

# 2026

 CHAUVIN  
ARNOUX

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## Measuring instruments for electrochemistry

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*Measure up*





## Chauvin Arnoux Test & Measurement: French expertise at the service of water quality

### A family Group with a history dating back more than a century

Chauvin Arnoux® is a leading international brand offering a complete range of portable measuring instruments renowned for their reliability, performance and durability.

### Measurement, our expertise for over 130 years

Renowned for its expertise in electrical measurement, the brand has extended its know-how by developing a complementary range of electrochemical measuring instruments.

### Total mastery of the production chain

Our measuring instruments, most of which are designed and manufactured in France, combine reliability, durability and innovation. Thanks to controlled production on our own sites, we can guarantee you professional quality that meets the needs of professionals.

#### A FEW FIGURES

**130** years in business

**10** subsidiaries worldwide

**100** million euros in sales revenues

**1,000** employees

**6** R&D departments worldwide

**8** production sites

**11%** of sales revenues invested in R&D

3 in Normandy (France)  
1 in Lyon (France)  
1 in Montpellier (France)  
1 in Milan (Italy)  
1 in Dover (USA)  
1 in Shanghai (China)

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## Definition of pH

The concept of pH (Hydrogen Potential or Hydrogen Weight, 'Pondus Hydrogenii' in Latin) was introduced in 1909 by the Danish chemist S.P.L. Sørensen, who described it as a measure of the degree of acidity or alkalinity (basicity) of an aqueous solution.

Why can an aqueous solution be considered acidic or basic? It is the concentration of  $H^+$  hydrogen ions (or protons) that defines the level of acidity. The higher the  $H^+$  concentration, the more acidic the solution. Conversely, the lower the  $H^+$  concentration, the more basic the solution.

The pH is defined as the inverse of the decimal logarithm of the hydrogen ion concentration (or more precisely, activity):

$$pH = -\log[H^+]$$

The pH range of aqueous solutions is 0 to 14. At pH 7, the solution is said to be 'neutral'. At  $pH < 7$ , the solution is said to be acidic, and this acidity increases as it approaches 0. At  $pH > 7$ , the solution is said to be basic, and this basicity increases as it approaches 14.

## Measurement of pH

Two electrodes are used to measure pH.

**The indicator electrode:** consisting of a glass membrane, it is sensitive to  $H^+$  ions and delivers a signal proportional to the degree of acidity of the solution.

**The reference electrode:** delivering a constant potential, it is used as a reference to measure the potential of the indicator electrode (not sensitive to  $H^+$  ions).

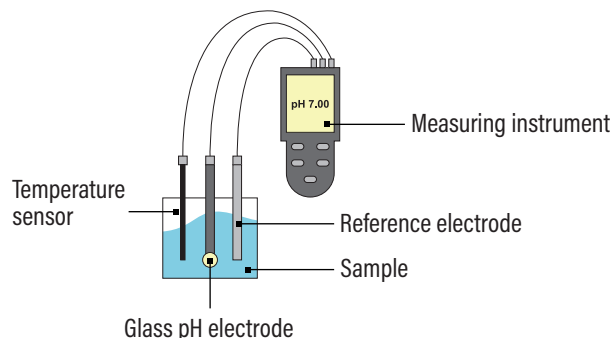
The potential difference generated between these two electrodes is used to determine the pH of the solution by means of the Nernst equation:

$$E = E_0 + 2.3RT / nF * \log [H_3O^+]$$

$E$  = potential measured  
 $R$  = gas constant  
 $n$  = ionic charge

$E_0$  = constant  
 $T$  = temperature in degrees Kelvin  
 $F$  = Faraday constant

## pH measurement configuration



## Oxidation reduction potential

The oxidation reduction potential (ORP) measures the capacity of an aqueous solution to release or capture electrons ( $e^-$ ) following a reaction between chemical species. It is used to determine the oxidizing or reducing nature of a medium. This is known as an electron transfer reaction.

- Oxidation involves a loss of electrons.
- Reduction involves a gain of electrons.

In aqueous systems, an oxidizing reaction is always coupled to a reducing reaction, which is why it is called 'redox'.

## Measurement of redox potential

Redox potential measurement also involves a two-electrode system for measuring a potential difference  $E$  (mV).

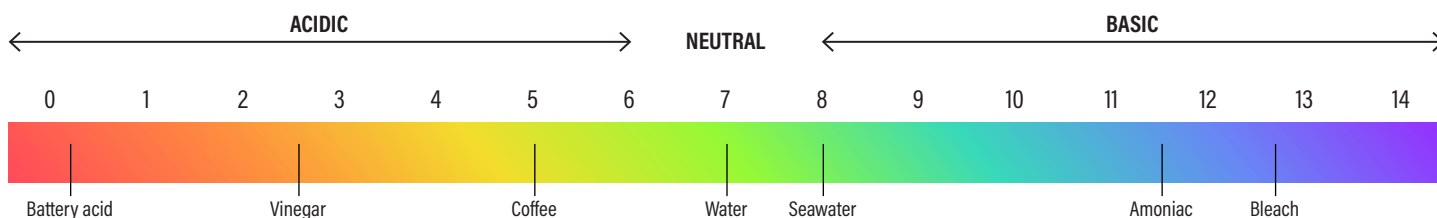
**The measuring electrode:** made of an inert metal (usually platinum).

**The reference electrode:** which delivers a constant potential and is used as a reference for measuring the potential of the indicator electrode.

The result can also be expressed in relation to the normal hydrogen electrode (NHE), in particular for reasons of data harmonization. To do this, the potential in relation to the NHE of the reference electrode is added to the measured value:

$$E_{NHE} = E_{measured} + E_{reference}$$

## pH scale



## Conductivity

Electrical conductivity is the ability of a solution, metal or gas to carry an electric current. Charged particles are needed to transport electricity through matter. In a solution, it is the anions and cations that carry the current, while in a metal it is the electrons. The conductivity of a solution depends essentially on 4 factors: the concentration of the ions, the mobility of the ions, the valence of the ions and the temperature.

## Conductivity measurement

The measurement system consists of a conductivity cell, a temperature probe and a conductivity meter.

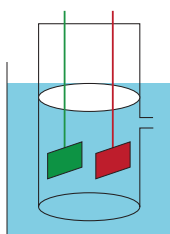


Diagram of a conductivity cell

The basic measurement principle is as follows: the conductivity cell consists of a pair of electrodes, called poles, to which the instrument applies a voltage. The conductivity meter measures the current flowing and calculates the value of the conductivity of the medium (in Siemens per unit of measurement) using the cell constant of the probe:

$$K = G \times \frac{l}{A} = G \times K$$

$K$  = conductivity (S/cm)

$G = 1/R$  = conductance (S) with  $U=R \cdot I$ ,  $R$  being the resistance ( $\Omega$ )

$K = l/A$  = cell constant (cm<sup>-1</sup>) with  $l$  the distance between the electrodes (cm) and  $A$  the contact surface of the electrodes with the electrolyte (cm<sup>2</sup>)

## Effect of temperature

Conductivity measurements are highly dependent on temperature. As the temperature increases, the viscosity of the sample decreases and this increases the mobility of the ions. The result is an increase in conductivity while the ion concentration remains constant.

It is not therefore possible to compare measurements carried out on the same sample at different temperatures. This is why the concept of a reference temperature has been introduced (usually 20°C or 25°C).

There are various types of temperature correction, including:

- **Linear:** involving a temperature coefficient  $\alpha$  (%/°C).
- **Non-linear:** the most widespread is that defined by the ISO/DIN 7888 standard for natural water.
- **No correction**

The type of correction is chosen according to the nature of the sample whose conductivity is to be measured.

## TDS (Total Dissolved Solids), salinity and resistivity

Dissolved Solids), salinity and resistivity.

TDS is used to estimate the level of dissolved solids in a solution. It corresponds to the mass of all the cations, anions and other undissociated species present in an aqueous solution. It is expressed in mg/l or ppm (parts per million).

$$1\text{ppm} = 1\text{ mg/L}$$

By measuring conductivity, the TDS value can be obtained quickly and reliably by multiplying it by the TDS factor:

$$\text{TDS} = \sigma \cdot f$$

$TDS$  = Total Dissolved Solids (mg/L)

$\sigma$  = conductivity ( $\mu\text{S/cm}$ )

$f$  = TDS factor

The TDS factor depends on the nature of the sample.

Salinity measurement is used to assess the level of dissolved salt in seawater. There are various definitions of salinity, the most commonly used being that defined by UNESCO and expressed in PSU (Practical Salinity Units).

$$1\text{ PSU} = 1\text{ g/L of salt}$$

Resistivity is the inverse of conductivity and is expressed in  $\Omega \cdot \text{cm}$ . This parameter is often limited to ultrapure water where the conductivity value is very low.

$$\text{Resistivity} = \frac{1}{\text{Conductivity}}$$

Electrochemical measuring instruments are widely used to monitor water quality, detect and quantify substances, analyse complex samples, monitor industrial processes, check finished products and develop new technologies.

Electrochemical measurements offer high sensitivity, accuracy and speed of analysis, and are essential for a wide range of applications, including drinking water, waste water, the food industry, the environment, and research and education.

These versatile tools are used to guarantee the quality, safety and regulatory compliance of various products throughout their production or processing chain, from raw materials to the final product.

