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HD pH/Rd

pH and redox combination electrodes, digital with reusable electronics oranalog

Series 201021 — pH electrodes
Series 201026 — redox electrodes

Brief description

Premium matierals and components make Supmea electrodes particularly suitable for the most demanding applications in process and industrial measurement technology. They are designed as combination electrodes (glass or metal electrodes and reference electrodes in one shaft). Depending on the model, a Pt1000 temperature probe can be optionally integrated.

An optimised PTFE ring diaphragm enables a quick response time while at the same time being largely impervious to greater pollution loads or oily/fatty process water and wastewater. Alternatively, a variant with a pinhole diaphragm is available as the optimal solution for processes with a high solids content (e.g. wastewater with sand particles or media that is subject to precipitation and/or crystallization reactions).

The electrodes are state-of-the-art for modern pH and redox electrodes. Each top-quality electrode is individually tested and supplied with a calibration certificate. Modern produc-tion facilities ensure consistent characteristics.

All standard electrodes are manufactured using physiologically safe and FDA-listed materials. They feature lead-free shaft glass and therefore comply with the RoHS-2 directive.



Type 201021/10...

Typical areas of application

Chemical industry:
Process water, high process pressures up to 13 bar, broad temperature range up to max. 135 °C, and wide pH range from pH 0 to pH 14; suspensions, coatings and media with solid particles.

Industrial wastewater engineering:
Process wastewater, wastewater with highly contaminating media (presence of oil or electrode poisons)

Galvanic:
Process water, media with electrode poisons (metal ions, complexing agents)

Power plants and waste incineration plants (flue gas scrubbing):
Wide pH range of pH 0 to pH 14, presence of fine ash particles

Sugar industry:
Consistent high temperature, presence of electrode poisons (e.g. sulfides)

The advantages of electrodes with combined Our electronics

- Fail-safe digital data transfer for optimal process monitoring
- Modular system: for single measuring points and for establishing electrode networks
- Plug and Play function.This facilitates the replacement of electrodes or the brief exchange of electrodes for calibra-tion purposes.
- Version with 4 to 20 mA output for integration into existing systems
- digiLine electronics can continue to be used even when the electrode becomes worn
- Easy and secure configuration in the lab using USB interface and software

Special features

- Low-maintenance thanks to dirt-repellant PTFE ring diaphragm with polymerized highly elastic gel
- Alternatively with a pinhole diaphragm for suspensions, coatings and media with solid particles
- Designed for use at a continually high process temperature of up to max. 135 °C[1]
- For process pressures of up to 13 bar
- Pt1000 temperature probe can be integrated as an option
- With salt reserve to increase service life in media with low conductivity
- Long service life with presence of electrode poisons thanks to double-chamber version
- Redox versions with platinum or gold tip up to ±1500 mV
- Supplied with quality certificate

[1] Electrodes with a PTFE diaphragm: 135 °C
Electrodes with a pinhole diaphragm: 110 °C

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Technical data

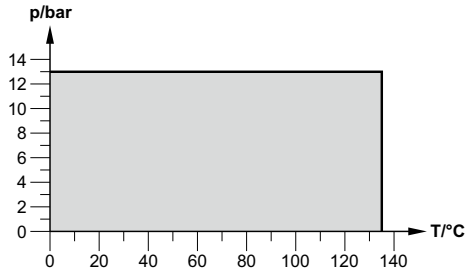
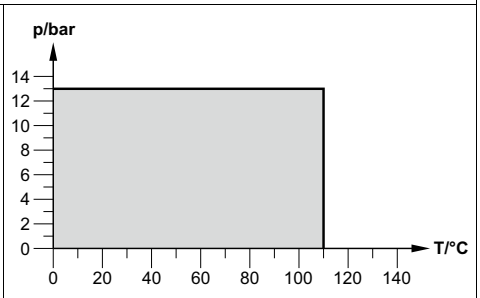
Specifications

Measurands	pH value or redox potential Temperature (optional)
Measuring ranges	
pH	0 to 14 pH
Redox potential	±1500 mV
Temperature	0 to max. 135 °C on versions with a PTFE diaphragm 0 to max. 110 °C on versions with a pinhole diaphragm

Environmental influences

Storage temperature	-5 to +30 °C
Protection type	IP66 and IP 67

Process conditions

	Versions with a PTFE diaphragm[a]	**Versions with a pinhole diaphragm**
Process temperature	0 to +135 °C	0 to +110 °C
Process pressure	13 bar	
Pressure-temperature diagram		
Recommended minimum conductivity	50 µS/cm	500 µS/cm

[a] Pressure/temperature diagrams for the electrode in conjunction with electrode holders ⇨page 9.

