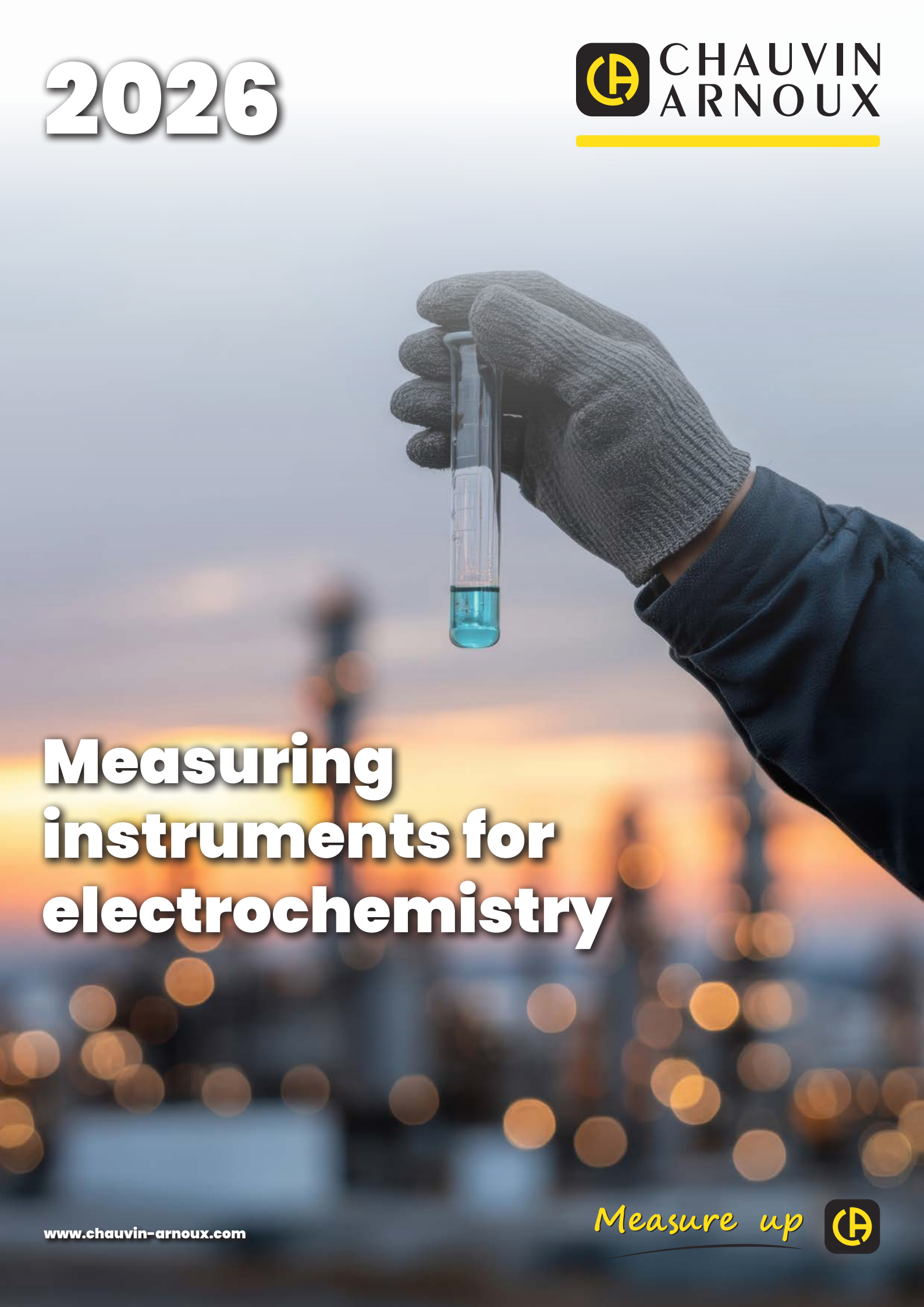
2026

CHAUVIN ARNOUX



Measuring instruments for electrochemistry

www.chauvin-arnoux.com

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

11% of sales revenues invested in R&D

Follow our news and join us on social media!

www.chauvin-arnoux.com

Visit our website

Eco Design

Contents

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.

