

Electrodes range

Range suitable for all your requirements

Reliable

Practical

pH electrodes

Redox electrodes

Reference electrodes

Conductivity cells

Dissolved oxygen sensors

Temperature sensors

Cables and accessories



Measure up



General-purpose pH electrodes

The particularly rugged and reliable standard pH combination electrodes are intended for any test, production or teaching laboratory. They are ideal for routine measurements in large-mouthed recipients (beaker, Erlenmeyer flask, etc.), offering excellent response times.

pH MICRO electrodes

Used mainly in industrial, pharmaceutical and medical research, the pH MICRO electrodes are designed for small recipients or apparatus with a small volume of the specimen (haemolysis tube, NMR tube, electrophoresis plate, column outlet, etc.).

Combination electrodes



| Electrode | BRV1A BRV1H | XRV1H | XRVST1H | BRV22A BRV22H | XRV22H | LRV6H | LRV7 | BRV4A BRV4H | BRV5A BRV5H | |
|---------------------------------|------------------------|-------------------------------------|---|--|--------------------|--------------------------------|------------------|---|--------------------------------------|----------------------|
| pH range | 0-14 0-12 | 0-12 | | 0-14 0-12 | 0-12 | | 0 - 14 | 0-14 0-12 | | |
| Shape of glass electrode | Spherical | | | Pointed | Pointed reinforced | Pointed reinforced | Pointed | Micro | | |
| Electrode body | Glass | PVC | PVC | Glass | PVC | Polypropylene | PVC | Glass | Glass | |
| Reference system | Ag/AgCl | | | | | | | | | |
| Reference electrolyte | KCl 1 mol/L | | | | | Polymer | | KCl 1 mol/L | | |
| Junction | Ceramic | | | | Fabric | None | Ceramic and open | Ceramic | | |
| Temperature sensor | No | | Yes Pt100 | No | No | | | | | |
| Operating temperature | 0 to 80°C | 0 to 60°C | | 0 to 80°C | 0 to 60°C | | | 0 to 80°C | | |
| Ø and length under cap (mm) | 12 x 120 | | | 6.5 (tip) x 120 | 12 x 120 | 12 (tip) x 130 | 6 (tip) x 123 | 6.5 (tip) x 120 | 5.5 (tip) x 120 | |
| Cable length | 1 m | | | | | | | | | |
| BNC connection | BRV1A-BNC BRV1H-BNC | XRV1H-BNC | XRVST1H BNC (pH measurement) 5-pin plug (temperature) | BRV22A-BNC BRV22H-BNC | XRV22H-BNC | LRV6H-BNC | P01715019 | BRV4A-BNC BRV4H-BNC | BRV5A-BNC BRV5H-BNC | |
| S7 connection (screw-on) | BRV1A-S7 BRV1H-S7 | XRV1H-S7 | | BRV22A-S7 BRV22H-S7 | - | - | - | - | BRV4A-S7 BRV4H-S7-130 BRV4H-S7 | BRV5A-S7 BRV5H-S7 |
| DIN connection | BRV1H-DIN | XRV1H-DIN | | - | - | - | - | - | - | - |
| Watertight 8-pin DIN connection | - | - | | - | - | - | - | P01715020 | - | - |
| TV connection | BRV1H-TV | XRV1H-TV | | - | XRV22H-TV | - | - | - | - | - |
| Recommended applications | General use | General use Protected electrodes | | Penetration of foodstuffs Fruit, cream, cheese, dough | | Cheese and semi-solid products | | Min. volume 0.5 mL in haemolysis tube | Mini volume | |