Design

Process connection	Pg13.5
Temperature sensor	Pt1000 (class A)
Plug heads	N screw head (S8), Pg13.5 thread VarioPin (VP) plug head, Pg13.5 thread
Reference system	Pressure-compensated **double-chamber system**, silver/silver chloride (Ag/AgCl) cartridge-style conduction system, highly elastic gel (AgCl-free)
Diaphragm	
Exterior	PTFE ring diaphragm or pinhole diaphragm
Interior	Ceramic diaphragm[a]
Glass membrane	Spherical
Membrane glass	High-temperature (HT) glass, high alkaliresistant
Materials	See illustrations in chapter "Dimensions", page 4

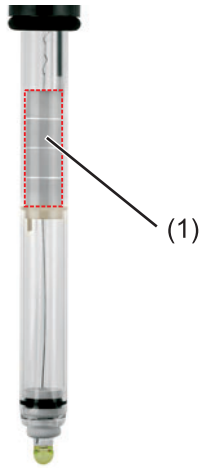
[a] In double chamber

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Special design features

Salt reserve



The electrode is equipped as standard with a salt reserve in the form of four salt rings (see illustration).[a]

This makes it particularly well suited for use in low-ion media or at high flow rates.

The salt reserve helps to improve the service life of the electrode.

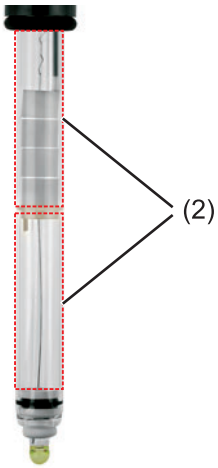
The rings are not a manufacturing defect (crystallization).

The „usage status“ of the electrode can be assessed by the reduction of the salt rings.

(1) Salt reserve

[a] KCl powder as a salt reserve on versions with a pinhole diaphragm

Double chamber



If electrode poisons such as sulfides are present in the measurement medium, the extended diffusion path (due to the two consecutive chambers – double chamber system) and the double diaphragm separation prevent electrode poisoning.

(2) Double chamber

Electronics



The electronics are delivered screwed firmly to the combination electrode. They can continue to be used even when the sensor becomes worn.

The factory calibration and further sensor data are stored in the head. Additional information is available in data sheet 202705 and in system data sheet 203501.

Extra code /960: digiLine interface, bus-compatible (the transmission of measured values, calibration and configuration are all digital).

Extra code /961: with analog 4 to 20 mA output for integration into an existing infrastructure (the transmission of measured values is analog, calibration and configuration are performed via a digital interface). With additional digital input (e.g. hold function).

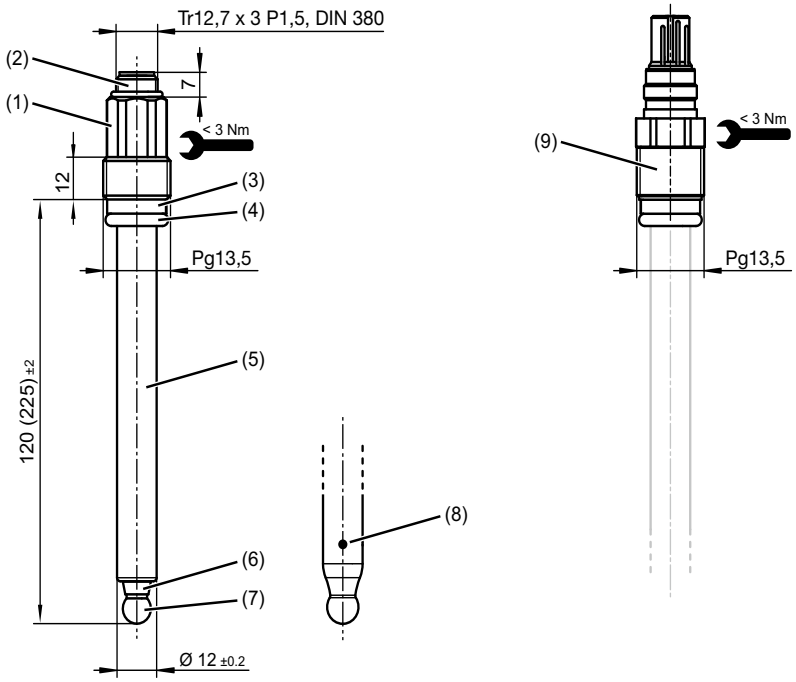
(3) M12 plug connector
(4) Screw connection
(5) Combination electrode