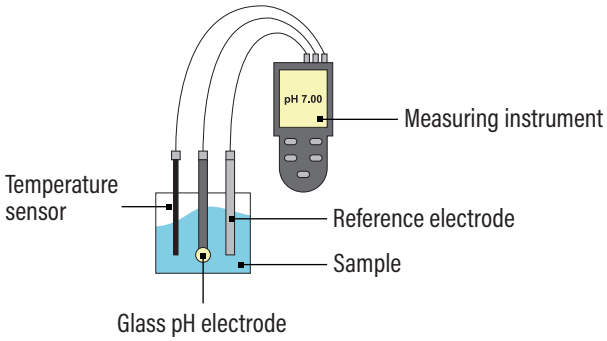
The reference electrode: delivering a constant potential, it is used as a reference to measure the potential of the indicator electrode (not sensitive to H^+ ions).

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
E0 = 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).

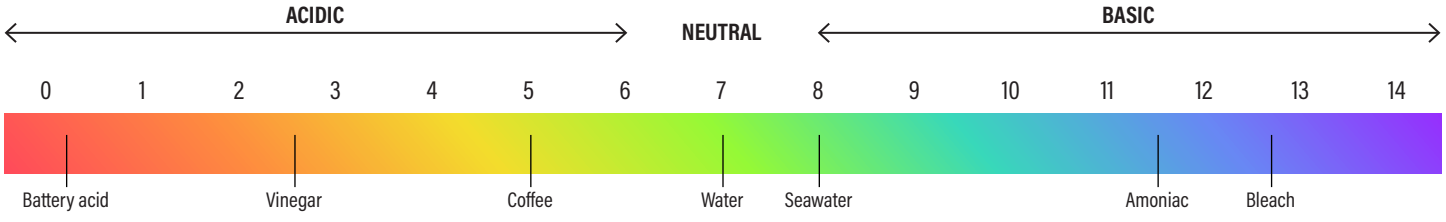
The measuring electrode: made of an inert metal (usually platinum).

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:

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

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.

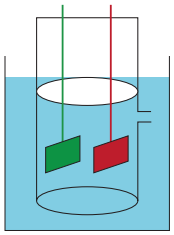


Diagram of a conductivity cell

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*I, R being the resistance (Ω)*

K = l /A = cell constant (cm-1) with l the distance between the electrodes (cm) and A the contact surface of the electrodes with the electrolyte (cm^{-2})

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 α (%/°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).

1ppm = 1 mg/L

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

$$TDS = \sigma.f$$

TDS = Total Dissolved Solids (mg/L)

σ = conductivity (µS/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 PSU = 1 g/L of salt

Resistivity is the inverse of conductivity and is expressed in Ω.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

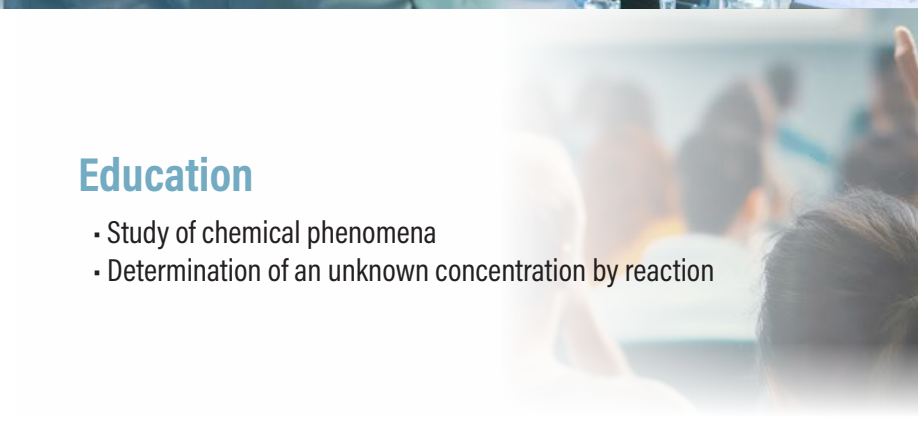
- Monitoring the effectiveness of disinfectants
- Maintaining a healthy environment for bathers

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

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		

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**

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

IP 67


PC connection

Backlight

Stability indicator

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
Conductivity	
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
TDS	
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
Resistivity	
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
Salinity	
Measurement range (instrument alone)	2.0 TO 42.0 PSU
Resolution (R)	0.1 PSU
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
Temperature	
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
Calibration	
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
Connectors	
Sensor input	DIN 8-pin (adapters for BNC, S7 and Jack optional)
Communication interface	Type B Micro USB for PC connection)
Conductivity sensor	
Type	XCP4ST1 (supplied), 4-pole conductivity sensor with built-in temperature probe (Pt 1000), 8-pin DIN connector, 1 m cable
Others	
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, unrechargeable
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, unrechargeable
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

