

Reference electrodes

- For use in pH measurement together with a glass electrode (e.g. 2G-2-U)
- For use in redox measurement together with a metal electrode (e.g. 2M-2-Pt)
- For use in pH measurement together with an antimony electrode (e.g. 2MP-2-Sb)
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- With ceramic diaphragm 1mm dia.
- Ag/AgCl conductive system in cartridge style
- Gel- or KCl-filled, free of silver ions

Types

2B- Reference electrode

Type of electrode head

- 1- cap N
- 2- cap N with thread Pg 13.5

Electrolyte

- | | | | |
|-----|------------|------------------------------------|---------------------------------|
| G | gel-filled | operating temperature -5 to + 90°C | pressure-resistant up to 10 bar |
| KCl | KCl-filled | operating temperature -5 to +100°C | unpressurized applications |

Type designation for your order:

2B-		
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Ex-stock standard electrode

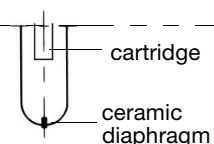
(can be supplied within 3 working days)

Sales No.	Type
20/00083865	2B-2-G



2B-2-G

Style notes:



pH glass electrodes

- For pH measurement together with a reference electrode (e.g. 2B-2-G)
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- Pressure-resistant up to 10 bar

Types

2G-	pH glass electrode		
	Type of electrode head		
	1-	cap N	
	2-	cap N with thread Pg 13.5	
	Membrane glass		
	U	universal glass (standard)	operating temp. -5 to +80°C, pH 0-12 (14)
	C	glass C (fluoride-resistant up to 500 mg/l HF)	operating temp. 0 to +80°C, pH 0-11
	HT	high-temperature glass (also suitable for highly alkaline applications)	operating temp. 0 to +130°C, pH 1-14

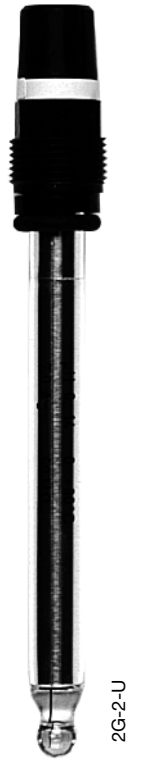
Type designation for your order:

2G-		
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Ex-stock standard electrode

(can be supplied within 3 working days)

Sales No.	Type
20/00083302	2G-2-U



2G-2-U

Style notes: _____

Gel-filled pH combination electrodes with glass shaft

- Standard electrode for general pH measurement
- Salt reservoir for longer operational life as standard
- Versions with PTFE ring diaphragm are particularly suitable for hostile environment e.g. sewage-treatment plants, oily and heavily contaminated media
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Integral Pt100 possible (version with cap SMEK threaded Pg 13.5)
- Customized styles on request
- Pressure-resistant up to 10 bar
- Ag/AgCl conductive system in cartridge style
- Gel filling free of silver ions
- Special frost-resistant reference electrolyte on low-temperature electrode (3 x ceramic diaphragm is recommended)



2GE-2-G-U-1

Types

2GE- Combination glass electrode

Type of electrode head

- 1- cap N
- 2- cap N threaded Pg 13.5
- 9- cap SMEK threaded Pg 13.5
(on version with integral temperature sensor)

Filling

- G- gel-filled (filler closed with tubing)

Membrane glass

- U- universal glass (standard) operating temp. -5 to +80°C, pH 0-12 (14)
- HT- high-temperature glass operating temp. 0 to +90°C, pH 0-14
(suitable for highly alkaline applications)
- K- rounded glass for rounded membrane operating temp. -5 to +80°C, pH 0-12 (14)
- C- glass C operating temp. 0 to +80°C, pH 0-11
(fluoride-resistant up to 500mg/l HF)
- TT- low-temperature glass operating temp. -30 to +30°C, pH 0-11

Diaphragm

- 1 1 x ceramic diaphragm, 1 mm dia.
- 3 3 x ceramic diaphragm, 1 mm dia.
- T PTFE ring diaphragm

Type designation for your order:

2GE-		G-		
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Ex- stock standard electrode

(can be supplied within 3 working days)

Sales No.	Type
20/00303348	2GE-1-G-U-1
20/00300151	2GE-2-G-U-1
20/00300169	2GE-2-G-HT-1
20/00321035	2GE-2-G-U-T

