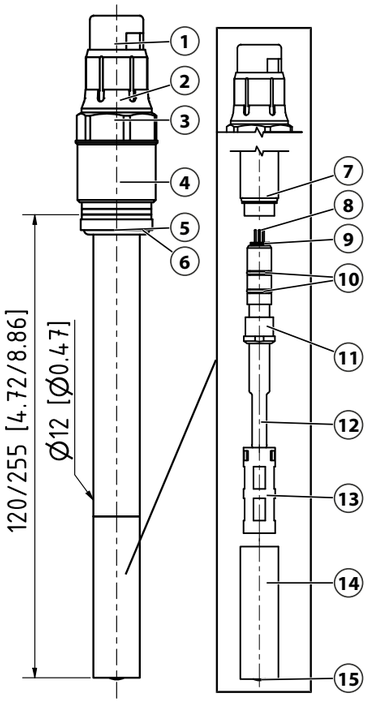
Knick

User Manual

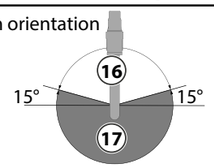
SE707

Oxygen Sensor



All dimensions in millimeters [inches]

Installation orientation



1	Memosens connector
2	Ring for Ex marking
3	A/F 19 with nameplate
4	PG 13.5 connector
5	Compression ring; conductive PEEK CA30
6	O-ring 11.5 x 2.6 mm; EPDM-FDA
7	O-ring 9 x 1 mm
8	Contact pins
9	Sealing washer; silicone
10	O-ring 6 x 1 mm; EPDM-FDA
11	Lock nut
12	Interior body
13	Membrane body
14	Membrane cap
15	Membrane
16	Permitted installation orientation
17	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 SE707 sensor (hereafter also called "product") is used for the continuous measurement of dissolved oxygen and temperature in aqueous process media.

The sensor may also be used to verify the oxygen content in the gaseous phase during cleaning and inerting operations.

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

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

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 SE707X 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 in Hazardous Locations

Certificate Number	Marking
BVS 16 ATEX E 037 X	Ⓔx II 1G
IECEx BVS 16.0030X	Ex ia IIC T3/T4/T6 Ga

The sensor has the following connection values:

Thermal Parameters

Suitable measures must be implemented to ensure that the temperature of the sensor connection head and cable are decoupled from the process temperature.

The sensors are suitable for use in the following ambient and process temperature ranges:

Temperature class	Ambient temperature range T_a	Maximum permissible process temperature
T6	–20 °C < T_a < 70 °C (–4 °F < T_a < 158 °F)	70 °C (158 °F)
T4	–20 °C < T_a < 120 °C (–4 °F < T_a < 248 °F)	120 °C (248 °F)
T3	–20 °C < T_a < 135 °C (–4 °F < T_a < 275 °F)	135 °C (275 °F)

Specific Conditions of Use

- The measuring cable and sensor may only be used within the ambient temperature range specified for the temperature class.
- The measuring cable, including its connecting head, must be protected from electrostatic charging if it passes through areas of Zone 0 (category 1G).
- Memosens sensors must not be operated under electrostatically critical process conditions. Avoid directly exposing the connection system to strong vapor or dust currents.
- Metallic process connection parts must be mounted electrostatically conductive at the mounting location (< 1 MΩ).
- Memosens sensors must only be used in liquids with a minimum conductivity of 10 nS/cm.

Product

Package Contents

- SE707 with protective cap
- User Manual
- Control Drawing
- Quality Certificate

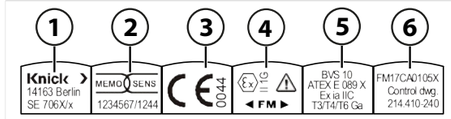
Product Identification

Oxygen Sensor		SE707 _/_-_ _ _
Explosion protection	Yes	X/
Sensor length	120 mm (4.72")	/1
	225 mm (8.86")	/2
Internal marking		-N
Electrical connections	Memosens connector	MS
Internal marking		N

Nameplate

The SE707 sensor is marked with a nameplate on the A/F 19 nut **(3)**. Additional information on product approvals and disposal is printed on the packaging of the SE707 sensor.

Example:



1	Manufacturer with postal address and model designation	4	Ex approval, special conditions and danger points
2	Memosens logo and serial number	5	Certificate number and Ex marking
3	CE mark	6	FM approval and Control Drawing

Product Properties

- Amperometric oxygen measurement
- Sterilizable, autoclavable, and CIP-resistant
- Integrated temperature detector

The sensor delivers measured values for temperature and partial pressure, as well as a raw measured value for oxygen concentration.

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 characteristics and calibration data of the sensor are stored in the Memosens connector. The Memosens sensors only communicate data via a compatible industrial transmitter.

Installation

01. Check the SE707 sensor for damage.
    Note: Replace damaged sensors.
02. If necessary: Fill the sensor with electrolyte before initial commissioning, see Maintenance.
03. Polarize the sensor before commissioning.
04. Remove the protective cap.
05. Install the sensor at the installation location.
06. Connect the sensor to the sensor cable[1)] and connect the sensor cable to an industrial transmitter [2)].

Operation

The sensor signal stabilizes within a few minutes. If the sensor is disconnected from the voltage source for more than 5 minutes, polarize before operation, see the Polarization Times table.

Note: In case of longer operation in the gaseous phase, the membrane may dry out.

Polarization

01. Use a sensor cable to connect the SE707 sensor to a transmitter (voltage must be present).

The polarization time is dependent on the time without polarization voltage.