## Drinking water

- Raw water quality monitoring
- Treatment process monitoring
- Disinfection process monitoring
- Distribution monitoring



## Wastewater

- Effluent inflow
- Primary, secondary and final treatment
- Sludge treatment
- Distribution

## Food and drink

- Raw water quality monitoring
- Production processes and finished products
- Wastewater discharge



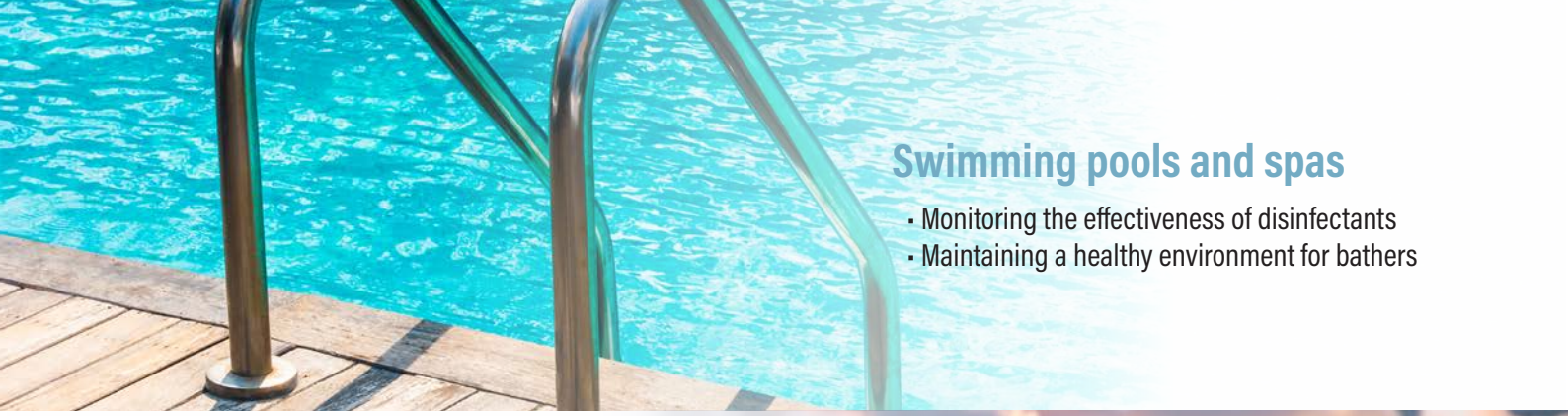
## Environment

- Pollutant detection
- Natural water monitoring
- Soil analysis



## Swimming pools and spas

- Monitoring the effectiveness of disinfectants
- Maintaining a healthy environment for bathers



## Industry

- Monitoring raw water quality
- Power generation
- Optimizing production processes
- Wastewater disposal



## Laboratory and research

- Study of chemical and biological reactions
- Analysis and characterization of media



## Education

- Study of chemical phenomena
- Determination of an unknown concentration by reaction



# CA 10101

Ref.: P01710010

The professional pH meter for reliable measurements on the move



XRGST1 pH/T electrode available with 1 m or 3 m cable

## Strengths

- IP67 waterproof case and connector
- Shockproof sheath
- PC connection via USB
- Automatic, customizable calibration
- Calibration log
- Data recording

## Accessories and replacement parts

pH combination electrode with built-in XRGST1 temperature sensor, 1 metre	P01710051
ORP combination electrode with built-in XRPTST1 temperature sensor	P01710052
pH 7.00 buffer solution (DIN-NIST), 125 mL	P01700106
pH 7.00 buffer solution (DIN-NIST), 125 mL	P01700107
See all electrodes and adapters on	P01700121
See all electrodes and adapters on	pages 16 to 21
See all accessories on	page 22
See all buffer and maintenance solutions on	pages 23, 24

IP 67



PC connection



Backlight



Stability indicator



Electrode status

	Measurement parameter	CA 10101	
Measurement range (instrument alone)	pH	-2.00 to 16.00 pH	
	Redox	±199.9 mV	-1999 to -200 and +200 to +1999 mV
	Temperature	-10.0 to +120.0°C / 14.0 to 248.0°F	
Intrinsic uncertainty of instrument (without electrode)	pH	0.01 pH	
	Redox	0.1 mV	1 mV
	Température	0.1 °C / 0.1 °F	
Intrinsic uncertainty of instrument (without electrode)	pH	± 0.01 pH ± R	
	Redox	± 0.1 mV ± R	± 1 mV ± R
	Température	< 0.4°C / < 0.7°F	
Calibration	pH	Automatic, up to 3 points, 3 groups of predefined buffer solutions (can be modified)	
	Redox	Automatic, 1 point, two preset buffer values (can be modified)	
	Calibration log	Slope and offset of last calibration displayed on instrument Full history saved and available for consultation via PC	
Temperature compensation	Automatic (ATC) or manual (MTC), -10°C to +120°C (14°F to 248°F)		
Connectors	Sensor input	8-pin DIN (optional adapters for BNC, S7 and Jack)	
	Communication interface	Type B Micro USB (for PC connection)	
Electrodes	pH	XRGST1 (supplied), pH combination electrode with built-in temperature sensor (Pt1000), 8-pin DIN connector and 1 m cable	
	Redox	XRGST1 (supplied), pH combination electrode with built-in temperature sensor (Pt1000), 8-pin DIN connector and 1 m cable	
Data recording and transfer	Time/date-stamping	Yes	
	Storage	> 100,000 measurements	
	Manual and automatic recording	Yes	
	Data transfer	Yes, on PC via USB Compatible with Data Logger Transfer software	
Power supply	4 x 1.5 V AA or LR06 alkaline batteries		
Battery life	Approx. 300 hours in continuous use		
Auto-power-off	Automatic power-off after 3, 10 or 15 min without use (adjustable)		
Dimensions / weight	211 x 127 x 54 mm / 600 g		

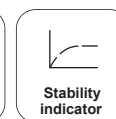
## State at delivery

- CA 10101 delivered in a site-proof case with :
- 1 pH electrode with built-in XRGST1 temperature sensor
  - 4 x 1.5 V LR06 batteries
  - 1 protective sheath fitted to the instrument
  - 2 ready-to-use buffer solutions (NIST/DIN compliant) of pH 4.01 and 7.00
  - 2 plastic beakers
  - 1 USB/µUSB cable
  - 1 wrist strap



## CA 10141

Ref.: P01710020



The professional conductivity meter for reliable measurements on the move



### ★ Strengths

- IP67 waterproof casing and connector
- Shockproof protective sheath
- PC connection via USB
- Automatic, customizable calibration
- Calibration log
- Conversion to TDS, resistivity and salinity
- Data recording

### 📦 State at delivery

- CA 10141 supplied in a site-proof case with :
- 1 x 4-pole conductivity cell with XCP4ST1 built-in temperature sensor
  - 4 x 1.5 V LR06 batteries
  - 1 protective sheath fitted to the instrument
  - 1 x 1408 µS/cm conductivity standard solution
  - 1 plastic beaker
  - 1 USB - micro USB cable
  - 1 wrist strap



CA 10141	
<b>Conductivity</b>	
Measurement range (instrument alone)	0.050 µS/cm to 500.0 mS/cm
Resolution (R)	1 nS/cm to 100 µS/cm (depending on range)
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
<b>TDS</b>	
Measurement range (instrument alone)	0.001 mg/l to 499.9 g/l
Resolution (R)	1 µg/L to 100 mg/L (depending on range)
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
TDS factor	0.40 to 1.00
<b>Resistivity</b>	
Measurement range (instrument alone)	2.000 Ω.cm to 19.99 MΩ.cm
Resolution (R)	1 mΩ.cm to 10 kΩ.cm (depending on range)
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
<b>Salinity</b>	
Measurement range (instrument alone)	2.0 TO 42.0 PSU
Resolution (R)	0.1 PSU
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
<b>Temperature</b>	
Measurement range (instrument alone)	- 10.0 to + 120.0°C (14.0 to 248.0°F)
Resolution (R)	0.1 °C (0.1°F)
Intrinsic uncertainty (instrument alone)	< 0.4°C (<0.7°F)
Temperature compensation	Automatic (ATC) or Manual (MTC)
Reference temperatures available	20 or 25 °C (68 or 77°F)
Temperature correction	Linear, non-linear, deactivated
<b>Calibration</b>	
Calibration	1 point, 6 predefined conductivity standards (user modifiable)
Calibration log	Display of the cell constant from the last calibration on the instrument Complete history saved and available for consultation via PC
<b>Connectors</b>	
Sensor input	DIN 8-pin (adapters for BNC, S7 and Jack optional)
Communication interface	Type B Micro USB for PC connection)
<b>Conductivity sensor</b>	
Type	XCP4ST1 (supplied), 4-pole conductivity sensor with built-in temperature probe (Pt 1000), 8-pin DIN connector, 1 m cable
<b>Others</b>	
Time/date-stamping	Yes
Storage	> 100,000 measurements
Manual and automatic recording	Yes
Data transfer	Yes, on PC via USB Compatible with Data Logger Transfer software
Power supply	4 x 1.5 V AA or LR06 alkaline batteries
Life span	Approx. 300 hours in continuous use
Auto-power-off	After 3, 10 or 15 min without use (adjustable)
Dimensions / weight	211 x 127 x 54 mm / 600 g

### ⚙️ Accessories and replacement parts

XCP4ST1 conductivity cell with built-in temperature sensor	P01710053
147 µS/cm conductivity standard solution	P01700117
1408 µS/cm conductivity standard solution	P01700118
See all electrodes and adapters on	pages 16 to 21
See all accessories on	page 22
See all buffer and maintenance solutions on	pages 23, 24

# CA 10001

Ref.: P01710015

**Waterproof pH tester for quick spot tests in solution**

IP 65

ATC

HOLD

Wide multi-parameter display  
Simultaneous display of pH and temperature

HOLD button to freeze the measurement

Automatic calibration, up to 3 points

Built-in temperature sensor

Electrode suitable for measurements in small diameter containers: flasks, test tubes, etc.



