

## pH and Redox Combination Electrodes for laboratory measurements with glass or plastic shaft

### 201030 Series – pH electrodes

### 201035 Series – redox electrodes

#### Brief description

These electrodes are high-quality sensors for pH and redox potential (ORP) measurements in the laboratory. The sensors can be supplied with either a glass shaft or a sturdy plastic shaft. These electrodes are suitable for all measurements in liquid media. They offer a high degree of measurement accuracy and reliability for all applications.

Suitable models are available for the most diverse requirements:

- *Active component for pH:*  
There is a choice of different membrane glasses for the pH versions.
- *Active component for redox:*  
A sturdy platinum or gold tip can be supplied.
- *Reference system:*  
The tried and tested JUMO silver/silver chloride conductive system (Ag/AgCl) and the acrylamide-free KCl gel together constitute the reference system. The conductive system is designed in cartridge style. As a result, the reference electrolyte remains free from silver ions over the entire life span of the sensor, which makes it less susceptible to electrode poisons.
- *Diaphragm:* In the standard version, JUMO labLine electrodes feature a sturdy ceramic diaphragm in zirconium dioxide. On the models with a plastic shaft, a glass fiber diaphragm forms the connection between the substance being measured and the reference system. PTFE diaphragms are available for special applications.

The electrical connection of the sensors is made through:

- plug cap
- plug cap with attached cable

These sensors incorporate state-of-the-art technology for modern pH or redox electrodes.

Each electrode is a quality product and is individually tested.

Modern production facilities ensure a constant quality.

#### General notes on sensors of the 201030 and 201035 series

All standard electrodes are manufactured from physiologically harmless, FDA-listed materials.

#### Area of application

- general laboratory applications
- surface measurements on paper and textiles
- insertion measurements in food
- pharmaceutical and cosmetic applications
- measurements in small sample volumes
- measurements in low-ion media



Type 201030/51-xx-07-21-...



Type 201035/51-xx-07-40-...

## Active elements of the pH or redox electrode

Membrane glass or active component	Designation	pH or redox range	Temperature range	Typical application
UW glass	Universal glass	pH 0 – 12 (briefly pH 14)	-5 to +80 °C	General liquid media
HA glass	High-alkaline glass	pH 0 – 14	-5 to +80 °C	For highly alkaline media (above pH 12)
C glass	Fluoride-resistant glass	pH 0 – 11	-5 to +50 °C	Media containing fluoride (hydrofluoric acid) media (HF) up to 1000 mg/l
Platinum tip	Redox measurement	+/- 2000 mV	-10 to +135 °C <sup>a</sup>	General redox measurements
Gold tip	Redox measurement	+/- 2000 mV	-10 to +135 °C <sup>a</sup>	Highly oxidizing redox applications

<sup>a</sup> Depending on the electrode model

## Constructional variations of the reference system (reference electrode)

Only reference electrolytes that are free from silver ions are used for the electrodes. A cartridge-style conductive system contains the silver/silver chloride (Ag/AgCl). Various forms of diaphragm are used.

Diaphragm type	Explanation	Possible electrolytes	Recommended minimum conductivity of the medium	Typical application / limitations
1x ceramic diaphragm	High-quality zirconium dioxide diaphragm <sup>a</sup>	Polymerized solid electrolyte	Without salt reserve: 100 µS/cm With salt reserve: 50 µS/cm	General liquid media
		Liquid KCl	5 µS/cm	
2x ceramic diaphragm or 3x ceramic diaphragm	As above, but due to increased number, more KCl escapes	Polymerized solid electrolyte, with TT glass: low-temperature gel	Without salt reserve: 50 µS/cm With salt reserve: <50 µS/cm	For polluted or low-ion media low-temperature applications
		Liquid KCl	0,1 µS/cm	
Glass fiber diaphragm	Glass fiber bundle instead of ceramic diaphragm for electrodes with plastic shaft	Polymerized solid electrolyte	Without salt reserve: 150 µS/cm With salt reserve: 100 µS/cm	General liquid media

<sup>a</sup> Zirconium dioxide diaphragm: high-quality ceramic material of constant porosity. This means optimum diffusion properties.