pH combination electrodes

Separate electrodes

Measuring electrodes

Reference electrodes



| Electrode | BRV45H | DRV2A DRV2H | BV41A BV41H | XV41 | BR41 | BR42 | XR41 | XR42 |
|-----------------------------|-------------------|--|--|-----------|---|-------------|---------------|-------------|
| pH range | 0-12 | 0-14 0-12 | | 0-12 | 0-14 | | | |
| Shape of glass electrode | Spherical | | | | - | | | |
| Electrode body | Glass | PVC and Plexiglas | Glass | PVC | Glass | | PVC | |
| Reference system | Ag/AgCl | | | - | Ag/AgCl | Calomel | Ag/AgCl | Calomel |
| Reference electrolyte | Acetic acid | KCl 1 mol/L | | - | KCl 1 mol/L | KCl 3 mol/L | KCl 1 mol/L | KCl 3 mol/L |
| Junction | Ceramic | Mechanical bridge | | - | Ceramic | | | |
| Temperature sensor | No | | | | | | | |
| Operating temperature | 0 to 80°C | 0 to 60°C | 0 to 80°C | 0 to 60°C | 0 to 80°C | | 0 to 60°C | |
| Ø and length under cap (mm) | 12 x 120 | 25 x 95 | 12 x 110 | 12 x 120 | 12 x 115 | 12 x 115 | 8 (tip) x 110 | |
| Cable length | 1 m | | | | | | | |
| BNC connection | BRV45H-BNC | DRV2A DRV2H | BV41A-BNC BV41H-BNC | XV41-BNC | - | - | - | - |
| S7 connection (screw-on) | BRV45H-S7 | - | BV41A-S7 BV41H-S7 | XV41-S7 | BR41-S7 | BR42-S7 | XR41-S7 | XR42-S7 |
| DIN connection | - | - | - | - | - | - | - | - |
| TV connection | - | - | - | - | - | - | - | - |
| 2 mm banana connection | - | - | - | - | BR41-BA2 | BR42-BA2 | XR41-BA2 | XR42-BA2 |
| 4 mm banana connection | - | - | - | - | BR41-BA4 | BR42-BA4 | XR41-BA4 | XR42-BA4 |
| Recommended applications | Non-aqueous media | Removable drainage bridge for clogging products (paint, emulsion, cream) | General use For use with a reference electrode BR41, BR42 or XR41, XR42 | | General use For use with a BV41A, BV41H or XV41H measuring electrode | | | |

References

Measurement of redox potential

Redox potential is a measurement in millivolts (mV) for qualifying an aqueous solution and classify it as oxidizing or reducing. This measurement can be performed with a pH-meter measuring the mV and a metal electrode dedicated to redox potential measurements. A redox potential sensor comprises a reference electrode made up of a silver wire and a measuring electrode made up of a platinum or gold wire. The measured potential value E depends on the ion concentration, the pressure of the gases present and, if relevant, the pH when H⁺ ions are involved in a pair.

| Redox combination electrodes | Simple Redox electrodes | | | | | | | | |
|------------------------------|-------------------------|--|--|--|--|----------------------|--|--|--|
| | Measuring electrodes | | | | | Reference electrodes | | | |



| Electrode | BRPT1 | XRPT1 | BPT1 | XPT1 | XPT2 | BR41 | BR42 | XR41 | XR42 |
|-----------------------------|---------------|------------------------------------|---|-----------|--------------|--|-------------|---------------|-------------|
| Range | +/- 2,000 mV | | | | | | | | |
| Electrode body | Glass | PVC | Glass | PVC | PVC | Glass | Glass | PVC | PVC |
| Metal | Platinum wire | | | | Platinum rod | - | | | |
| Reference system | Ag/AgCl | | - | | | Ag/AgCl | Calomel | Ag/AgCl | Calomel |
| Reference electrolyte | KCl 1 mol/L | | - | | | KCl 1 mol/L | KCl 3 mol/L | KCl 1 mol/L | KCl 3 mol/L |
| Junction | Ceramic | | - | | | Ceramic | | | |
| Temperature sensor | No | | | | | | | | |
| Operating temperature | 0 to 80°C | 0 to 60°C | 0 to 80°C | 0 to 60°C | | 0 to 80°C | | 0 to 60°C | |
| Ø and length under cap (mm) | 12 x 115 | 12 x 120 | 8 x 115 | 12 x 120 | 12 x 120 | 12 x 115 | 12 x 115 | 8 (tip) x 110 | |
| Cable length | 1 m | | | | | | | | |
| BNC connection | BRPT1-BNC | XRPT1-BNC | BPT1-BNC | XPT1-BNC | XPT2-BNC | - | - | - | - |
| S7 connection (screw-on) | BRPT1-S7 | XRPT1-S7 | BPT1-S7 | XPT1-S7 | XPT2-S7 | BR41-S7 | BR42-S7 | XR41-S7 | XR42-S7 |
| DIN connection | - | XRPT1-DIN | - | - | - | - | - | - | - |
| TV connection | - | - | - | - | - | - | - | - | - |
| 2 mm banana connection | - | - | - | - | - | BR41-BA2 | BR42-BA2 | XR41-BA2 | XR42-BA2 |
| 4 mm banana connection | - | - | - | XPT1-BA4 | XPT2-BA4 | BR41-BA4 | BR42-BA4 | XR41-BA4 | XR42-BA4 |
| Recommended applications | General use | General use Protected electrode | General use For use with a reference electrode BR41, BR42, XR41 or XR42 | | | General use For use with a measuring electrode BPT1, XPT1, XPT2 | | | |