Style notes:

— PTFE ring diaphragm
spherical membrane

— ceramic diaphragm
rounded membrane

— ceramic diaphragm
spherical membrane

Gel-filled sealed pH combination electrodes with glass shaft

- Standard electrode for general pH measurement
- Versions with PTFE ring diaphragm are particularly suitable for hostile environment e.g. sewage-treatment plants, oily and heavily contaminated media.
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Integral Pt100 possible (version with cap SMEK threaded Pg 13.5)
- Customized styles on request
- Pressure-resistant up to 0.5 bar
- Ag/AgCl conductive system in cartridge style
- Gel filling free of silver ions

Types

2GE- Combination glass electrode

Type of electrode head

- 1- cap N
- 2- cap N threaded Pg 13.5
- 9- cap SMEK threaded Pg 13.5
(only on version with integral temperature sensor)

Filling

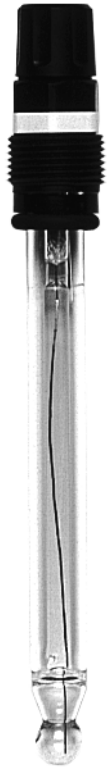
- GV- gel-sealed

Membrane glass

- | | | |
|-----|---|---|
| U- | universal glass (standard) | operating temp. -5 to +80°C, pH 0-12 (14) |
| HT- | high-temperature glass
(suitable for highly alkaline applications) | operating temp. 0 to +90°C, pH 0-14 |
| K- | rounded glass (for rounded membrane) | operating temp. -5 to +80°C, pH 0-12 (14) |
| C- | glass C
(fluoride-resistant up to 500mg /l HF) | operating temp. 0 to +80°C, pH 0-11 |

Diaphragm

- 1 1 x ceramic diaphragm, 1 mm dia.
- T PTFE ring diaphragm



2GE-2-GV-U-1

Type designation for your order:

2GE-		GV-		
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Ex-stock standard electrode

(can be supplied within 3 working days)

Sales No.	Type
20/00300147	2GE-1-GV-U-1
20/00300148	2GE-2-GV-U-1

Style notes:

PTFE ring diaphragm
spherical membrane

ceramic diaphragm
rounded membrane

ceramic diaphragm
spherical membrane

Gel-filled, sealed pH combination electrodes with plastic shaft

- Standard electrode for general pH measurement
- Fracture-resistant shaft material made of high-quality plastic which is resistant to acidic and caustic solutions
- In 2-chamber version suitable for media which poison the reference system, e.g. heavy metals
- KCl reservoir as standard, for longer operational life (on Doka version)
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Integral Pt100 possible (version cap SMEK threaded Pg 13.5)
- Customized styles on request
- Pressure-resistant up to 10 bar
- With glass silk diaphragm
- Ag/AgCl conductive system in cartridge style
- Gel filling free of silver ions

Types:

2GEP- Combination glass electrode with plastic shaft

Type of electrode head

- 1- cap N
- 2- cap N threaded Pg 13.5
- 9- cap SMEK Pg 13.5
(only on version with integrated temperatur sensor)

Filling

- GV- gel-sealed
- GV-Doka- gel-sealed in 2-chamber version

Membrane glass

- U- universal glass (standard)
- HT- high-temperature glass
(suitable for highly alkaline applications)
- C- glass C
(fluoride-resistant up to 500mg/l HF)

operating temp. -5 to +80°C, pH 0-12 (14)
operating temp. 0 to +80°C, pH 0-14
operating temp. 0 to +80°C, pH 0-11

Protective basket

- S with protective basket
- O without protective basket



2GEP-2-GV-U-0

Type designation for your order:

2GEP-					
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Ex-stock standard electrode

(can be supplied within 3 working days)

Sales No. Type
20/00303398 2GEP-2-GV-Doka-U-S

Style notes:

___ glass silk diaphragm spherical membrane with protective basket	___ glass silk diaphragm spherical membrane without protective basket
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Style notes:

— ceramic
diaphragm
spherical
membrane

— PTFE
ring diaphragm
spherical
membrane

— ceramic
diaphragm
rounded
membrane

— insertion
version
— ceramic
diaphragm

— ground
diaphragm
spherical
membrane

with mounted pressure head

electrolyte

thread Pg
cemented on

tube
connection
(pressurization,
connection of a KCl
reservoir, etc.)