		CA 10001
Measurement range	pH	0.00 to 14.00 pH
	Temperature	0.0 to 60.0 °C / 32.0 to 140.0 °F
Resolution	pH	0.01 pH
	Temperature	0.1 °C / 0.1 °F
Uncertainty	pH	± 0.1 pH
	Temperature	± 1 °C / ± 2 °F
Embout	Spherical	
Calibration	Automatic; 1, 2 or 3 points; buffers memorized	
Temperature compensation	Automatic (ATC)	
Reference system	Gel, un rechargeable	
Junction	Fabric	
Power supply/battery life	2 x CR2032 3V batteries / >100 hours	
Automatic power-off	After 20 min without use	
Ingress protection	IP65	
Dimensions / weight	227 x 36 x 20 mm / 65 g	



**Practical pocket format for mobile applications in the field or laboratory**

## Accessories and replacement parts

pH 4.01 buffer solution (DIN-NIST), 125 mL	P01700106
pH 7.00 buffer solution (DIN-NIST), 125 mL	P01700107
pH 10.01 buffer solution (DIN-NIST), 125 mL	P01700109
KCl 3 mol/L storage solution	P01700121
Set of 3 plastic beakers	P01710056
Bag 120x245x60	P01298075
See all accessories	page 22
See all buffer and maintenance solutions	pages 23, 24



Bag 120x245x60

## State at delivery

- CA 10001 supplied in a cardboard box with:
- 2 x CR2032 3V batteries
  - 1 electrode storage flask
  - 1 multilingual user's manual
  - 1 verification certificate

**Complete your purchase!**

# CA 10002

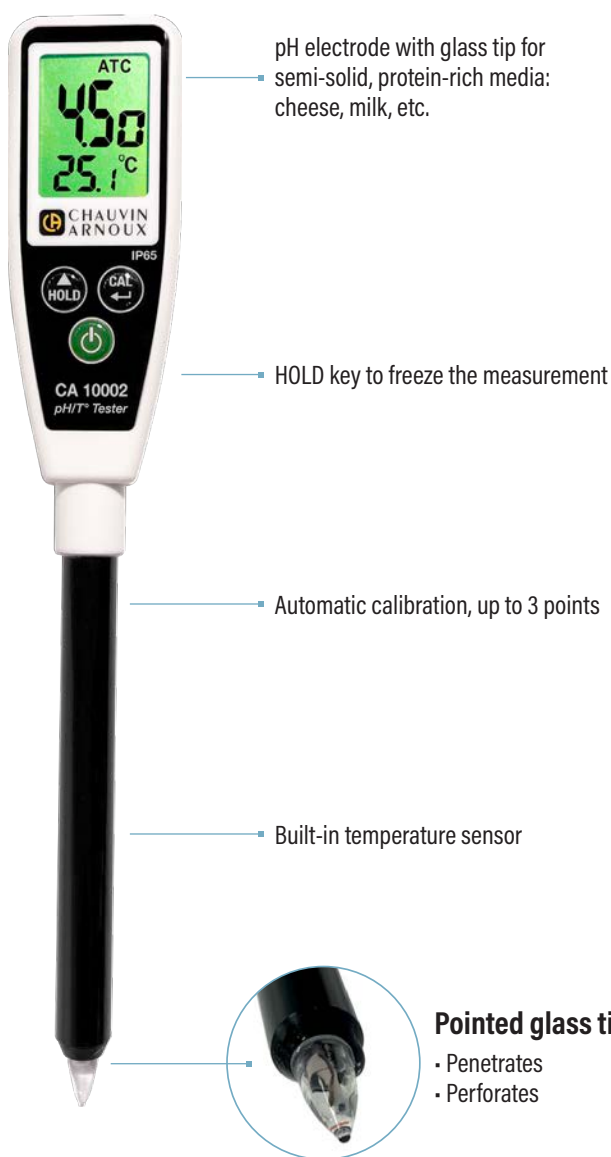
Ref.: P01710016

The special pH tester for the food industry for quick spot checks on solid and semi-solid media

IP 65

ATC

HOLD



pH electrode with glass tip for semi-solid, protein-rich media: cheese, milk, etc.

HOLD key to freeze the measurement

Automatic calibration, up to 3 points

Built-in temperature sensor



**Pointed glass tip:**

- Penetrates
- Perforates

		CA 10002
Measurement range	pH	2.00 to 12.00 pH
	Temperature	0.0 to 80.0 °C / 32.0 to 176.0 °F
Resolution	pH	0.01 pH
	Temperature	0.5 °C / 0.5 °F
Uncertainty	pH	± 0.1 pH
	Temperature	± 1 °C / ± 2 °F
End fitting		Pointed
Calibration		Automatic; 1, 2 or 3 points; buffers memorized
Temperature compensation		Automatic (ATC)
Reference system		Gel, un rechargeable
Junction		Fabric
Power supply / battery life		2 x CR2032 3V batteries / >100 hours
Auto-extinction		After 20 min without use
Ingress protection		IP65
Dimensions / weight		228 x 36 x 20 mm / 65 g

## State at delivery

- CA 10002 supplied in a cardboard box with :
- 2 x CR2032 3V batteries
  - 1 electrode storage flask
  - 1 multilingual user's manual
  - 1 verification certificate

## Accessories and replacement parts

pH 4.01 buffer solution (DIN-NIST), 125 mL	P01700106
pH 7.00 buffer solution (DIN-NIST), 125 mL	P01700107
pH 10.01 buffer solution (DIN-NIST), 125 mL	P01700109
KCl 3 mol/L storage solution	P01700121
Set of 3 plastic beakers	P01710056
Bag 120x245x60	P01298075
See all accessories	page 22
See all buffer and maintenance solutions	pages 23, 24

Watch our videos



## CA 10101E

Ref.: P01710011

Delivered without electrode

Designed for teaching and compliant with professional standards

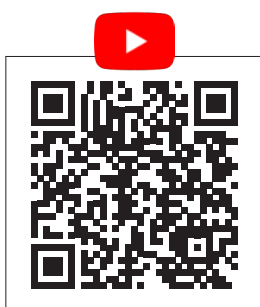


### ★ Strengths

- Ergonomic, modern and rugged (shockproof sheath)
- Power supply via mains adapter
- BNC connection
- Compatible with Regressi and Graph 2D (via USB)
- Analogue output for compatibility with CAD/CAM interfaces
- Retractable stand for bench mounting

Works with combination electrode or separate two-electrode system

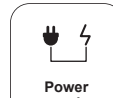
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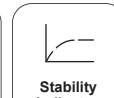
Regressi  
ExAO



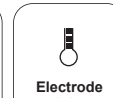
PC connection



Power  
supply



Stability  
indicator



Electrode  
status

	Measurement parameters	CA 10101E	
Measurement range (instrument alone)	pH	-2.00 to 16.00 pH	
	Redox	±199.9 mV	-1999 to -200 and +200 to +1999 mV
	Temperature	-10.0 to +120.0°C / 14.0 to 248.0°F	
Resolution	pH	0.01 pH	
	Redox	1 mV	1 mV
	Temperature	0.1°C / 0.1°F	
Intrinsic uncertainty of instrument (without electrode)	pH	± 0.02 pH ± R	
	Redox	± 2 mV ± R	± 2 mV ± R
	Temperature	< 0.4°C / < 0.7°F	
Calibration	pH	Automatic, up to 3 points, 3 groups of predefined buffer solutions (modifiable)	
	Redox	Automatic, 1 point, two preset buffer values (modifiable)	
	Calibration log	Display of slope and offset of last calibration on instrument Complete history saved and available for consultation via PC	
Temperature compensation	Automatic (ATC) or manual (MTC), -10°C to +120°C (14°F to 248°F)		
Connecteurs	Sensor input	BNC (pH/redox electrode) 2 mm banana (reference) Jack (temperature)	
	Communication interface	Micro USB (for PC connection) Analogue output (2 x 4mm banana)	
Enregistrement et transfert des données	Time/date-stamping	Yes	
	Storage	> 100,000 measurements	
	Manual and automatic recording	Yes	
	Data transfer	Yes, on PC via USB Compatible with Data Logger Transfer software	
Power supply	Mains adapter / 4 x 1.5 V AA or LR6 alkaline batteries		
Battery life	Approx. 300 hours in continuous operation		
Auto power-off	Automatic power-off after 3, 10 or 15 min without use (adjustable)		
Dimensions / weight	211 x 127 x 54 mm / 600 g		

### 📦 State at delivery

CA 10101E supplied in a cardboard box with:

- a protective sheath mounted on the device
- 4 x AA or LR6 alkaline batteries
- 1 USB-micro-USB cable
- 1 mains adapter
- a quick start guide
- a verification certificate



### ⚙️ Accessories and replacement parts

XRVIH pH combination electrode with PVC body	XRVIH-BNC
Électrode de mesure pH XV41 corps PVC	XV41-BNC
XV41 pH measuring electrode with PVC body	XR41-BA2
XRPT1 ORP combination electrode with PVC body	XRPT1-BNC
USB mains adapter	P01651023
See all electrodes	pages 16 to 20
See all accessories	page 22
XRPT1 ORP combination electrode with PVC body	pages 23, 24

## CA 10141E

Réf : P01710021

Delivered without electrode

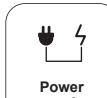
Designed for teaching and compliant with professional standards



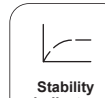
Regressi  
ExAO



PC connection



Power supply



Stability indicator

### ★ Strengths

- Ergonomic, modern and robust (shockproof sheath)
- Power supply via mains adapter
- BNC connection
- Compatible with Regressi and Graph 2D (via USB)
- Analogue output for compatibility with CAEx interfaces
- Retractable support for mounting on a workbench

### 📦 State at delivery

CA 10141E supplied in a cardboard box with:

- a protective sheath fitted to the device
- 4 x AA or LR6 alkaline batteries
- 1 USB-micro-USB cable
- 1 mains adapter
- a quick start guide
- a verification certificate



### ⚙️ Accessories and replacement parts

XCP4 platinum PVC conductivity cell	XCP4-BNC
BCP4 platinum glass conductivity cell	BCP4-BNC
USB mains adapter	P01651023
See all electrodes	pages 16 to 21
See all accessories	page 22
See all buffer and maintenance solutions	pages 23, 24