| Combination electrode | Electrodes for argentometry | | | | | |
|-----------------------|-----------------------------|--|--|----------------------|--|--|
| | Measuring electrodes | | | Reference electrodes | | |



| Electrode | BRAG1 | BAG1 | XAG1 | BR43 | XR43 | BR44 |
|-----------------------------|--|------|-----------|--|--|---|
| Range | +/- 2,000 mV | | | | | |
| Electrode body | Glass | | PVC | Glass | PVC | Glass |
| Metal | Silver rod | | | - | | |
| Reference system | Mercurous sulphate | - | | Mercurous sulphate | Mercurous sulphate | Ag/AgCl |
| Reference electrolyte | Saturated K ₂ SO ₄ | - | | Saturated K ₂ SO ₄ | Saturated K ₂ SO ₄ | KCl 1 mol/L KNO ₃ 1 mol/L |
| Junction | Ceramic | - | | Ceramic | | |
| Temperature sensor | No | | | | | |
| Operating temperature | 0 to 80°C | | 0 to 60°C | 0 to 80°C | 0 to 60°C | 0 to 80°C |
| Ø and length under cap (mm) | 12 x 125 | | 12 x 120 | 12 x 115 | 8 (tip) x 110 | 12 x 120 |
| Cable length | 1 m | | | | | |

| | | | | | | | |
|--------------------------|-------------------------------|--|----------|---------------------------------------|----------|-------------------------------------|----------|
| References | BNC connection | BRAG1-BNC | BAG1-BNC | XAG1-BNC | - | - | - |
| | S7 connection (screw-on) | BRAG1-S7 | BAG1-S7 | XAG1-S7 | BR43-S7 | XR43-S7 | BR44-S7 |
| | DIN connection | - | - | - | - | - | - |
| | TV connection | - | - | - | - | - | - |
| | 2 mm banana connection | - | - | - | BR43-BA2 | XR43-BA2 | BR44-BA2 |
| | 4 mm banana connection | - | - | XAG1-BA4 | BR43-BA4 | XR43-BA4 | BR44-BA4 |
| Recommended applications | For argentometry measurements | For argentometry measurements, to be combined with reference electrode | | Reference electrodes for argentometry | | Double junction for clogging agents | |

Conductivity cells & temperature sensors

Electrical conductivity is the capability of a solution, metal or gas to allow an electric current to flow through it. In a solution, it is the anions (- charge) and cations (+ charge) which transport the current, whereas in a metal, it is the electrons. Conductivity is measured by applying an alternating current to a measuring cell. This cell is composed of a glass body supporting two to four platinum plates (also called poles) immersed in a solution. Like pH, conductivity measurements depend significantly on the temperature. When the temperature of a sample rises, its viscosity diminishes, leading to increased mobility of the ions present, thus increasing the conductivity. To measure conductivity correctly, you need to use a separate temperature sensor or a conductivity cell with a built-in temperature sensor.

| Conductivity cell with built-in temperature sensor | Conductivity cells | | | Temperature sensors | | |
|--|--------------------|--|--|---------------------|--|--|
|--|--------------------|--|--|---------------------|--|--|



| Electrode | XCPST4 | BCP4 | XCP4 | BT1 | BT5 | BT6 |
|-----------------------------------|-----------------------|----------------|-----------|-----------------|---------------|------------------|
| Range | 0.1 μ S to 200 mS | | | -50°C to +200°C | 0°C to +90°C | -10°C to +110°C |
| Electrode body | PVC | Glass | PVC | Glass | Polypropylene | Stainless steel |
| Type of cell | 2 platinum poles | | | - | | |
| Cell constant (cm ⁻¹) | 1 | | | - | | |
| Temperature sensor | Yes Pt100 | No | | Yes Pt100 | | Yes Pt1000 |
| Operating temperature | 0 to 60°C | 0 to 80°C | 0 to 60°C | -50°C to +200°C | 0 to 90°C | -10°C to +110°C |
| Ø and length under cap (mm) | 12 x 115 | 11 (tip) x 100 | 12 x 115 | 8 x 125 | 6 (tip) x 116 | 5 x 97 |
| Cable length | 1 m | | | | | |
| 5-pole connection | XCPST4 | - | - | - | - | - |
| BNC connection | - | BCP4-BNC | XCP4-BNC | - | - | - |
| S7 connection (screw-on) | - | BCP4-S7 | XCP4-S7 | - | - | - |
| 2 mm banana connection | - | - | XCP4-BA2 | - | - | - |
| 4 mm banana connection | - | - | XCP4-BA4 | - | - | - |
| Other types of connection | - | - | XCP4-JEN | BT1-JACK | BT5-JACK | P01710070 (JACK) |
| Other types of connection | - | - | XCP4-RAD | BT1-DIN | BT5-DIN | - |
| Recommended applications | General use | | | | | |