## Additional pH and redox electrodes can be found in the following data sheets:

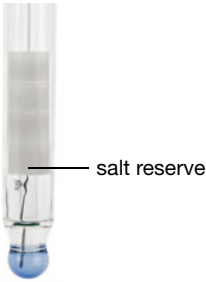
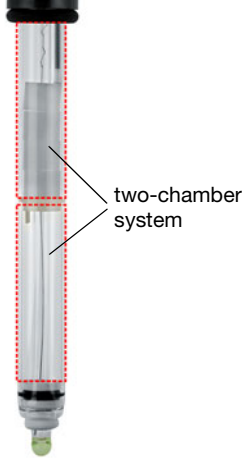
- Data sheet 201005 – JUMO ecoLine pH/Rd
- Data sheet 201020 – JUMO tecLine pH/Rd
- Data sheet 201050 – JUMO ISFET pH combination electrode
- Data sheet 201081 – JUMO pH single sensors
- Data sheet 201082 – JUMO Rd single sensors
- Data sheet 201083 – JUMO reference electrodes, diaphragm tubes
- Data sheet 201085 – JUMO compensation thermometers

## pH and Redox Combination Electrodes for laboratory measurements with glass or plastic shaft PEI/PSU

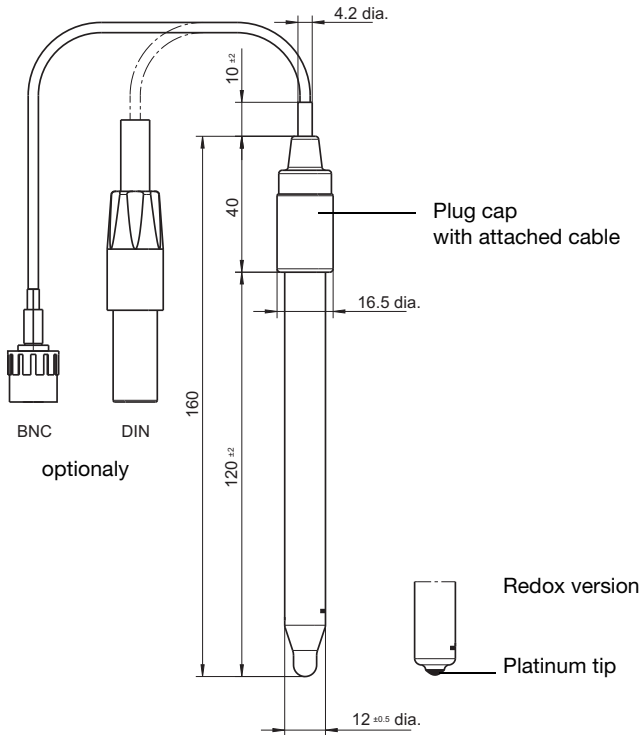
### Key features

- High-quality zirconium dioxide diaphragm; glass fiber diaphragm for plastic shaft
- Cartridge-style conductive system with reference electrolyte (free from silver ions)
- pH range: 0 – 12 pH, briefly up to 14 pH
- Temperature range: up to -5 to +80 °C
- Optional salt reservoir for extending the operational life in low-conductivity media
- Redox versions with platinum or gold tip up to +/-2000 mV

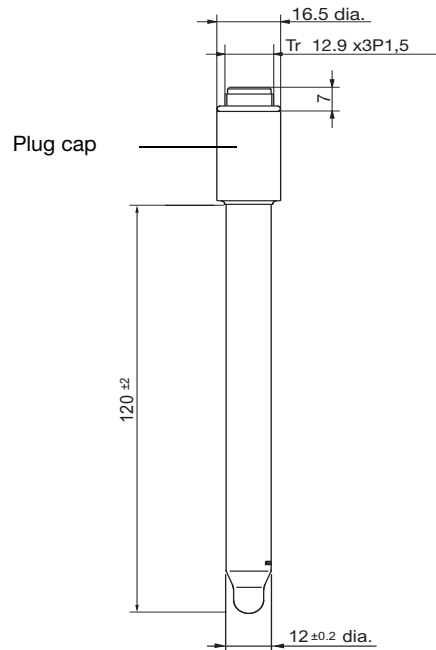
### Extra code

Salt reserve, extra code 837		Two-chamber system (DOKA), extra code 838	
 <p>salt reserve</p>	<p>The option is available to equip the electrode with a salt reserve, in the form of four salt rings (see illustration). This is recommended when using the electrode in media with fewer ions or at high flow rates. The salt reserve helps to increase the service life of the electrode. The rings are not a manufacturing defect (crystallization).</p>	 <p>two-chamber system</p>	<p>If electrode poisons (e.g. sulphides) are in the sample medium, the extended diffusion path (two consecutive chambers (double chamber)) and the double diaphragm foreclosure prevent electrode poisoning.</p>