CA 10141E	
<b>Conductivité</b>	
Measurement range (instrument alone)	0.050 µS/cm to 200.0 mS/cm
Resolution (R)	1 nS/cm to 100 µS/cm (depending on range)
Intrinsic uncertainty (instrument alone)	± 1% reading ± R
<b>TDS</b>	
Measurement range (instrument alone)	0.001 mg/l to 200.0 g/l
Resolution (R)	1 µg/l to 100 mg/l (depending on range)
Intrinsic uncertainty (instrument alone)	± 1% reading ± R
TDS factor	0.40 to 1.00
<b>Resistivity</b>	
Measurement range (instrument alone)	2 Ω.cm to 4999 kΩ.cm
Resolution (R)	1 mΩ.cm to 1 kΩ.cm (depending on range)
Intrinsic uncertainty (instrument alone)	± 1% reading ± R
<b>Salinity</b>	
Measurement range (instrument alone)	2.0 TO 42.0 PSU
Resolution (R)	0.1 PSU
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
<b>Temperature</b>	
Measurement range (instrument alone)	- 10.0 to + 120.0°C (14.0 to 248.0°F)
Resolution (R)	0.1 °C (0.1°F)
Intrinsic uncertainty (instrument alone)	± 0.4°C / ± 0.7°F
Temperature compensation	Automatic (ATC) or manual (MTC)
Available reference temperatures	20 or 25 °C (68 or 77°F)
Temperature correction	Linear, non-linear, deactivated
<b>Calibration</b>	
Calibration	1 point, 6 predefined conductivity standards (user-modifiable)
Calibration log	Display of the cell constant from the last calibration on the instrument Complete history saved and available for consultation via PC
<b>Connectors</b>	
Sensor input	BNC (conductivity cell), JACK (Pt1000 temperature sensor)
Communication interface	Micro USB type B (for PC connection) 2 analogue outputs for conductivity/TDS/salinity resistivity and temperature (3 x 4mm banana)
<b>Others</b>	
Time/date-stamping	Yes
Storage	> 100,000 measurements
Manual and automatic recording	Yes
Data transfer	Yes, on PC via USB Compatible with Data Logger Transfer software
Power supply	Mains adapter / 4 x 1.5 V AA or LR6 alkaline batteries
Battery life	Approx. 300 hours in continuous use
Automatic power-off	After 3, 10 or 15 minutes without use (adjustable)
Dimensions / weight	211 x 127 x 54 mm / 600 g

Watch our videos



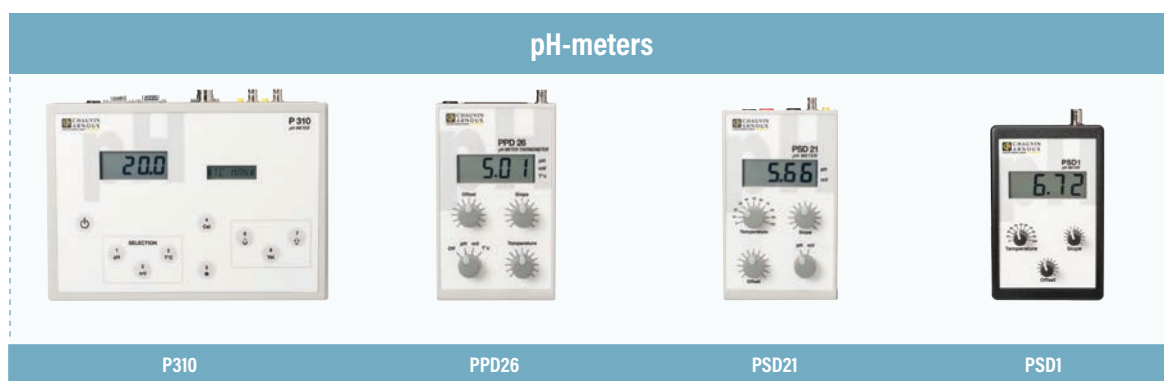
## Range dedicated to education

The education range includes four pH meters, two conductivity meters and one multiparameter tester. Each instrument has a range of specifications to meet multiple needs. Designed in benchtop format, they are particularly well suited to the demands of teaching.

The PSD1, PSD21, PPD26, CSD22 and MPC25 instruments feature potentiometers for a simplified, educational approach to electrochemical measurement. These instruments also have an analogue output.

The P310 and C320 have analogue and RS232 outputs.

Supplied without electrode See all electrodes and temperature sensors on pages 16 to 21.



		P310	PPD26	PSD21	PSD1
Measurement range	pH	0 - 14			
	mV	± 1 999 mV			-
	T°	Manual correction: 0 - 150 °C Automatic correction (with Pt100 sensor) : -10 - +200 °C	0 - 150 °C	-	-
Resolution	pH	0.01 pH			
	mV	1 mV			-
	T°	Manual correction: 0.1°C Automatic correction (with Pt100 sensor): 0.1°C	0.1°C	-	-
Temperature compensation	ATC/MTC		MTC (0 - 60 °C)	MTC (0 - 100 °C)	MTC (0 - 100 °C)
Calibration	pH: automatic or manual with 1 or 2 buffers Redox potential: manual with 1 buffer		pH: manual at 2 points Redox potential: manual at 1 point		Manual at 2 points
Connections (inputs)	BNC plug for pH electrode 2 mm Banana for reference  BNC plug for redox electrode 2 mm Banana for reference  5-pin plug for T°C probe		BNC plug for pH/mV electrode  3.5 mm jack plug for temperature sensor (Pt100)	BNC plug for pH/mV electrode 2 mm banana for separate reference electrode	BNC plug for pH electrode
Communication (outputs)	Sub.D 9-channel male connector for analogue logger outputs (x3)  Sub.D 9-channel female connector for RS232 output		2.54 mm jack plug for logger output	Insulated 4 mm terminals for logger output	4 mm terminals for logger output
Dimensions	275 x 208 x 51 mm		187 x 106 x 54 mm		155 x 90 x 41 mm
Weight	800 g		340 g	280 g	200 g
Power supply	9 V mains adapter (supplied)		9 V battery (supplied)	9 V mains adapter (supplied)	9 V mains adapter (supplied)
State at delivery	Benchtop pH meter: supplied with pH4 and pH7 concentrated standard solutions (125 mL), 1 common 2 mm banana reference lead and 2 mm male/female 4 mm banana adapter, 1 user's manual and 1 mains adapter (9 V power supply)		Portable pH meter: supplied with pH 4 and pH 7 concentrated standard solutions (125 mL), 1 user's manual and a 9 V battery		Laboratory pH meter: supplied with 2 pH 4 and pH 7 concentrated standard solutions (125 mL), 1 user's manual and 1 mains adapter (9 V power supply)

Supplied without electrode

See all electrodes and temperature sensors on pages 16 to 21.

## Conductivity meters and multiparameter testers



		C320	CSD22	MPC25
Measurement range	pH	-	-	0 - 14
	mV	-	-	± 1999 mV
	Conductivity	6 measurement ranges: 0 - 2 000 nS/cm 0 - 20 µS/cm 0 - 200 µS/cm 0 - 2 000 µS/cm 0 - 20 mS/cm 0 - 200 mS/cm	4 measurement ranges: 0 - 200 µS/cm 0 - 2 000 µS/cm 0 - 20 mS/cm 0 - 200 mS/cm	4 measurement ranges: 0 - 200 µS/cm 0 - 2 000 µS/cm 0 - 20 mS/cm 0 - 200 mS/cm
Resolution	pH	-	-	0,01
	mV	-	-	1 mV
	Conductivity	Rs = 1 nS/cm Rs = 0.01 µS/cm Rs = 0.1 µS/cm Rs = 1 µS/cm Rs = 0.01 mS/cm Rs = 0.1 mS/cm	Rs = 0.1 µS/cm Rs = 1 µS/cm Rs = 0.01 mS/cm Rs = 0.1 mS/cm	Rs = 0.1 µS/cm Rs = 1 µS/cm Rs = 0.01 mS/cm Rs = 0.1 mS/cm
Temperature	Measurement range	Manual correction: 0 - 200 °C Automatic correction (with Pt100 sensor) : -10 - +200 °C	-	-
	Resolution	Manual correction: 0.1°C Automatic correction (with Pt100 sensor): 0.1°C	-	-
Temperature compensation		ATC/MTC	-	MTC (0 - 100°C)
Temperature correction		Linear: 0 to 8.0 %/°C	-	-
Reference temperature		25°C	-	-
Calibration		Manual at 1 point		pH: manual with 1 or 2 buffers Redox potential: manual with 1 buffer Conductivity: manual with 1 buffer
Connections (inputs)		BNC plug for conductivity cell 5-pin plug for conductivity cell, t°C or t°C probe only	BNC plug for conductivity cell	BNC plug for pH/mV electrode 2 mm banana input for reference BNC plug for conductivity cell
Communication (outputs)		2 insulated 4mm terminals for analogue logger output 9-channel female Sub-D connector for RS232 output	Insulated 4 mm terminals for logger output	Insulated 4 mm terminals for conductivity logger output Insulated 4 mm terminals for pH/mV logger output
Dimensions		275 x 208 x 51 mm	187 x 106 x 54 mm	275 x 208 x 51 mm
Weight		780 g	280 g	800 g
Power supply		9 V mains adapter (supplied)	9 V mains adapter (supplied)	9 V mains adapter (supplied)
State at delivery		Bench-top conductivity meter: instrument supplied with 1M KCl solution (125 mL), 1 user's manual and 1 mains adapter (9 V power supply)	Bench-top conductivity meter: instrument supplied with 1M KCl solution (125 mL), 1 user's manual and 1 mains adapter (9 V power supply)	Laboratory multiparameter tester: supplied with 2 pH4 and pH7 concentrated standard solutions (125 mL), 1 x 1M KCl solution (125 mL), 1 x Michaelis solution, 1 x 2 mm/4 mm adapter, 1 user's manual and 1 x mains adapter (9V power supply).

