct contact with the process medium.** Rinse and clean the SE554 after removing it from the process medium. Follow the information on hazardous substances.

01. Depressurize the process and discharge if necessary.
02. Disconnect the sensor from the sensor cable.
03. Remove the sensor from the fitting.
04. Clean and store the sensor.

## Storage

Immerse the sensor tip and junction into the watering cap with electrolyte (3 mol/l KCl) and store. If the sensor is unintentionally stored dry, water the sensor in electrolyte (3 mol/l KCl) for several hours.

## Disposal

To dispose of the product properly, follow the local regulations and laws.

Waste devices must be separated from unsorted municipal waste before disposal.

Information on return and recycling can be found in the manufacturer's declaration on our website.

## Specifications

| | |
|---|---|
| **Measuring range** | |
| pH | 0 … 14 |
| ORP | ±1500 mV |
| **Process temperature** | 0 … 130 °C (32 … 266 °F) |
| **Relative process pressure** | 0 … 10 bar (0 … 145 psi) |
| **Temperature detector** | |
| SE554X/*-*MSN-** | NTC 30 kΩ |
| **Wetted materials** | |
| Body | Glass |
| Junction | 2× hole |
| Electrode (ORP) | Platinum |
| Sensor tip | Alpha glass |
| **Reference system** | Ag/AgCl/$Cl^-$ solid electrolyte |
| **Process connection** | PG 13.5 |
| **Tightening torque** | 1 … 3 Nm |
| **Electrical connection** | |
| SE554X/*-*MSN-** | Memosens connector |
| **Dimensions** | See graphic |

2) See Control Drawing for information on the certified Memosens cable.
3) Observe the instructions for use relating to the measuring device.