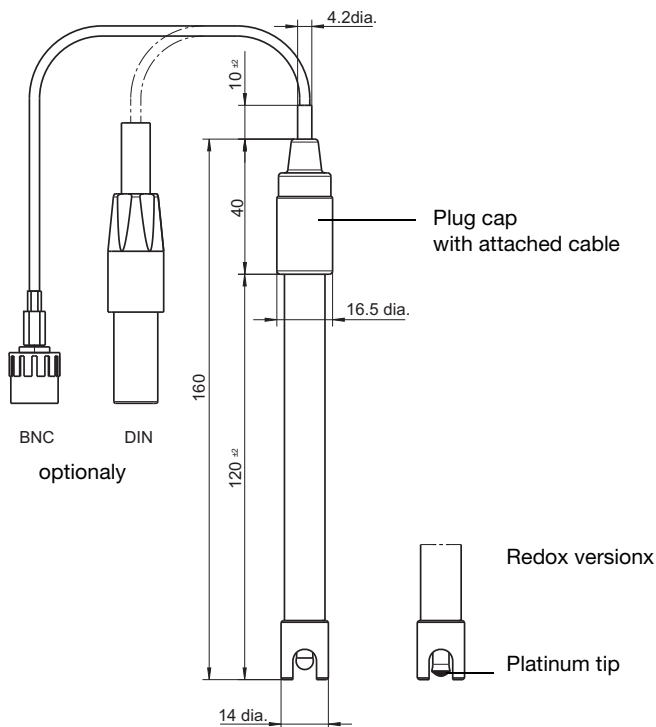
## Dimensions



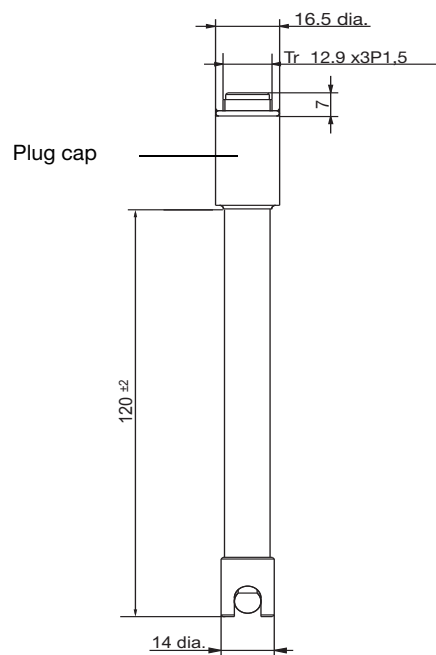
Type 201030/51-18-07-40-xxxx-76-120/000 (pH)  
 Type 201030/51-18-07-40-xxxx-78-120/000 (pH)  
 Type 201035/51-22-07-40-xxxx-76-120/000 (redox)  
 Type 201035/51-22-07-40-xxxx-78-120/000 (redox)



Type 201030/51-18-07-21-0000-00-120/000 (pH)  
 Type 201035/51-22-07-21-0000-00-120/000 (redox)



Type 201030/53-18-05-40-xxxx-76-120/000 (pH)  
 Type 201030/53-18-05-40-xxxx-78-120/000 (pH)  
 Type 201035/53-22-05-40-xxxx-76-120/000 (redox)  
 Type 201035/53-22-05-40-xxxx-78-120/000 (redox)



Type 201030/53-18-05-21-0000-00-120/000 (pH)  
 Type 201035/53-22-05-21-0000-00-120/000 (redox)