Dissolved oxygen measurement









These rugged PVC dissolved oxygen probes are based on the principle of the Clark probe and can be used in a temperature range from 0° to 60°C. The oxygen-permeable membrane is mounted on a washer (BO23 and BOT2). The assembly, maintained by the removable protective end-piece, is very easy to change. A temperature sensor is associated with the dissolved oxygen probe (BOT2 and BOT4) to enable automatic temperature correction.

Dissolved oxygen probes



| Electrode | BO23 | BOT2 |
|-----------------------------|------------------|-------------------|
| Measurement range | 0 to 0.20mg/L | |
| Accuracy | 0.02mg/L at 20°C | |
| Electrode body | PVC | |
| Type of probe | Clark probe | |
| Temperature sensor | No | Yes Thermistor |
| Operating temperature | 15 to 30°C | |
| Ø and length under cap (mm) | 23 (tip) x 105 | 25 (tip) x 135 |
| Cable length | 1 m | |
| 5-pole DIN reference | BO23 | BOT2 |
| Recommended applications | General use | |

A vast choice of connection technologies

| | | | |
|--|------------------------------------|---|-------------------------------------|
|  | BNC type Ref- BNC |  | 2 mm banana type Ref- BA2 |
|  | S7 screw-in type Ref- S7 |  | 4 mm banana type Ref- BA4 |
|  | DIN type Ref- DIN |  | Jack type Ref- JACK |
|  | TV type Ref- TV |  | 5-pole DIN type |

Other connection technologies and mechanical accessories: please contact us

• PVC electrode extension: HEALLPVC • Support for 3 electrodes: PELECT

Standard reference solutions



MANUMESURE, a CHAUVIN ARNOUX Group company, proposes a full range of calibration solutions for the measurement of pH, oxidation-reduction potential and conductivity. With the aim of meeting your requirements more closely, the range includes certified reference standards traceable to the SI units which follow the NIST (US National Institute of Standards and Technology) and DIN19266 specifications. Manumasure also proposes three pH buffers with a use-by date, uncertainty and traceability to the SI system acknowledged by COFRAC. The property value is directly traceable to the primary pH reference standards produced by the French national calibration laboratory (LNE).

NIST pH buffers (125 ml flask)

| | |
|----------------------|------------------|
| pH 1.68 NIST buffer | P01700105 |
| pH 4.01 NIST buffer | P01700106 |
| pH 7.00 NIST buffer | P01700107 |
| pH 9.18 NIST buffer | P01700108 |
| pH 10.01 NIST buffer | P01700109 |

COFRAC-certified pH buffers (25 ml flask)

| | |
|---------------------------------------|------------------|
| COFRAC-cert. pH 4.005 buffers (x10) | P01700101 |
| COFRAC-cert. pH 6.865 buffers (x10) | P01700102 |
| COFRAC-cert. pH 9.180 buffers (x10) | P01700103 |
| Set of COFRAC-cert. 3x5 pH 4, 7 and 9 | P01700104 |

Other solutions: Please contact us

Concentrated pH buffers (125 ml flask)

| | |
|--------------------------|------------------|
| Concentrated pH 4 buffer | P01700111 |
| Concentrated pH 7 buffer | P01700112 |
| Concentrated pH 9 buffer | P01700113 |

Redox buffers (125 ml flask)

| | |
|---------------------------|------------------|
| 146 mV Michaelis solution | P01700110 |
| 220 mV Redox buffer | P01700114 |
| 468 mV Redox buffer | P01700115 |

Conductivity standards (flacon 125 ml)

| | |
|-----------------------------------|------------------|
| 147 µS/cm conductivity standard | P01700117 |
| 1408 µS/cm conductivity standard | P01700118 |
| 12.85 mS/cm conductivity standard | P01700119 |
| KCl 1 mol/L conductivity standard | P01700116 |

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