pressure head

Electrode,
prepared
for
pressure head
e.g.
2GE-2-D-KCl-U-1

pressure head
Type 2991-0-0025

ground
diaphragm

spherical
membrane

spherical membrane

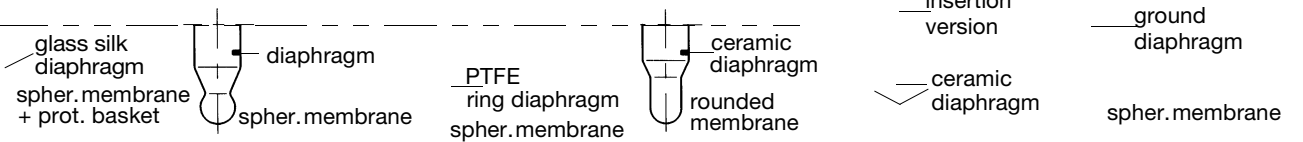
rounded membrane

spherical membrane



2GE-3-KCI-CM-2-BNC

Style notes:



Metal electrodes for redox measurement

- In conjunction with a reference electrode (e.g. 2B-2-G) for redox measurement
- Active platinum element (pin or rounded tip)
for use in e.g. chromate reduction, nitrite oxidation, swimming pool monitoring
- Active gold element (available only as pin)
for use in e.g. cyanide oxidation
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- Pressure-resistant up to 10 bar

Types

2M- Metal electrode

Type of electrode head

- 1- cap N
- 2- cap N threaded Pg 13.5

Active element

Pt	platinum pin	1 mm dia.	length = 8 mm	operating temp. -10 to +130°C
PtK	platinum tip	5.5 mm dia.		operating temp. -10 to +130°C
Au	gold pin	1 mm dia.	length = 8 mm	operating temp. -10 to +130°C



2M-1-PtK

Type designation for your order:

2M-		
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Style notes: _____

— Pt-tip

— Au- or Pt-pin



2ME-2-G-PtK-1

— ceramic diaphragm
— Au- or Pt-pin

— ceramic diaphragm
— Pt-tip

— PTFE ring diaphragm
— Pt-tip

Product line 202905



2MEP-2-GV-PIK-0

— glass silk
diaphragm

— Pt-or Au-pin

— glass silk
diaphragm

— Pt-tip

— ceramic
diaphragm
— Au- or Pt-pin

— ceramic
diaphragm
— Pt-tip

PTFE
ring
diaphragm
— Pt-tip

— glass silk
diaphragm
— Pt-tip

Twin metal electrodes for redox measurement

- For use in e.g. titration and amperometric redox potential measurements
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- Operating temperatures up to 130°C
- Pressure-resistant up to 10 bar

Types

2MD- Twin metal electrode

Type of electrode head

- 1- cap N
- 2- cap N threaded Pg 13.5

Active element

Pt-Au	platinum pin and gold pin	1 mm dia.	length 8 mm
Pt-Pt	platinum pin and platinum pin	1 mm dia.	length 8 mm

Type designation for your order:

2MD-		
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2MD-2-Pt-Au

Metal electrode for pH measurement (antimony electrode)

- In conjunction with a reference electrode (e.g. 2B-2-G) and an electrolyte bridge for pH measurement, e.g. in media containing hydrofluoric acid
- NOTE: transmitter must have an antimony input (e.g. 2P1-transmitter to Data Sheet 20.2770 with extra Code /40)
- Fracture-resistant high-quality plastic shaft material, resistant to acidic and caustic solutions
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- Pressure-resistant up to 10 bar