Watch our videos

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

XRV1H pH combination electrode with PVC body	**XRV1H-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**

Regressi ExAO

PC connection

Power supply

Stability indicator

Designed for teaching and compliant with professional standards

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
Conductivité	
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
TDS	
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
Resistivity	
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
Salinity	
Measurement range (instrument alone)	2.0 TO 42.0 PSU
Resolution (R)	0.1 PSU
Intrinsic uncertainty (instrument alone)	± 0.5% reading ± R
Temperature	
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
Calibration	
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
Connectors	
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)
Others	
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.

		pH-meters			
					
		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	Bench-top pH meter: supplied with pH 4 and pH 7 concentrated standard solutions (125 mL), 1 user's manual and 1 power supply (9 V)	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	-	-	± 1 999 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+ 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

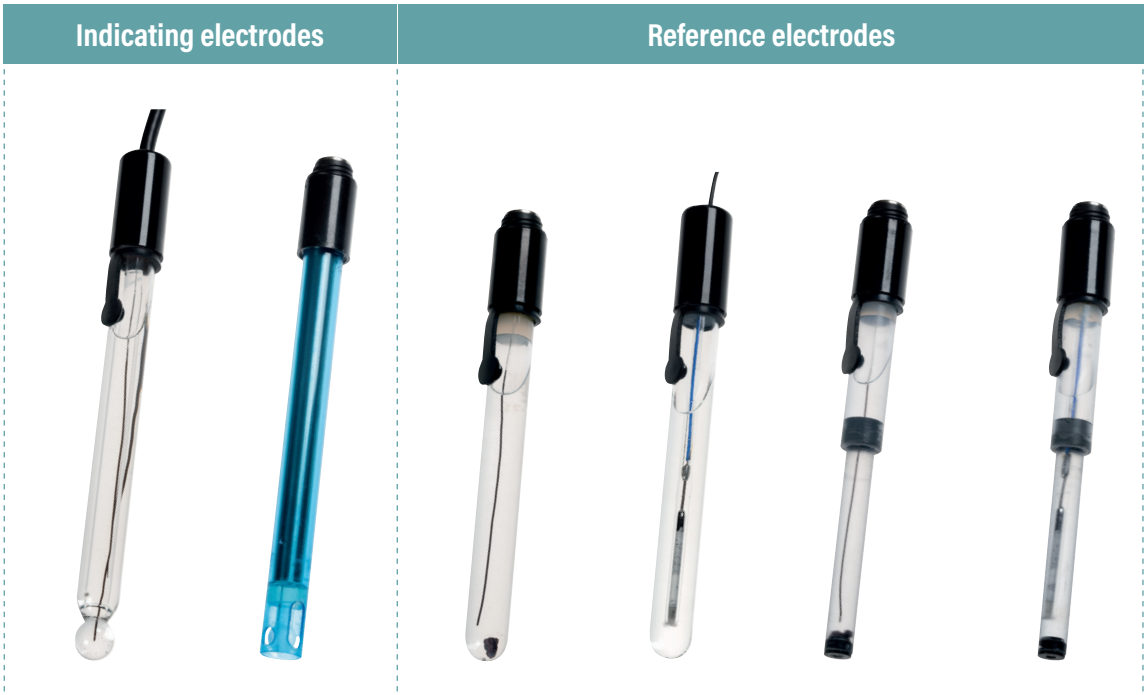
5-pole DIN type

Reference	BRV1H	XRV1H	LRV7	BRV4H	BRV4H-S7-130
pH range	0-12	0-12	0 - 14	0-12	
End-fitting	Spherical		Pointed	Micro	
Electrode body material	Glass	PVC	PVC	Glass	
Reference system	Ag/AgCl				
Reference electrolyte	Filled with KCl 1 mol/L		Polymer	Filled with KCl 1 mol/L	
Junction	Ceramic		Ceramic and open	Ceramic	
Temperature sensor	Non				
Operating temperature	0 to 80°C	0 to 60°C		0 to 80°C	
Ø and length under cover (mm)	12 x 120		6 (extremity) x 123	6.5 (extremity) x 120	6.5 (extremity) x 185
Longueur du câble	1 m				
References **BNC connections**	BRV1H-BNC	XRV1H-BNC	P01715019	BRV4H-BNC	-
S7 (screw) connections	BRV1H-S7	XRV1H-S7	-	BRV4H-S7	BRV4H-S7-130
DIN connections	-	XRV1H-DIN	-	-	-
Waterproof 8-pin DIN connectors	-	-	P01715020	-	-
TV connectors	BRV1H-TV	XRV1H-TV	-	-	-
Recommended applications	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			
Reference	**BV41H**	**XV41**	**BR41**	**BR42**	**XR41**	**XR42**
pH range	0-12	0-12	0-14			
End-fitting	Spherical		-			
Electrode body material	Glass	PVC	Glass		PVC	
Reference system	-		Ag/AgCl	Calomel	Ag/AgCl	Calomel
Reference electrolyte	-		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			
Temperature sensor	No					
Operating temperature	0 to 80°C	0 to 60°C	0 to 80°C		0 to 60°C	
Ø and length under cover (mm)	12 x 110	12 x 120	12 x 115		8 (extremity) x 110	
Cable length	1 m					
References						
BNC connections	BV41H-BNC	XV41-BNC	-	-	-	-
S7 (screw) connections	BV41H-S7	XV41-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	-	-	BR41-BA4	BR42-BA4	XR41-BA4	XR42-BA4
Recommended applications	General use For use with a BR41, BR42, XR41 or XR42 refrence electrode		General use For use with a BV41H or XV41H measuring electrode			