## Standard pH electrodes

Two electrodes are used to measure pH: the indicator (or measuring) electrode, made of a glass membrane and sensitive to hydronium ions, which delivers a voltage proportional to the activity of the H<sup>+</sup> ions, and the reference electrode, which delivers a constant potential. The instrument measures the potential difference (mV) between the measuring electrode and the indicator electrode, which it then converts into pH units.

The electrodes can be housed in the same body, known as a 'combination' electrode, or they can be used separately. Combination electrodes have the advantage of being easier to handle than a system with separate electrodes.

### pH combination electrodes



#### Help with choosing electrode connection technology



BNC type  
Ref-BNC



S7 screw type  
Ref-S7



DIN type  
Ref-DIN



TV type  
Ref-TV



2 mm banana type  
Ref-BA2



4 mm banana type  
Ref-BA4



Jack type  
Ref-JACK



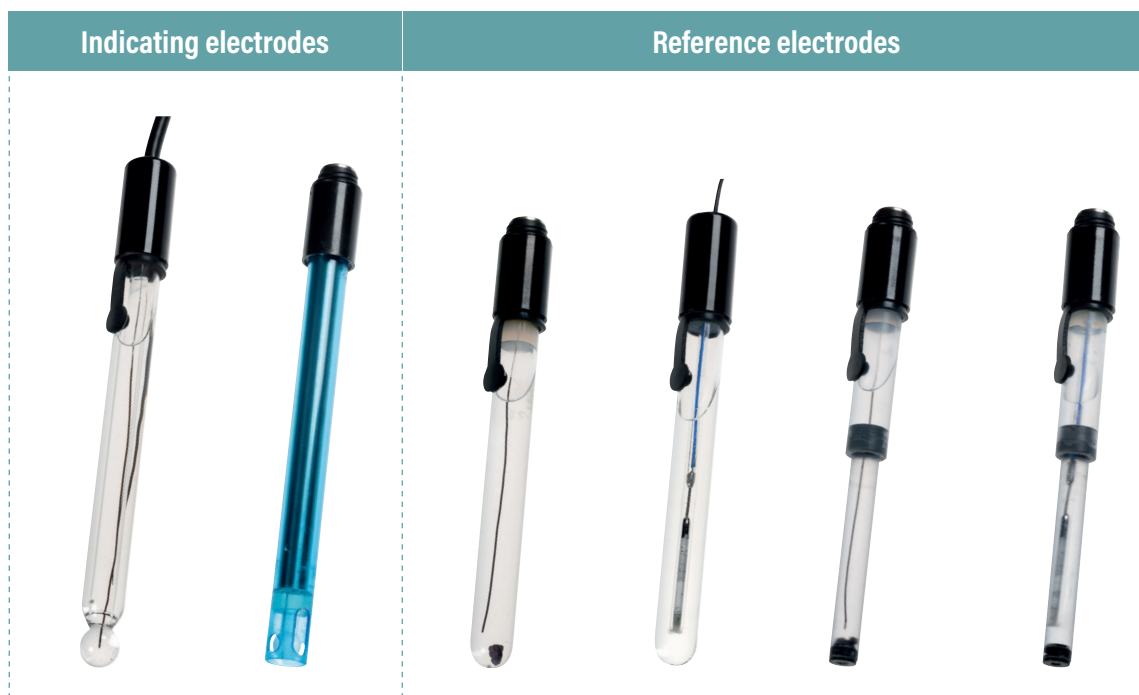
5-pole DIN type

Reference	BRV1H	XRV1H	LRV7	BRV4H	BRV4H-S7-130	
<b>pH range</b>	0-12	0-12	0 - 14	0-12		
<b>End-fitting</b>	Spherical		Pointed	Micro		
<b>Electrode body material</b>	Glass	PVC	PVC	Glass		
<b>Reference system</b>	Ag/AgCl					
<b>Reference electrolyte</b>	Filled with KCl 1 mol/L		Polymer	Filled with KCl 1 mol/L		
<b>Junction</b>	Ceramic		Ceramic and open	Ceramic		
<b>Temperature sensor</b>	Non					
<b>Operating temperature</b>	0 to 80°C	0 to 60°C		0 to 80°C		
<b>Ø and length under cover (mm)</b>	12 x 120		6 (extremity) x 123	6.5 (extremity) x 120	6.5 (extremity) x 185	
<b>Longueur du câble</b>	1 m					
<b>References</b>	<b>BNC connections</b>	BRV1H-BNC	XRV1H-BNC	P01715019	BRV4H-BNC	-
	<b>S7 (screw) connections</b>	BRV1H-S7	XRV1H-S7	-	BRV4H-S7	BRV4H-S7-130
	<b>DIN connections</b>	-	XRV1H-DIN	-	-	-
	<b>Waterproof 8-pin DIN connectors</b>	-	-	P01715020	-	-
	<b>TV connectors</b>	BRV1H-TV	XRV1H-TV	-	-	-
<b>Recommended applications</b>	General use Protected electrode	General use Protected electrode	For semi-solid products Ideal for agri-food	Small volumes 0.5 mL	Rod length 130 mm Small volumes 0.5 mL	

## Standard pH electrodes

A separate electrode (or half-cell) system consists of a measuring electrode and a reference electrode. This system is popular with teachers as it provides an educational approach to pH measurement. This set-up is also used when the life span of the two electrodes is not similar.

### Separate pH electrodes



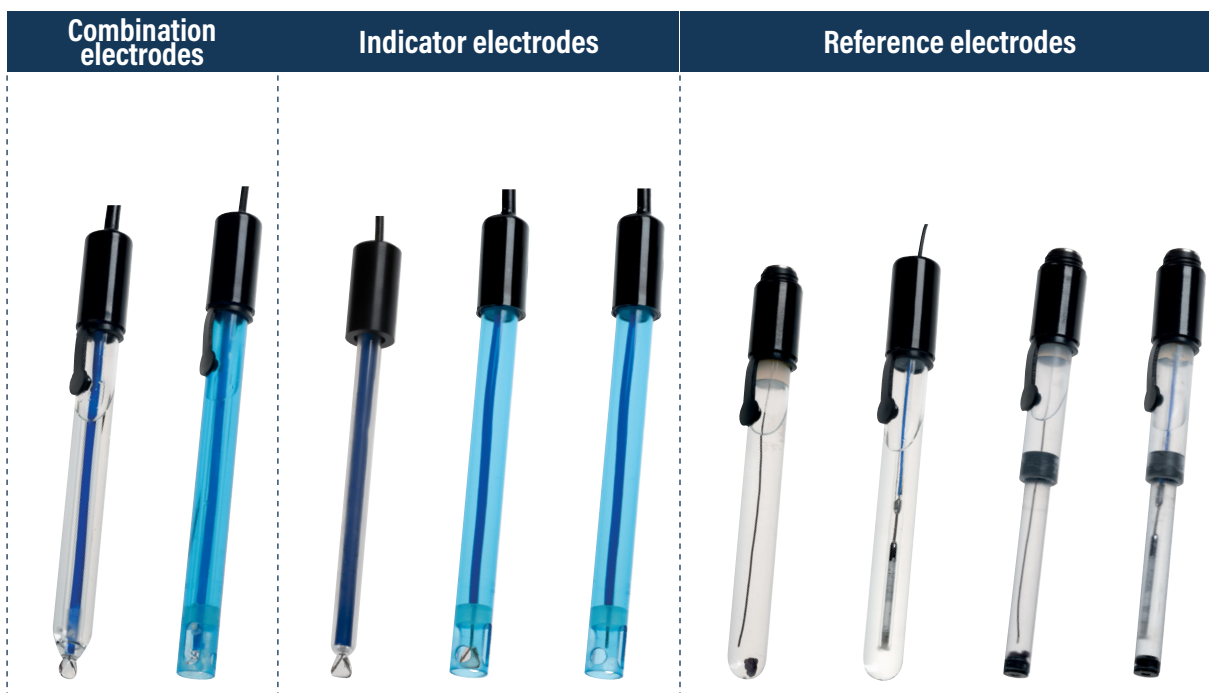
	Indicating electrodes		Reference electrodes			
	BV41H	XV41	BR41	BR42	XR41	XR42
<b>pH range</b>	0-12	0-12	0-14			
<b>End-fitting</b>	Spherical		-			
<b>Electrode body material</b>	Glass	PVC	Glass		PVC	
<b>Reference system</b>	-		Ag/AgCl	Calomel	Ag/AgCl	Calomel
<b>Reference electrolyte</b>	-		Filling with KCl 1 mol/L	Filling with KCl 3 mol/L	Filling with KCl 1 mol/L	Filling with KCl 3 mol/L
<b>Junction</b>	-		Ceramic			
<b>Temperature sensor</b>	No					
<b>Operating temperature</b>	0 to 80°C	0 to 60°C	0 to 80°C		0 to 60°C	
<b>Ø and length under cover (mm)</b>	12 x 110	12 x 120	12 x 115		8 (extremity) x 110	
<b>Cable length</b>	1 m					
<b>BNC connections</b>	BV41H-BNC	XV41-BNC	-	-	-	-
<b>S7 (screw) connections</b>	BV41H-S7	XV41-S7	BR41-S7	BR42-S7	XR41-S7	XR42-S7
<b>2 mm banana connectors</b>	-	-	BR41-BA2	BR42-BA2	XR41-BA2	XR42-BA2
<b>4 mm banana connectors</b>	-	-	BR41-BA4	BR42-BA4	XR41-BA4	XR42-BA4
<b>Recommended applications</b>	General use For use with a BR41, BR42, XR41 or XR42 reference electrode			General use For use with a BV41H or XV41H measuring electrode		

References

## Standard redox electrodes

The oxidation-reduction potential (or redox potential) is used to assess the capacity of a solution to gain or lose electrons (known as electron activity). This measurement is based on a potential difference (in mV) measured between an indicator (or measuring) electrode and a reference electrode. The redox indicator electrode is made of an inert metal capable of gaining or losing electrons. Like pH electrodes, redox electrodes can be housed in the same body or used separately.