Polarization times:

Time t without polarization voltage	Required polarization time
t > 30 min	360 min
30 ≥ t > 15 min	6 × t
15 ≥ t > 5 min	4 × t
t ≤ 5 min	2 × t

Calibration

Before calibration, remove the SE707 sensor if necessary. We recommend calibration in air for oxygen measurement. A zero calibration (2-point calibration) is required before measuring low oxygen concentrations.

Calibrate in accordance with the user manual of the transmitter.

Cleaning

Note: Do not use a cleaning medium or alcohol. They could damage the sensor or lead to fault currents.

Depending on the process medium, the sensor must be cleaned to ensure reliable measurements.

01. Clean the sensor body with water and a suitable brush.
02. Use a soft paper towel to remove dirt particles on the membrane or membrane body.
03. After cleaning, rinse thoroughly with clean water.

1) See Control Drawing for information on the certified Memosens cable.
2) Observe the User Manual for the industrial transmitter.

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Translation of the original instructions
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Version 7

This document was published on March 03, 2026.

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

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Maintenance

Depending on how the sensor is used, different maintenance intervals are required. The operating company will specify the corresponding maintenance intervals.

Maintenance includes cleaning the sensor and replacing wear materials or consumables like:

- O-rings
- Electrolyte
- Membrane body
- Interior body

Replacing the Electrolyte and O-Rings

01. Clean the sensor exterior.
02. Unscrew the membrane cap **(14)** and carefully slide it off the sensor.
03. Slide the membrane body **(13)** off the interior body **(12)** or out of the membrane cap **(14)**.
04. If necessary, replace the membrane body **(13)** (ZU0563 or ZU0564).
05. Check O-ring 9 × 1 mm **(7)** and O-rings 6 × 1 mm **(10)** and replace if necessary.

⚠CAUTION! Risk of burns from alkaline electrolyte. Handle electrolyte with care; wear protective equipment. Observe the safety instructions.

06. Fill the membrane body **(13)** halfway with electrolyte (ZU0565). Avoid air bubbles.
07. Carefully tap the membrane body **(13)** to remove air bubbles.
08. Slide the upright membrane body **(13)** onto the interior body **(12)**. Remove excess electrolyte with a paper towel.

    Note: No electrolyte, measured medium, or other contamination may be located between the membrane body **(13)** and the membrane cap **(14)**.
09. Carefully slide the membrane cap **(14)** over the membrane body **(13)** and screw on tightly.

Replacing the Interior Body

01. Remove the membrane body **(13)**, see "Replacing the Electrolyte and O-Rings" steps 01 … 03.
02. Use distilled water to rinse the interior body **(12)** and dry with a paper towel.
03. Loosen the lock nut **(11)** using a ⅜" open-end wrench and slide the interior body **(12)** out of the sensor body. If necessary, use pliers.

NOTICE! Risk of contact pin **(8)** breaking off. Pull out the interior body **(12)** only axially and without any rotational movement.

04. Remove the existing interior body **(12)** with sealing washer **(9)**. Do not leave the sealing washer **(9)** in the body.
05. Insert a new interior body **(12)** and sealing washer **(9)** (ZU0567) into the sensor body and rotate it until the groove in the interior body snaps into the cam of the sensor body.
06. Press the interior body **(12)** into the sensor body until the stop.
07. Tighten the lock nut **(11)** with a ⅜" open-end wrench.
08. Fill the membrane body **(13)** with electrolyte (ZU0656), see "Replacing the Electrolyte and O-Rings" steps 04…09.

Removal

⚠WARNING! For process media that contain hazardous substances: The sensor has direct contact with the process medium. Rinse and clean the SE707 after removing it from the process medium. Follow the information on hazardous substances.

01. Disconnect the SE707 sensor from the sensor cable.
02. If necessary, remove the sensor from the fitting.

Storage

To protect the membrane, store the SE707 sensor with the protective cap.

Spare Parts, Accessories

O_2 membrane body, single	ZU0563
O_2 membrane kit: Membrane body (4×), O-ring set (1×), 25 ml electrolyte (1×)	ZU0564
O_2 electrolyte 25 ml	ZU0565
Interior body for SE707	ZU0568
O-ring set silicone FDA	ZU0679

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	pO_2 < 1200 mbar (17.4 psi)
Detection limit	
In aqueous process media	1 ppb
In process media containing CO_2	3 ppb
Measurement error[3)]	
In aqueous process media	1% + 1 ppb
In process media containing CO_2	1 % + 3 ppb
Response time[3)] (Air -> N_2)	98% of end value < 90 s
Signal current in ambient air	–250 … –500 nA
Residual signal	≤ 0.03 % of signal in ambient air (in indoor air)
Flow dependence	≤ 5%
Absolute process pressure	0.2 … 6 bar (2.9 … 87 psi)
Pressure resistance	Max. 12 bar (174 psi) absolute
Process temperature	0 … 80 °C (32 … 176 °F)
Ambient temperature	–5 … 121 °C (23 … 250 °F)
Temperature detector	NTC 22 kΩ
Wetted materials	
Body	Stainless steel 1.4404 (Material Certificate 3.1)
Membrane	PTFE/silicone/PTFE, FDA-compliant (reinforced with steel mesh)
O-ring	Silicone (FDA and USP Class VI)
Surface roughness	N5 (Ra < 0.4 µm)
Process connection	PG 13.5
Tightening torque	1 … 3 Nm
Electrical connection	Memosens connector
Dimensions	See graphic

3) For 25 °C (77 °F) and 1,013 mbar (14.7 psi)