Types

2MP- Metal electrode for pH measurement with plastic shaft

Type of electrode head

2- cap N threaded Pg 13.5

Active element

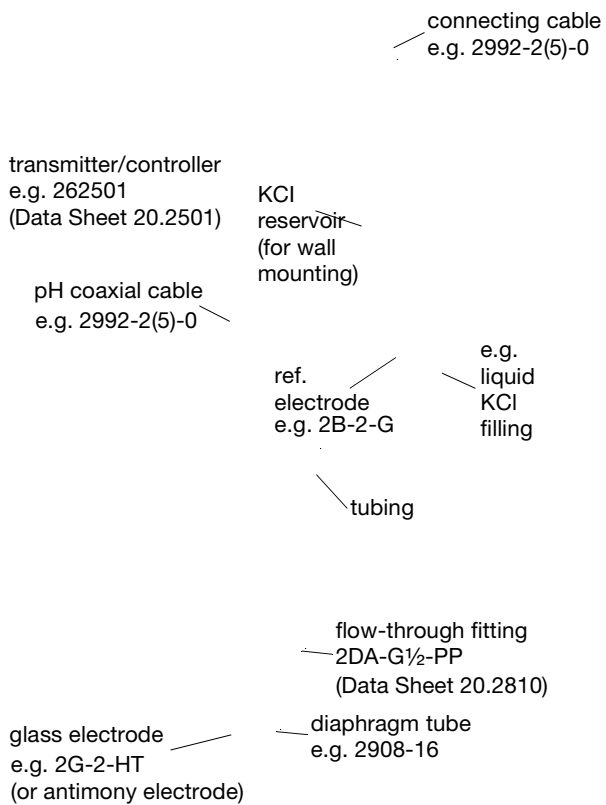
Sb antimony operating temp. -10 to +80°C

Type designation for your order:

2MP-	2-	Sb
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Construction example: Flow-through measurement



Construction example: Measurement in vessel

Product line 202907

Glass conductivity cells

- For conductivity measurements in aqueous solutions
- Standard dimensions 120 x 12 mm (DIN 19 263)
- Other fitting lengths (e.g. 160 x 12 mm, 225 x 12 mm) have to be specified in plain text when ordering
- Customized styles on request
- Cell constant: $K = 1 \pm 10\%$
- Integral Pt100 possible (version with cap SMEK threaded Pg 13.5)
- Pressure-resistant to 10 bar

Types

2LF- Conductivity cell

Type of electrode head

- | | |
|----|--|
| 1- | cap N |
| 2- | cap N threaded Pg 13.5 |
| 9- | cap SMEK threaded Pg 13.5
(only on version with integrated Pt100) |

Active element

Pt	platinum platinised	operating temp. -10 to +160°C	max. range 0—100mS/cm
PtU	platinum unplatinised	operating temp. -10 to +160°C	max. range 0— 1mS/cm

Type designation for your order:

2LF-

Ex-stock standard electrode

(can be supplied within 3 working days)

Sales No.	Type
20/00303396	2LF-2-Pt



2LF-2-Pt

— attached cable
L = 3m

Type	L	∅
2K-1	15	4.5 _{-0.5}
2K-2		
2K-11	24	2.8 _{-0.5}
2K-21		
2K-3	22	4.5 _{-0.5}

— Type 2K-3

Connection cables and plugs for electrodes

For pH / redox and conductivity measurement

Cable end 1

2990-	no plug connection
2992-	cable socket Type N, rotating
2994-	cable socket Type SMEK

Cable type

1	low-noise coaxial cable	diameter: 3 mm, black	temperature -25 to + 70°C
2	low-noise coaxial cable	diameter: 5 mm, black	temperature -25 to + 70°C
3	low-noise coaxial cable	diameter: 3 mm, black	temperature 0 to +130°C
4	low-noise coaxial cable	diameter: 5 mm, black	temperature 0 to +130°C
5	stranded wire		temperature 0 to + 70°C
6	stranded wire		temperature -50 to +180°C
7	low-noise coaxial cable	2 x copper screen (triax cable) diameter: 5 mm, black	temperature -25 to + 70°C
8	special cable, 2-core, screened (for conductivity)	diameter: 5 mm, grey	temperature - 5 to + 80°C
9	special cable, 4-core, screened (for conductivity)	diameter: 5 mm, grey	temperature - 5 to + 80°C
10	coaxial cable (SMEK) + 3 stranded wires and screen	diameter: 5.5 mm, black	temperature - 5 to + 80°C

Cable length

(...) specify cable length in metres (e.g. 1 = 1 m cable)

Cable end 2

- 0	no plug connection
- 1	plug to DIN 19 262
-21	BNC plug for 3 mm cable dia.
-22	BNC plug for 5 mm cable dia.
-23	BNC angle plug for 5 mm cable dia.
- 3	banana plug
- 4	plug N for 5 mm cable dia.
- 6	AMP plug 6.3 mm
- 7	5-pole diode plug
- 8	angle connector for 2EL6- (for cables 8 and 9 only)
- 9	Lemosia plug for 3 mm cable dia.
-13	Shieldkon connector with 2AMP plug 6.3 mm (for 5 mm coaxial cable dia. only)
-14	Cinch plug