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

	Reference	BRPT1	XRPT1	BPT1	XPT1	XPT2	BR41	BR42	XR41	XR42
		Combination electrodes		Indicator electrodes			Reference electrodes			
	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								
References	BNC connections	BRPT1-BNC	XRPT1-BNC	BPT1-BNC	XPT1-BNC	XPT2-BNC	-	-	-	-
References	S7 (screw) connections	BRPT1-S7	XRPT1-S7	BPT1-S7	XPT1-S7	XPT2-S7	BR41-S7	BR42-S7	XR41-S7	XR42-S7
References	2 mm banana connectors	-	-	-	-	-	BR41-BA2	BR42-BA2	XR41-BA2	XR42-BA2
References	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

	Combination electrodes	Indicator electrodes		Reference electrodes		
						
Reference	**BRAG1**	**BAG1**	**XAG1**	**BR43**	**XR43**	**BR44**
Redox range	+/- 2,000 mV					
Electrode body material	Glass		PVC	Glass	PVC	Glass
Metal	Silver rod			–		
Reference system	Mercurous sulphate	–		Mercurous sulphate	Mercurous sulphate	Ag/AgCl
Reference electrolyte	Saturated K_2SO_4	–		Saturated K_2SO_4	Saturated K_2SO_4	KCl 1 mol/L KNO3 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	BR44-S7
2 mm banana connectors	-	-	-	BR43-BA2	XR43-BA2	BR44-BA2
4 mm banana connectors	-	-	XAG1-BA4	BR43-BA4	XR43-BA4	BR44-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

	Conductivity cells			Temperature sensors	
Reference	**XCPST4**	**BCP4**	**XCP4**	**BT5**	**BT6**
Conductivity range	0.1 µs 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-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	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.

	pH electrodes			Redox electrode	Conductivity cell
					
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^{-1}
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	

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

CA 10101 pH-meter

Male DIN connector
Female BNC/Jack
P01295501

Male DIN connector
Female S7/Jack
P01295502

CA 10141 conductivity meter

Male DIN connector
Female BNC/Jack
P01710054

Male DIN connector
Female S7/Jack
P01710055

ACCESSORIES

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

P310, PSD21 and PSD1 pH meters, C320 and CSD22 conductivity meters and MPC25 multiparameter tester

9 V power supply.....HECALIM

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

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

Manumesure 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.

Manumesure 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

cofrac
MATERIAUX DE REFERENCE
Accréditation N° 1-5650
Portée disponible sur www.cofrac.fr

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

Manumesure 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

Manumesure 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.).

CHAUVIN ARNOUX
MANUMESURE

✓ Industrial metrology
✓ Environmental measurements
✓ Regulatory inspections
✓ Industrial maintenance

Calibration & verification

Manumesure 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.

cofrac
MULTI ACTIVITÉS
Étalonnage : N°2-1035, N°2-1405, N°2-1406, N°2-1310, N°2-1615, N°2-1336
Essais : N°1-1623, N°1-1318, N°1-2000
Matériaux de référence : N°1-5650
Portées disponibles www.cofrac.fr.

Maintenance

Manumesure repairs and maintains instruments of all brands.

Contact
info@manumesure.fr
www.manumesure.fr

ADVICE ON PH ELECTRODE MAINTENANCE

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.