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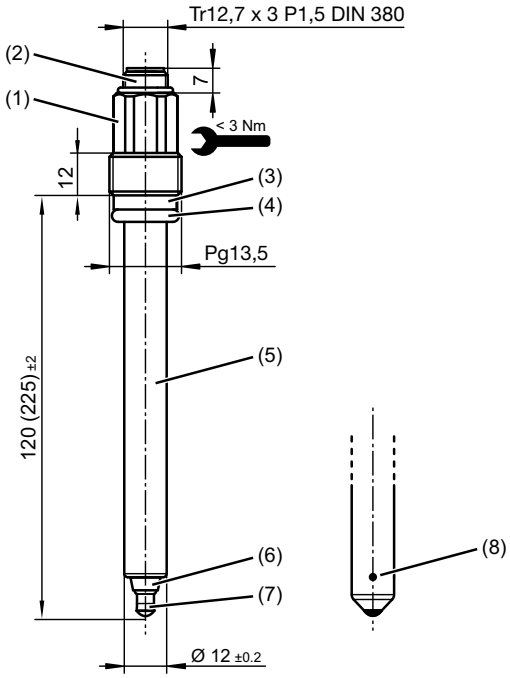
Dimensions

pH combination electrode type 201021/10...



(1) N screw head (S8) Pg13.5 (PPS), max. tightening torque 3 Nm
(2) Thread Tr12.7 × 3 P1.5
(3) Ring (PEEK)
(4) O-ring 10 × 3.5 (FPM70)
(5) Electrode shaft (glass DIN 19263)
(6) Ring diaphragm (PTFE)
(7) Spherical membrane
(8) Pinhole diaphragm
(9) VarioPin (VP) plug head connection variant with rotatable union nut Pg13.5 (PBT), max. tightening torque 3 Nm

Redox combination electrode type 201026/10...



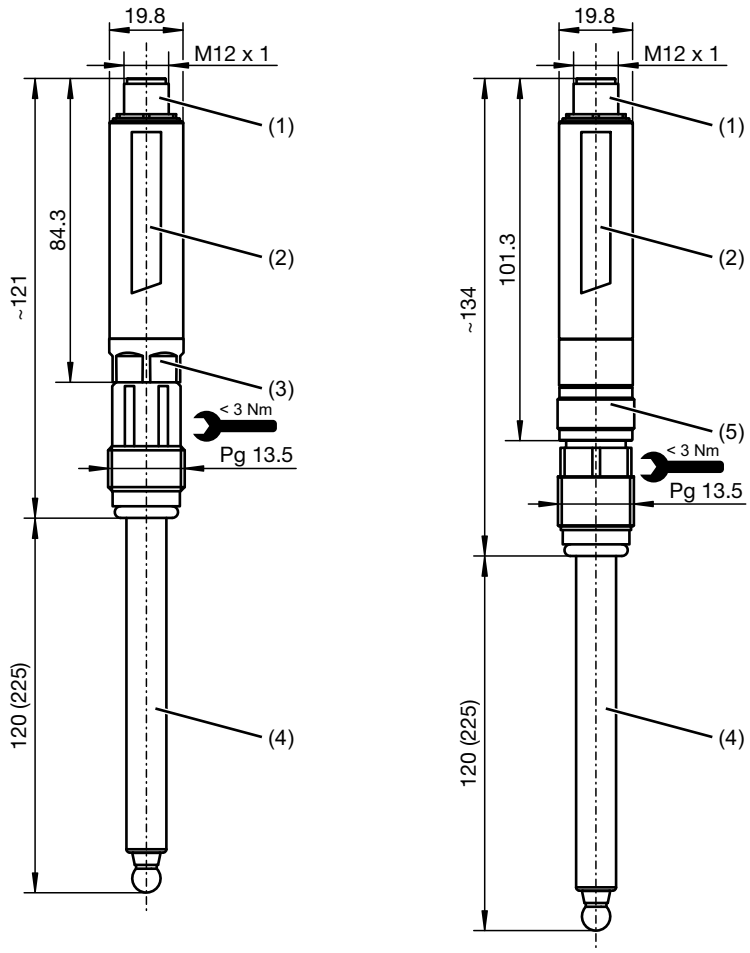
(1) N screw head (S8) Pg13.5 (PPS), max. tightening torque 3 Nm
(2) Thread Tr12.7 × 3 P1.5
(3) Ring (PEEK)
(4) O-ring 10 × 3.5 (FPM70)
(5) Electrode shaft (glass DIN 19263)
(6) Ring diaphragm (PTFE)
(7) Platinum or gold tip
(8) Pinhole diaphragm