Type designation for your order:

		(...)	
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Ex-stock standard cables

(can be supplied within 3 working days)

Sales No.	Type
20/00082672	2992-2(3)-0
20/00082673	2992-2(5)-0
20/00082674	2992-2(8)-0
20/00085976	2992-2(100)-0

Instrument plug

(can be supplied within 3 working days)

Sales No.	Type	
20/00058082	2990-00-1	plug to DIN 19 262 for 5 mm cable dia.
20/00058327	2990-00-21	BNC plug, 3 mm cable dia.
20/00059253	2990-00-22	BNC plug, 5 mm cable dia.
20/00064222	2990-00-23	BNC angle plug, 5 mm cable dia.
20/00082463	2990-00-3	banana plug, red
20/00082464	2990-00-3	banana plug, black
20/00061202	2990-00-4	plug N, 5 mm
20/00057350	2991-00-0	cable socket N, 5 mm

8.98 / 00073065



instrument plug to
DIN 19 262

BNC plug for
3 mm cable dia.

BNC plug for
5 mm cable dia.

BNC angle plug for
5 mm cable dia.

Shieldkon
connector with
AMP plug 6.3mm
(for 5 mm coaxial
cable dia. only)

Cable socket Type N, 2992-..., rotating (can be fitted in factory only)

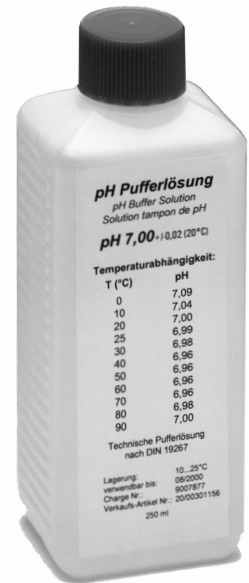
Product line 202950

Buffer solutions to DIN 19 267

- Technical buffer solutions to DIN 19 267 are used for calibrating pH electrodes and have proved very successful, particularly for use in industry and industrial laboratories, because they are relatively unaffected by dilution (high buffering capacity).
- The effect of the temperature on the pH values of the buffer solution is shown in the table on the bottle label.
The accuracy is ± 0.02 pH units
- The buffer solutions indicate the batch no. and the max. recommended use-by date.
- The bottle tops are coloured, for identification.

Sales No.	Description
20/00309747	250 ml buffer solution pH 3.07 to DIN 19267 at 20°C
20/00344977	250 ml buffer solution pH 4.00 to DIN 19267 at 20°C
20/00301070	250 ml buffer solution pH 4.65 to DIN 19267 at 20°C
20/00301071	250 ml buffer solution pH 6.80 to DIN 19267 at 20°C
20/00338371	250 ml buffer solution pH 7.00 to DIN 19267 at 20°C
20/00301072	250 ml buffer solution pH 9.27 to DIN 19267 at 20°C
20/00345027	250 ml buffer solution pH 10.00 to DIN 19267 at 20°C
20/00301073	250 ml redox-potential test solution +468mV (at 25°C)

Minimum ordering quantity: 5 units



Cleaners

Sales No.	Description
20/00307586	250 ml diaphragm cleaner (thiourea solution)
20/00307114	250 ml electrode cleaner (pepsin hydrochloric acid solution, protein remover)

Minimum ordering quantity: 5 units

Auxiliary electrolytes

Sales No.	Description
20/00306215	250 ml 3-molar KCl solution without AgCl (free of silver ions)
20/00307585	250 ml 3-molar KCl solution with AgCl (for electrodes with wire conductor in the reference system)

Minimum ordering quantity: 5 units

Conductivity test-solutions

Sales No.	Description
20/00346056	250 ml KCl 0.01 mol/l 1.41 mS/cm
20/00346058	250 ml KCl 0.1 mol/l 12.88 mS/cm
20/00346060	250 ml KCl 1.0 mol/l 111.80 mS/cm

Minimum ordering quantity: 5 units

8.98 / 00073065

Product line 202711

Product line 202712