Combination and separate redox electrodes

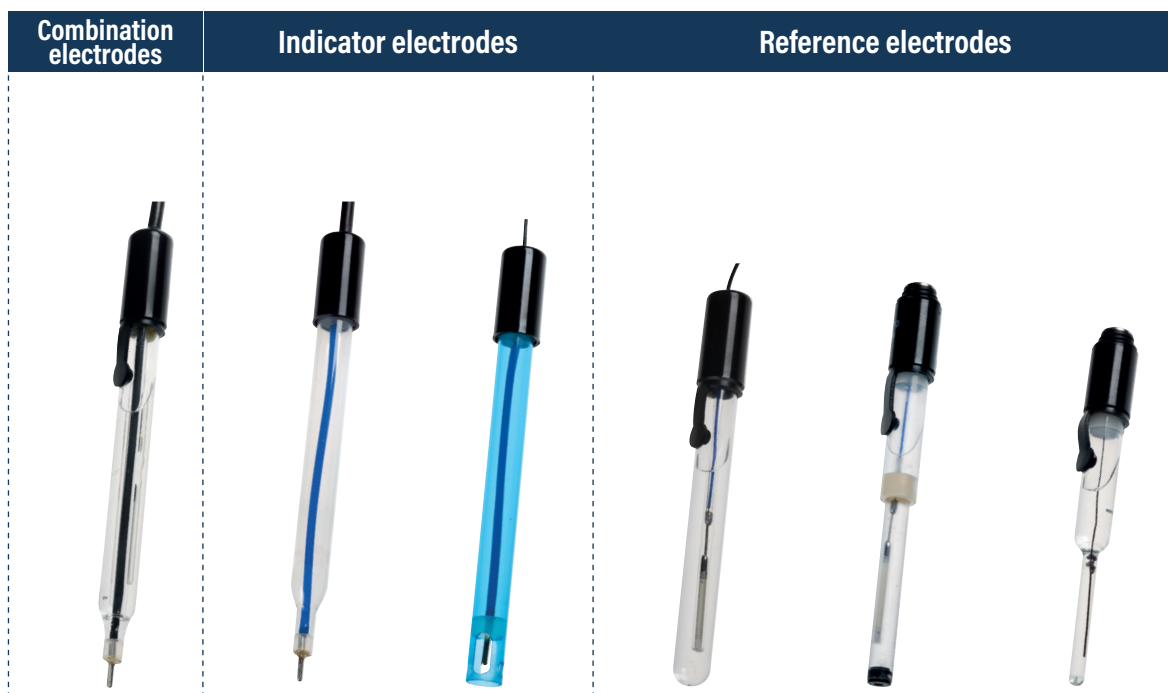


	Combination electrodes		Indicator electrodes			Reference electrodes			
Reference	BRPT1	XRPT1	BPT1	XPT1	XPT2	BR41	BR42	XR41	XR42
Redox range	+/- 2.000 mV								
Electrode body material	Glass	PVC	Glass	PVC	PVC	Glass	Glass	PVC	PVC
Metal	Platinum wire				Platinum rod	-			
Reference system	Ag/AgCl		-			Ag/AgCl	Calomel	Ag/AgCl	Calomel
Reference electrolyte	Filling with KCl 1 mol/L		-			Filling with KCl 1 mol/L	Filling with KCl 3 mol/L	Filling with KCl 1 mol/L	Filling with 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 cover (mm)	12 x 115	12 x 120	8 x 115	12 x 120	12 x 120	12 x 115	12 x 115	8 (extremity) x 110	
Cable length	1 m								
BNC connections	BRPT1-BNC	XRPT1-BNC	BPT1-BNC	XPT1-BNC	XPT2-BNC	-	-	-	-
S7 (screw) connections	BRPT1-S7	XRPT1-S7	BPT1-S7	XPT1-S7	XPT2-S7	BR41-S7	BR42-S7	XR41-S7	XR42-S7
2 mm banana connectors	-	-	-	-	-	BR41-BA2	BR42-BA2	XR41-BA2	XR42-BA2
4 mm banana connectors	-	-	-	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 BR41, BR42, XR41 or XR42 reference electrode			General use For use with a BPT1, XPT1 or XPT2 measuring electrode			

## Standard redox electrodes for argentometry

Silver redox electrodes are commonly used for argentometric titrations. The potential difference is measured by an electrode generally consisting of a silver wire or rod. These electrodes are used for solutions containing silver ions.

Combination and separate silver electrodes

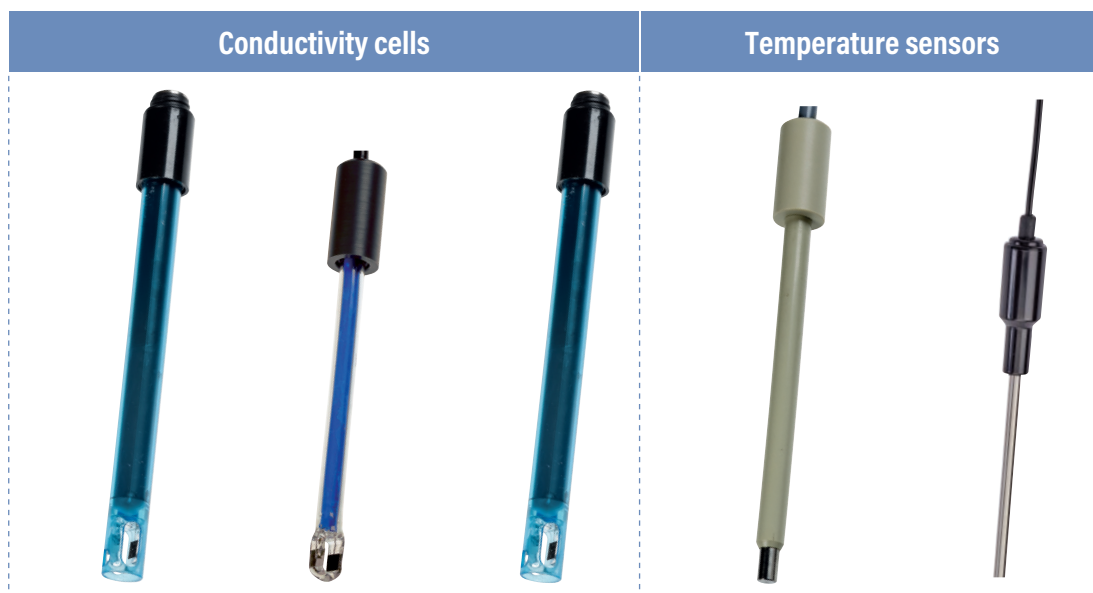


	BRAG1	BAG1	XAG1	BR43	XR43	BR44
Reference	BRAG1	BAG1	XAG1	BR43	XR43	BR44
Redox range	+/- 2,000 mV					
Electrode body material	Glass	Glass	PVC	Glass	PVC	Glass
Metal	Silver rod			-		
Reference system	Mercurous sulphate	-	-	Mercurous sulphate	Mercurous sulphate	Ag/AgCl
Reference electrolyte	Saturated K <sub>2</sub> SO <sub>4</sub>	-	-	Saturated K <sub>2</sub> SO <sub>4</sub>	Saturated K <sub>2</sub> SO <sub>4</sub>	KCl 1 mol/L KNO <sub>3</sub> 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 cover (mm)	12 x 125		12 x 120	12 x 115	8 (extremity) x 110	12 x 120
Cable length	1 m					
References	BNC connections	BRAG1-BNC	BAG1-BNC	XAG1-BNC	-	-
	S7 (screw) connections	BRAG1-S7	BAG1-S7	XAG1-S7	BR43-S7	XR43-S7
	2 mm banana connectors	-	-	-	BR43-BA2	XR43-BA2
	4 mm banana connectors	-	-	XAG1-BA4	BR43-BA4	XR43-BA4
Recommended applications	For argentometric measurements	For argentometric measurements, combined with reference electrode		Reference electrodes for argentometry		Double junction for clogging product

## Standard conductivity cells and temperature sensors

There are three types of cells for measuring conductivity: **the two-pole cell**, for conventional measurements over a range of low conductivities, **the four-pole cell**, for measurements over wider conductivity ranges while reducing the polarization effect, and **the induction cell**, which is used for extreme conductivity values and is more suitable for professionals. Each probe is characterized by its cell constant, which allows the measured conductance to be converted into conductivity.

