

InSUS Sensor Series

Single Use pH and Dissolved Oxygen Sensors

Technical Data



InSUS 310
pH sensor



InSUS 607
DO sensor

InSUS H60i
Reusable DO
sensor head



Short description

The InSUS™ sensor series for single-use technology bioprocesses cover the measurement parameters pH and dissolved oxygen (DO). These gamma- and X-ray irradiation-sterilizable sensors have been designed especially for deployment in stirred single-use bags in the 20–3,000 L range for applications such as: cell culture, fermentation, virus inactivation, and media/buffer preparation. The sensors offer a unified design that allows easy installation in a standard 1" Eldon James port disc. Inventory control of bags, both at bag manufacturer and end-user sites, is enhanced thanks to sensor shelf life of up to 36 months.

Outstanding features of the sensors are:

- Wide pH measurement range from 3 – 10;
- DO measurement based on optical fluorescence quenching technology;
- High signal stability comparable to conventional/re-usable sensors;
- Sensor signals compatible with METTLER TOLEDO transmitters and a variety of biocontrollers;
- InSUS 310 pH: 30 month dry storage capacity (shelf life). Glass elements shielded by protective guards.



USP
Class VI

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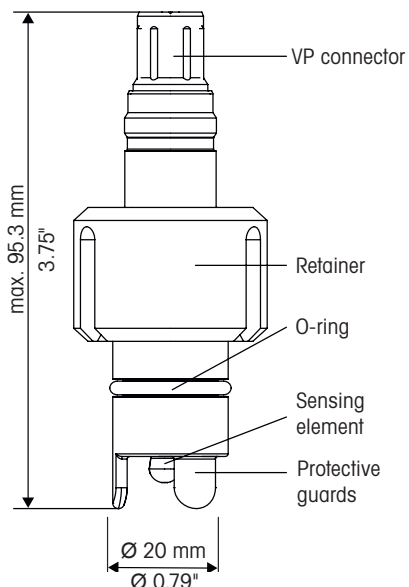
METTLER TOLEDO

Technical specifications

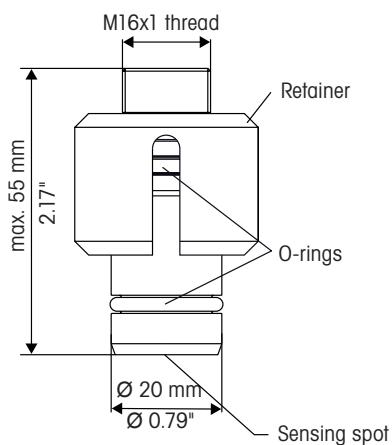
Specifications	InSUS 310	InSUS 607
Measurement principle	pH sensitive glass membrane/silver/silver chloride reference system filled with potassium chloride solution. Analog sensor.	Optical (fluorescence quenching). To be completed with re-usable sensor head type InSUS H60i.
Storage before use		
Maximum shelf life	30 months (protective coating on reference system made of soluble biocompatible PVP).	36 months
Storage conditions	Dry, 5...25 °C (41...77 °F), ambient pressure	Dry, 5...25 °C (41...77 °F), ambient pressure
Operating conditions		
Sterilization method	Gamma- and X-ray irradiation 25–45 kGy	Gamma- and X-ray irradiation 25–45 kGy
Permissible temperature range during measurement	5...60 °C (41...140 °F)	5...60 °C (41...140 °F)
Mechanical pressure resistance during measurement	2 barg/40 °C (29 psig/104 °F) 1 barg/60 °C (15 psig/140 °F)	2 barg/40 °C (29 psig/104 °F) 1 barg/60 °C (15 psig/140 °F)
Wetting time after exposure to measurement liquid	120 minutes	10 minutes
Sensor performance		
Operating range	pH 3...10	0...250 % air
Accuracy under defined laboratory conditions	±0.10 pH for ±1.50 pH units around calibration point after 1-point process calibration (adjustment of inline reading to an offline pH measurement of a grab sample)	<2.5 % for the range 50...100 % air after 1-point calibration in 100 % air, <1 % after 2-point calibration in 100 % air and 0 % oxygen
Response time	t _{90%} <20 s between pH 4...7	25 °C (77 °F) air → nitrogen, t _{98%} <30 s
Membrane glass resistance	300...900 MOhm	n/a
Factory calibration zero point	7.20 ±0.25 pH	n/a
Factory calibration slope	min –57.8 mV/pH (98 %)	n/a
Design features		
Temperature compensation	Via built-in Pt 1000	Via Pt 1000 integrated in InSUS H60i
Connector	VP for connection with VP6 cable	M16 × 1 for connection with InSUS H60i
Process connection	Eldon James 1" weld-in port	Eldon James 1" weld-in port
Wetted sensor material	HDPE (USP 88 Class VI)	HDPE (USP 88 Class VI)
Wetted O-rings	EPDM (USP 88 Class VI)	EPDM (USP 88 Class VI)
Wetted optical spot material	n/a	Silicone (USP 88 Class VI)
Certificates		
CE EMI	•	n/a
USP 88 VI for wetted materials	•	•