## Order details: pH and Redox Combination Electrodes for laboratory measurements with glass or plastic shaft PEI/PSU

		<b>(1) Basic type</b>
	201030	pH combination electrode
	201035	Redox combination electrode
		<b>(2) Basic type extensions</b>
x	51	Glass shaft/cartridge-style conductive system
o	53	Plastic shaft PEI/cartridge-style conductive system
		<b>(3) Active component</b>
o	11	C glass/pH 0 – 11/-5 to +50 °C
o	17	HA glass/pH 0 – 14/-5 to +80 °C
x	18	UW glass/pH 0 – 12 (briefly 14)/-5 to +80 °C
x	22	Platinum tip/+/- 2000 mV/-5 to +90 °C
o	32	Gold tip/ +/- 2000 mV/-5 to +90 °C
		<b>(4) Diaphragm</b>
o	04	PTFE diaphragm <sup>a</sup>
o	05	1× glass silk diaphragm <sup>b</sup>
x	07	1× zirconium dioxide diaphragm (special ceramic) <sup>a</sup>
		<b>(5) Connection</b>
x	21	Plug cap (S6)
o	40	Plug cap (S6) with attached cable
		<b>(6) Cable length</b>
x	0000	No attached cable
o	xxxx	Length in mm (only full meters/up to 10 m/standard length 1000 mm = 1 m)
		<b>(7) Instrument connector</b>
x	00	No connector
o	76	BNC connector
o	78	DIN connector
		<b>(8) Fitting length</b>
x	120	Fitting length 120 mm (standard) <sup>c</sup>
		<b>(9) Extra codes</b>
o	000	None
o	052	KCl reservoir (holder)
x	837	Salt reservoir <sup>a</sup>
o	838	2-chamber system (DOKA) with KCl/KCl bridge

x = standard

o = optional

<sup>a</sup> Only available with basic type extension /51

<sup>b</sup> Only available with basic type extension /53

<sup>c</sup> Other fitting length on request

**Order code**      (1)      (2)      (3)      (4)      (5)      (6)      (7)      (8)      (9)      ...<sup>a</sup>  
 /  -  -  -  -  -  -  -  /  , ...<sup>a</sup>  
**Order example**      201030      /      51      -      18      -      07      -      21      -      0000      -      00      -      120      /      000

<sup>a</sup> List extra codes in sequence, separated by commas

### Note:

The type code is a type designation, not a modular system.

If at all possible, please choose the items listed under “**Stock versions**” or “**Production versions**” when placing your order.

Any free combination of individual code features must be technically checked and approved by us.

Please ask us in case of doubt.



## Stock versions pH

(delivery: 3 working days after receipt of order)

Type	Brief description	Sales No.
201030/51-18-07-21-0000-00-120/837	Glass shaft PEI, UW glass, plug cap, 120 mm, 2-chamber system, salt reservoir	00303348

## Production versions pH

(delivery: 10 working days after receipt of order)

Type	Brief description	Sales No.
201030/51-18-04-21-0000-00-120/837,838	Glass shaft, UW glass, plug cap, 120 mm,	00335215
201030/53-18-05-21-0000-00-120/837,838	Plastic shaft PEI, UW glass, plug cap, 120 mm, 2-chamber system, compatible with Mettler Toledo InLab417/Schott BlueLine 22pH	00303399
201030/53-11-05-21-0000-00-120/837,838	Plastic shaft PEI, C glass, plug cap, 120 mm, 2-chamber system	00345114

## Production versions Redox (ORP)

(delivery: 10 working days after receipt of order)

Type	Brief description	Sales No.
201035/51-22-07-21-0000-00-120/837	Glass shaft, platinum tip, zirconium dioxide diaphragm, plug cap, 120 mm	00300394

## Production versions Redox (ORP)

(delivery: 10 working days after receipt of order)

Type	Brief description	Sales No.
201035/51-32-07-21-0000-00-120/837	Glass shaft, gold tip, zirconium dioxide diaphragm, plug cap (S6), 120 mm	00300395
201035/51-22-07-40-1000-76-120/837	Glass shaft, platinum tip, zirconium dioxide diaphragm, attached cable, BNC connector, 120 mm	00472792