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Combination electrode with reusable elec-tronics

Electronics with N connection with VarioPin connection



(1) M12 plug connector, 5 or 8-pole (see order details)
(2) DigiLine electronics
(3) N connection (screw head S8) for digiLine electronics
(4) pH or redox electrode with N con-nection
(5) VarioPin connection[a] (plug head) for digiLine electronics

[a] Only for type 201021/...

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Accessories

Cables

Item	Part no.
Cable for sensors with N screw head (S8) Pg13.5: 202990/02-92-x-13 Cable for sensors with VarioPin (VP) plug head: 202990/11-95-x-11	

Solutions

Item	Part no.
pH buffer solutions Redox reference solution Electrode cleanser	

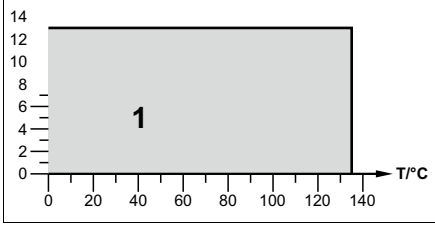
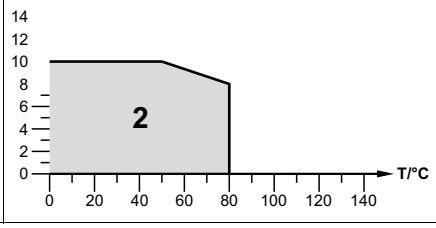
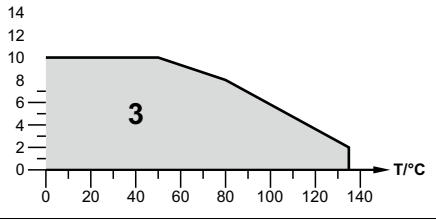
Elekctrode holder

Electrode holders can be used to install **electrodes with a PTFE membrane** and a length of **120 mm** (types 20102x/xx-xx-**04**-xx-**120**/xxx) in tanks or pipelines with 3/4-14 NPT threaded connections.

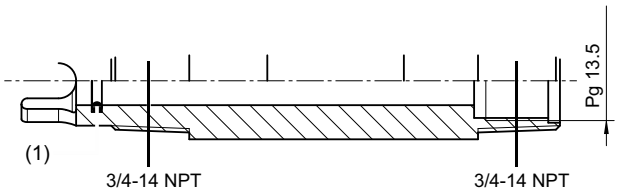
Item		Part no.
Stainless steel electrode holder		00674618
PEEK electrode holder		00674617
PPS electrode holder		00674620
PP electrode holder		00674619
PVDF electrode holder (Fig.)		00673945

Process conditions

When using the electrodes in conjunction with the electrode holders, the following pressure/temperature limits must be observed:

Electrode holders made of stainless steel, PEEK, PPS	Electrode holder made of PP	Electrode holder made of PVDF
0 °C (13 bar); 135 °C (13 bar)	0 °C (10 bar); 50 °C (10 bar); 80 °C (8 bar)	0 °C (10 bar); 50 °C (10 bar); 80 °C (8 bar); 135 °C (2 bar)
		

Dimensions



(1) O-ring (material: FKM)
(2) Electrode holder (material: stainless steel or PEEK or PPS or PP or PVDF)

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Ordering Code

Electrode Connector	S8						S8
Salt Bridge Type		D					Dual-chamber structure diaphragm
Sealing Ring Material			F				Fluorine rubber
Temperature Compensation Type				0			None
Cable Length					00		0m
					05		5m
					10		10m
					15		15m
					20		20m
					XX		Others
Enclosure Material and Process Connection						SP	Glass, PG13.5
Accessories							P4	Stainless steel jacket
							P5	PTFE sheath