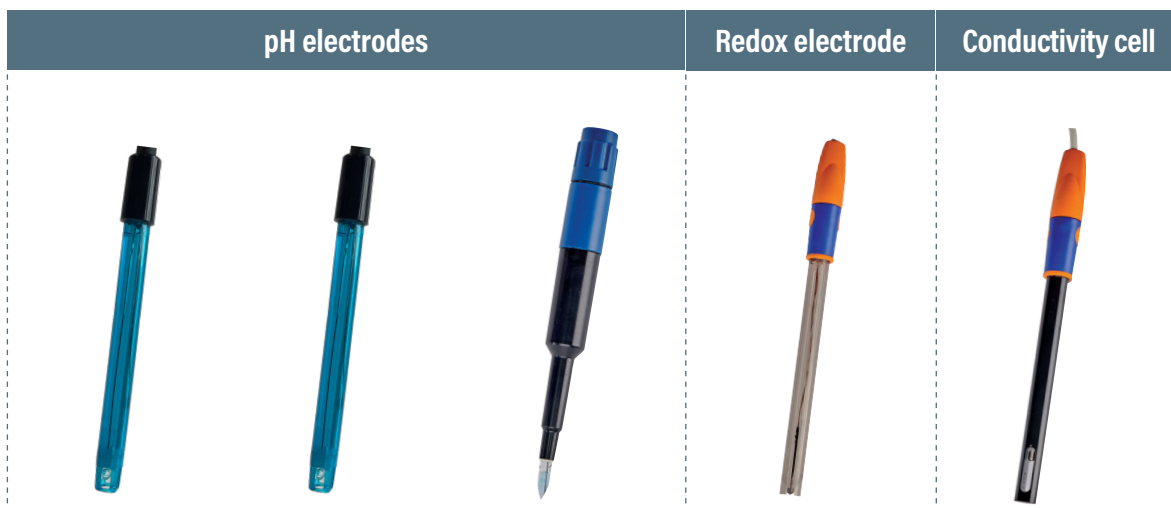
### Conductivity cells and temperature sensors



Reference	XCPST4	BCP4	XCP4	BT5	BT6	
Conductivity range	0.1 $\mu$ S to 200 mS			0°C to +90°C	-10°C to +110°C	
Electrode body material	PVC	Glass	PVC	Polypropylene	Stainless steel	
Type of cell	2 platinum poles			-	-	
Cell constant (cm <sup>-1</sup> )	1			-	-	
Temperature sensor	Yes Pt100	No		Yes Pt100	Yes Pt1000	
Operating temperature	0 to 60°C	0 to 80°C	0 to 60°C	0 to 90°C	-10°C to +110°C	
Ø and length under cover (mm)	12 x 115	11 (extremity) x 100	12 x 115	6 (extremity) x 116	5 x 97	
Cable length	1 m					
References	5-pole connectors	XCPST4	-	-	-	
	BNC connectors	-	BCP4-BNC	XCP4-BNC	-	
	S7 (screw) connectors	-	BCP4-S7	XCP4-S7	-	
	4 mm banana connectors	-	-	XCP4-BA4	-	
	RAD connectors	-	-	XCP4-RAD	-	
	DIN connectors	-	-	-	BT5-DIN	-
	Jack connectors	-	-	-	BT5-JACK	P01710070
Recommended applications	General use					

## Specific electrodes for CA 10101 & CA 10141

The CA 10101 pH meter and the CA 10141 conductivity meter are portable measuring devices specially designed by Chauvin Arnoux for mobile applications: in the field, in the laboratory or in production. To facilitate field work, these instruments are supplied with probes incorporating a Pt1000 temperature sensor. They are also made of rugged materials, making them particularly hard-wearing. The pH and redox electrodes are combination electrodes incorporating a gel electrolyte to enhance their durability.



Reference	XRGST1 P01710051	XRGST1 - 3 m P01710057	LRV7 P01715020	XRPTST1 P01710052	XCP4ST1 P01710053
Measurement range	1 - 12		0 - 14	± 1999 mV	0.1 µS/cm - 500 mS/cm
End-fitting	Spherical		Pointed	-	
Electrode body material	Polycarbonate		PVC	Polycarbonate	Epoxy
Reference system	Ag/AgCl			-	
Reference electrolyte	Gel			-	
Junction	Ceramic and non-woven fabric		Ceramic and open	Ceramic	-
Cell constant	-			0.55 ± 0.05 cm <sup>-1</sup>	
Temperature sensor	Yes		No	Yes	
Temperature measurement range	0 to 60°C				0 to 100°C
Dimensions	150 x Ø 16 mm		132 x Ø 16 mm	190 x Ø 18 mm	
Cable length	1 m	3 m	1 m		
Connections	Waterproof 8-pin DIN				
Recommended applications	Field applications and general and laboratory use		Dairy products (milk, cheese, yoghurt), semi-solid foods	Field applications and general and laboratory use	

### CA 10101 pH-meter

### CA 10141 conductivity meter

DIN adapter cables are available for use of electrodes equipped with BNC connectors or S7 screw connectors with a temperature sensor (Jack connector).



Male DIN connector  
Female BNC/Jack  
P01295501



Male DIN connector  
Female S7/Jack  
P01295502



Male DIN connector  
Female BNC/Jack  
P01710054



Male DIN connector  
Female S7/Jack  
P01710055

## CA 10101 pH meter

XRGST1 Combination pH/T electrode.....	P01710051
XRGST1 Combination pH/T electrode 2.90m.....	P01710057
XRPTST1 Combination redox/T electrode.....	P01710052
LRV7 DIN-type pointed pH electrode.....	P01715020
PT1000 JACK temperature probe.....	P01710070
Male DIN-BNC/female JACK adapter cable.....	P01295501
Male DIN-S7/female JACK adapter cable.....	P01295502
Set of 3 plastic beakers.....	P01710056
Shockproof sheath.....	P01710050
CA10101/CA10141 adjustment kit.....	P01710060

## CA 10141 Conductivity meter

XCP4ST1 Conductivity/T probe.....	P01710053
PT1000 JACK temperature probe.....	P01710070
DIN BNC/Jack adapter for conductivity.....	P01710054
DIN-S7/Jack Conductivity Adapter.....	P01710055
Set of 3 plastic beakers.....	P01710056
Shockproof sheath.....	P01710050
CA10101/CA10141 adjustment kit.....	P01710060

## CA 10001 & CA 10002 pH/Temp testers

Bag 120x245x60.....	P01298075
Set of 3 plastic beakers.....	P01710056

## CA 10101E pH meter & CA 10141E conductivity meter

PT1000 temperature sensor / Jack.....	P01710070
USB mains adapter.....	P01651023
Set of 3 plastic beakers.....	P01710056
Shockproof sheath.....	P01710050

## P310 pH meter

Analogue output cable for P310.....	P012954900
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## P310, PSD21 and PSD1 pH meters, C320 and CSD22 conductivity meters and MPC25 multiparameter tester

9V power supply.....	HECALIM
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## S7 electrode connectors

S7 to TV/Cinch connector.....	S7RAC-R41
S7 to BNC connector.....	S7RAC-R44
S7 to BA2 connector.....	S7RAC-R46
S7 to BA4 connector.....	S7RAC-R47
S7 to BA2 connector (x2).....	S7RAC-R48
S7 to BA4 connector (x2).....	S7RAC-R49
S7 to DIN 5-pin connector (RAD).....	S7RAC-R50

## Other accessories

Support for 3 electrodes.....	PELECT
PVC electrode extension.....	HEALLPVC
Set of 3 plastic beakers.....	P01710056
Cap for fillable electrodes.....	P01710058



DIN male BNC/female jack adapter  
P01295501 & P01710054

Din male-S7/female jack adapter  
P01295502 & P01710055



Bag for pH testers  
P01298075

USB mains adapter  
P01651023



P310 analogue output cable  
P01295490

S7 connector to TV/Cinch plug  
S7RAC-R41



S7 connector to BNC plug  
S7RAC-R44

S7 connector to 1 x 4mm banana plug  
S7RAC-R46



S7 connector to 1 x 4mm banana plug  
S7RAC-R47

S7 connector to 2 x 2mm banana plugs  
S7RAC-R48



S7 connector to 2 x 4mm banana plugs  
S7RAC-R49

S7 connector to 5-pin DIN plug  
S7RAC-R50



3-electrode support  
Electrode extension for XR41, XR42 & XR43  
PELECT and HEALLPVC

## Manumasure is the Chauvin Arnoux Group company specialized in metrology and regulatory testing

Manumasure offers a full range of calibration solutions for pH, redox potential and conductivity measurements. In order to best meet your needs, the range includes certified standards traceable to SI units that follow the specifications of NIST (National Institute of Standard and Technology, USA) and DIN 19266.

Manumasure also offers three pH buffers with a shelf life, uncertainty and SI traceability recognised by COFRAC.

The property value is directly traceable to the primary pH standards produced by the LNE. The company has also developed maintenance solutions for pH and ORP electrodes.

### DIN/NIST pH buffer solutions

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



The formulation of these buffer solutions follows the specifications of NIST (National Institute of Standards and Technology, USA) and DIN19266.

The solutions are delivered in 125 ml flasks with a quality certificate (at the customer's request).

### Concentrated pH buffer solutions

Concentrated pH 4.00 buffer	P01700111
Concentrated pH 7.00 buffer	P01700112
Concentrated pH 9.00 buffer	P01700113



The pH 7.00 and 9.00 concentrated buffer solutions are supplied in 125 ml flasks and must be diluted 10 times before use.

The pH 4.00 buffer is supplied in a 125 ml flask and must be diluted 5 times before use.

### COFRAC-certified pH buffer solutions

COFRAC-certified pH 4.005 buffer (x10)	P01700101
COFRAC-certified pH 6.865 buffer (x10)	P01700102
COFRAC-certified pH 9.180 buffer (x10)	P01700103
Set of 3 x 5 COFRAC-certified pH 4, 7 and 9 buffers	P01700104



Single-dose 25 ml vial

**Accuracy:** guaranteed pH and contamination-free for 1 to 2 years until opened.

**Practicality:** time saving, more effective calibration, waste and spillage avoided.

**Traceability:** labelled vial with batch number, expiry date and COFRAC reference material producer logo.

*Certificate supplied with each box of COFRAC pH buffer solutions.*

### Redox buffer solutions

146 mV Michaelis solution	P01700110
220 mV redox buffer	P01700114
468 mV redox buffer	P01700115



Manumasure offers two ready-to-use standard solutions (220 mV and 468 mV) and a concentrated solution (146 mV Michaelis solution).

These solutions are supplied in 125 mL vials.

### Standard conductivity solutions

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



The conductivity standards are checked and standardized with a conductivity meter calibrated with:

- Two certified solutions traceable to NIST reference materials
- A standard developed by the OIML (Organisation Internationale de Métrologie Légale)

The concentrated 1mol/L KCl solution must be diluted to obtain different conductivity values.

These solutions are supplied in 125 mL vials.