## pH Combination Electrodes for measurement in solids (Insertion Electrodes)

### Typical applications

- Food checks (measurements in meat, cheese, vegetables, etc.)
- Soil samples

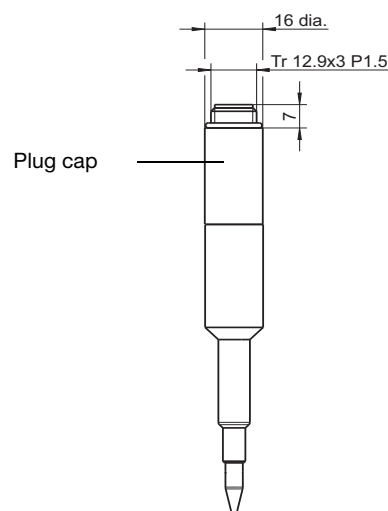
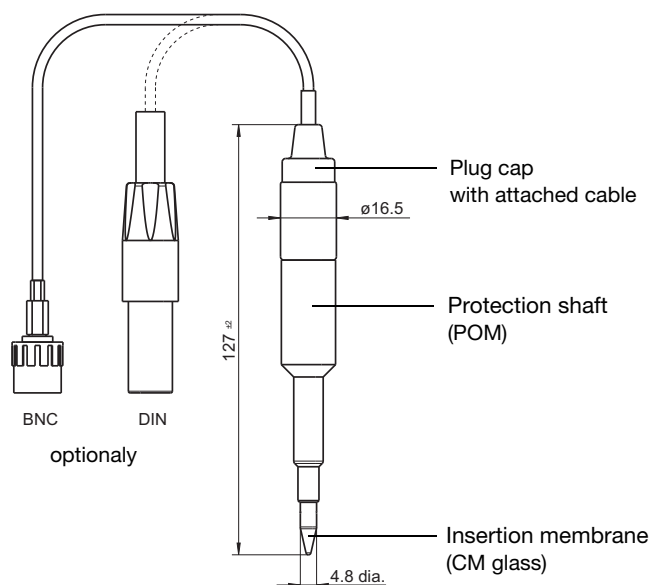
### Key features

- Insertion probe 6 mm
- Solid electrolyte, annular gap diaphragm
- Cartridge-style conductive system with reference electrolyte (free from silver ions)
- pH range: 0 – 11 pH, briefly up to 14 pH
- Temperature range: -5 to +50°C (please refer to the order details)
- Salt reservoir for extending the operational life in low-conductivity media



Type 201030/62-15-08-21-...

### Dimensions



Type 201030/62-15-08-40-xxxx-76-120/000 (pH)  
Type 201030/62-15-08-40-xxxx-78-120/000 (pH)

Type 201030/62-15-08-21-xxxx-76-120/000 (pH)  
Type 201030/62-15-08-21-xxxx-78-120/000 (pH)

## Order details: pH Combination Electrodes for measurement in solids

	(1) <b>Basic type</b>	
	201030	pH combination electrode
	(2) <b>Basic type extensions</b>	
	60	Plastic shaft PE/solid electrolyte/cartridge-style conductive system/insertion probe
	(3) <b>Active component</b>	
x	15	CM glass/pH 0 – 11/-5 to +50 °C
	(4) <b>Diaphragm</b>	
o	08	2x zirconium dioxide diaphragm
x	11	Annular gap diaphragm
	(5) <b>Connection</b>	
x	21	Plug cap
o	40	Plug cap with attached cable
	(6) <b>Cable length</b>	
x	0000	No attached cable
o	xxxx	Length in mm (only full meters/up to 10 m/standard length: 1000 mm = 1 m)
	(7) <b>Instrument connector</b>	
x	00	No connector
o	76	BNC connector
o	78	DIN connector
	(8) <b>Fitting length</b>	
x	120	Fitting length 120 mm (standard)
	(9) <b>Extra codes</b>	
x	052	KCl reservoir (holder)

x = standard

o = optional

Order code      (1)      (2)      (3)      (4)      (5)      (6)      (7)      (8)      (9)  
 Order example      201030      /      60      -      15      -      08      -      21      -      0000      -      00      -      120      /      052

### Note:

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## Production versions

(delivery: 15 working days after receipt of order)

Type	Brief description	Sales No.
201030/60-15-08-21-0000-00-120/052	Solid electrolyte, zirconium dioxide diaphragm, plug cap, 120 mm	00432926
201030/60-15-08-40-1000-76-120/052	Solid electrolyte, zirconium dioxide diaphragm, plug cap with attached cable, 120 mm	00448527