Dimension drawing

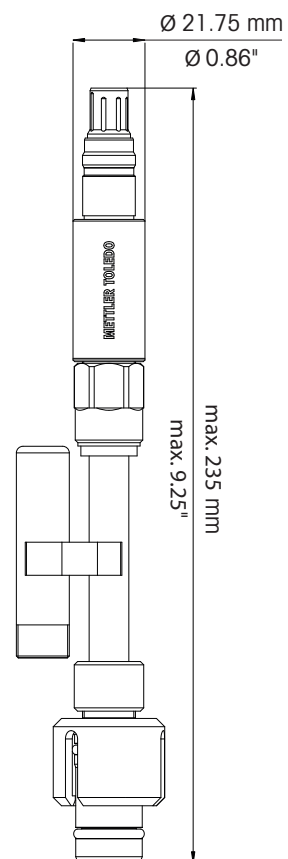
InSUS 310



InSUS 607



InSUS H60i/InSUS 607 assembly



Ordering information

Sensors

Name	Quantity of Sensors	Order No.
InSUS 310	1	30 778 185
InSUS 310	10	30 778 187
InSUS 607	1	30 778 198
InSUS 607	10	30 778 199

Accessories for InSUS pH Sensors

Cables	Order No.
VP6-ST/1 m	52 300 107
VP6-ST/3 m	52 300 108
VP6-ST/5 m	52 300 109
VP6-ST/10 m	52 300 110

For InSUS Dissolved Oxygen Sensors

Name	Description	Order No.
InSUS H60i nA	Reusable sensor head with nA output	30 788 856
InSUS H60i mA	Reusable sensor head with 4 / 20 mA output	30 788 857

Cables

VP8-ST/1 m		52 300 353
VP8-ST/3 m		52 300 354
VP8-ST/5 m		52 300 355
VP8-ST/10 m		52 300 356
VP8-ST/15 m		52 300 357
VP8-ST/20 m		52 300 358

Compatibility with METTLER TOLEDO transmitters

	InSUS 310 Analog pH Sensor	InSUS 607 Via Digital InSUS H60i interface
M300	•	–
M400 type 2 and type 3	•	•
M800 1-channel	•	•
M800 2-channel	–	•
M800 4-channel	–	•

Please ask your local METTLER TOLEDO sales representative.

InSUS is a trademark of the METTLER TOLEDO Group.

For addresses of METTLER TOLEDO
Market Organizations please go to:
www.mt.com/contacts



Management System
certified according to
ISO 9001/ISO 14001

METTLER TOLEDO Group

Process Analytics

Local contact: www.mt.com/contacts

Subject to technical changes

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For more information