## Electrode maintenance

The maintenance of pH and redox (ORP) electrodes has a significant impact on their life span and accuracy. Regular maintenance includes storage in a suitable electrolyte solution between measurements, correct handling and cleaning appropriate to the type of contamination.

See our advice on electrode maintenance on page 24



	Maintenance solutions		Cleaning solution
Solution	KCl 1 mol/L	KCl 3 mol/L	Pepsin/HCl solution containing 1% pepsin
Type	Filling and storage solution		Solution for cleaning protein contamination
Use	Ready-to-use solution (codigoutte bottle with dropper)		Ready-to-use solution
Conditioning	30 mL vial		125 mL vial
Reference	P01700120	P01700121	P01700122

## Longevity and reliability, our commitment

### Metrology & maintenance

Manumasure provides metrological verification, maintenance and management of a range of measuring, control and test equipment in its laboratories or on customer sites. The company also offers regulatory testing covering the environment (air pollutant emissions, noise, etc.), personal safety (inspection of electrical installations, etc.) and risk prevention (thermography, etc.).

### Calibration & verification

Manumasure offers you a unique metrology partnership to check and calibrate your fleet of measuring devices (calibration certificate and verification report):

- Electrochemical measuring instruments
- Weighing
- Pressure
- Etc.

### Maintenance

Manumasure repairs and maintains instruments of all brands.



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- ✓ Environmental measurements
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- ✓ Industrial maintenance



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## pH electrodes

pH electrodes are sensitive and subject to ageing. An ageing electrode is characterized in particular by an increase in response time and drift of the slope and zero point. Regular maintenance of the electrodes extends their life span and ensures reliable, accurate measurements.

## Make sure the electrodes are clean

The glass bulb and the junction are sensitive parts that can easily become contaminated (deposits). To keep them clean, rinse the electrode with distilled water and carefully pat it dry with a soft cloth. Do not rub the glass bulb as this could damage it (by charging the contact surface with static electricity) and may scratch it.

In the event of contamination of the junction by proteins, use the Pepsin/HCl solution. Carry out these operations before and after each use and also during calibration, between each point.

## Monitor the electrolyte level

For liquid-filled electrodes, there should be a sufficient quantity of the reference electrolyte in the electrode (slightly below the filling hole) The electrolyte provides the electrolytic bridge and levels that are too low could disrupt the measurement. It is also important to remove the filling cap during measurement. This enables optimal flow of the reference electrolyte.

## Store your electrodes carefully

Store the electrodes upright and in a suitable storage solution. Never store the electrodes in distilled water (the reference electrolyte loses its conductivity, which leads to electrode deterioration).

## Calibrate regularly

The frequency of calibration depends on the level of accuracy required but also on how often the electrode is used. It is up to the user to determine the frequency best suited to their protocol and needs.

It is recommended to calibrate the electrode with at least two points because the electrode is characterized by both its slope and its zero point. Three-point calibration is recommended when the measurements cover a wider range. Calibrate under the same temperature conditions used for the sample measurements.

## Choose suitable buffers

The pH values of the chosen buffer solutions must frame with the pH values of the sample.

For example, if the expected pH of the sample is 5, calibrate with buffer solutions at pH 4 and 7. Make sure not to exceed the expiry date of the buffer solutions used.

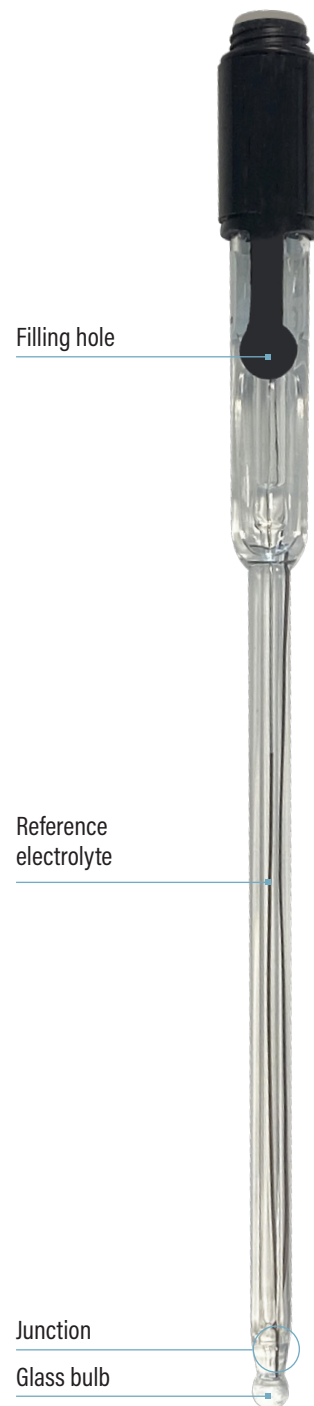
Do not calibrate in the standard solution vial but in a beaker, for example, to avoid contamination (except for single-dose COFRAC solutions).

## Take care when measuring

The electrode must be immersed sufficiently deeply. Make sure that the glass bulb and the junction are completely immersed in the sample.

For liquid-filled electrodes, open the filling hole during measurement. This enables optimal flow of the reference electrolyte and ensures accurate measurements.

The sample must remain homogeneous during measurements. Shake if necessary or use a magnetic stirrer, taking care not to damage the electrode with the magnetic rod.





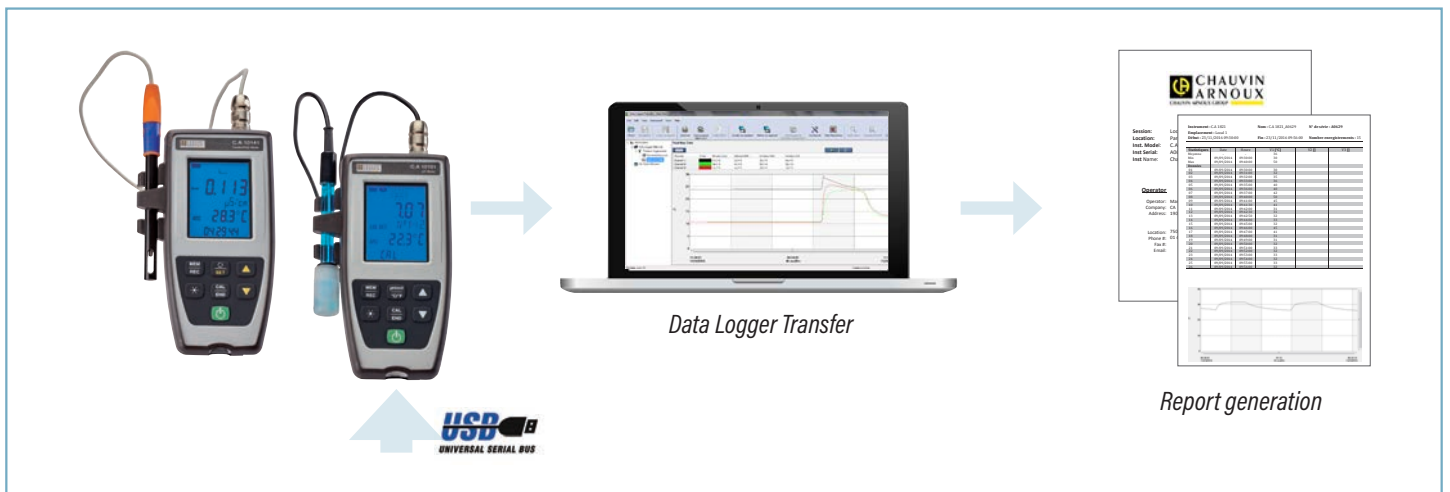
## Data Logger Transfer, the software for analysing your data

Free software, free to use (Windows® compatible).

Compatible with the CA 10101, CA 10141, CA 10101E and CA 10141E, this module allows you to:

- **Configure the devices (date, time and automatic shutdown)**
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- **Program immediate or delayed recordings:**
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  - If the device is switched off when the recording starts, it will switch itself back on.
- **Take instantaneous measurements**
- **Display data in table or graph form**
- **Generate reports in text document (docx) or spreadsheet (xlsx) format**

Free to download from our website: [www.chauvin-arnoux.com](http://www.chauvin-arnoux.com)





## USB connection - for the CA 10101, CA 10141, CA 10101E and CA 10141E

Once the instruments are connected to the PC, you can directly access their contents.

### Customize the calibration sets with your own buffer values

In the content, you will find the files pH\_Set.csv, ORP\_Set.csv. (pH meters) and Set.csv (conductivity meters). These files give you access to the values of the buffer solutions used during the automatic calibration process.

You can open these files using a spreadsheet and modify them:

- Add or delete a calibration set
- Modify an existing calibration set

### Calibration log

In the instrument's contents, you will also find the file calib\_log.txt. The instruments record the calibrations in this file. You will find the following information:

- **pH calibration: slope and asymmetry, temperature, pH buffer, date and time**
- **Redox calibration: asymmetry, redox buffer value, date and time**
- **Conductivity calibration: cell constant, temperature, standard value, date and time**

```
-----  
Date : 15/01/2024 11H49M  
Offset : 1.8 mU  
Slope : 97.6%  
pH      Température (MTC)  
4.01    25.0  
7.00    25.0  
-----  
Date : 23/01/2024 13H55M  
Offset : 1.3 mU  
Voltage  
468.0  
-----
```

*Extract from the pH meter calibration log  
(CA10101 and CA10101E)*

```
-----  
Date : 13/07/2024 10H05M  
Cell constant : 1.5271 cm-1  
Conduct. (ms)  Température (MTC)  
0.14700        25.0  
-----
```

*Extract from the conductivity meter calibration log  
(CA10141 and CA10141E)*

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Globally renowned for our prestigious **130 year heritage** and high quality test and measurement products, **Chauvin Arnoux** is fast gaining recognition in the UK as the brand of choice for many in the electrical contracting and energy management industries.

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