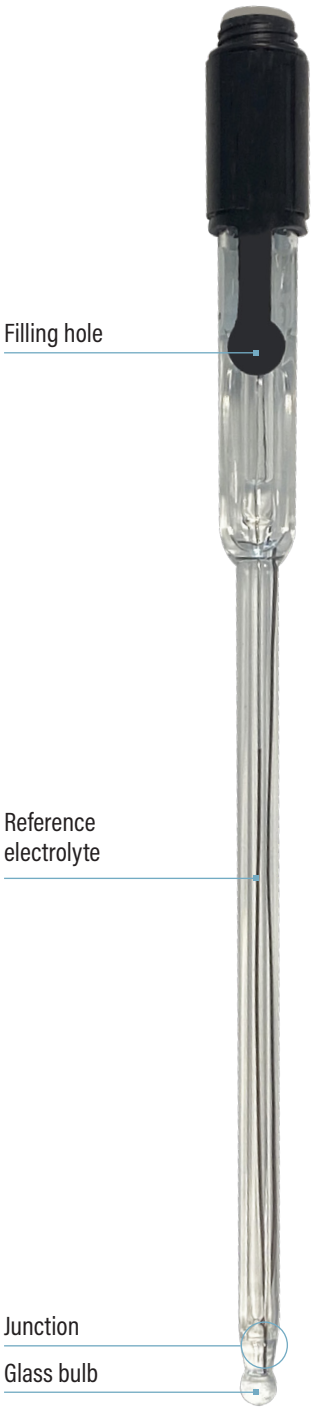
Do not calibrate in the standard solution vial but in a beaker, for example, to avoid contamination (except for single-dose COFRAC solutions).

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

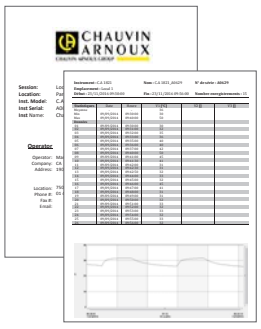
Free software, free to use (Windows® compatible).

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)**
- **Download and view stored data**
- **Program immediate or delayed recordings:**
  - Define a start date and an end date or a duration
  - Define sampling intervals (1 s to 1 h)
  - 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***

Data Logger Transfer



Report generation

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**

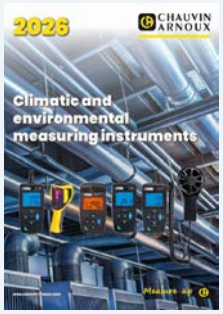
```
------------------------------------------------
Date : 15/01/2024 11H49M
Offset : 1.8 mV
Slope : 97.6%
pH       Température (MTC)
4.01     25.0
7.00     25.0
------------------------------------------------
Date : 23/01/2024 13H55M
Offset : 1.3 mV
Voltage
468.0
------------------------------------------------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

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)

Discover the climate and environment range



Discover the general Test and Measurement catalogue

Discover our companies specializing in spectroscopy

CHAUVIN ARNOUX SPECTRALYS

CHAUVIN ARNOUX INDATECH

- Pharmaceutical
- Biotechnology
- Chemicals
- Agri-food

A LOCAL BRANCH STRUCTURE

LILLE
Tél. : 03 20 55 96 41
info@chauvin-arnoux.com

LYON
Tél. : 04 72 65 77 60
info@chauvin-arnoux.com

PARIS
Tél. : 01 44 85 44 85
info@chauvin-arnoux.com

MARSEILLE
Tél. : 04 72 65 77 62
info@chauvin-arnoux.com

10 SUBSIDIARIES WORLDWIDE

AUSTRIA
Chauvin Arnoux GesmbH
Gastgebgasse 27
AT-1230 Wien - Austria
Tél.: +43 1 61 61 9 61
vie-office@chauvin-arnoux.at
www.chauvin-arnoux.at

CHINA
Shanghai Pujiang Enerdis Instruments Co Ltd
Gemdale Viseen Minhang Technilogy & Industrial Park Project 3 Floor, 23 Building
1288 Zhongchun RD, Minhang District
Shanghai 201199 - China
Tél.: +86 21 65 21 51 96
info@chauvin-arnoux.com.cn
www.chauvin-arnoux.com

GERMANY
Chauvin Arnoux GmbH
Ohmstrasse 1
77694 Kehl / Rhein - Germany
Tél.: +49 7851 99 26-0
info@chauvin-arnoux.de
www.chauvin-arnoux.de

ITALY
AMRA
Via Sant'Ambrogio, 23
20846 Macherio (MB) - Italia
Tél.: +39 039 245 75 45
info@amra-chauvin-arnoux.it
www.chauvin-arnoux.it

MIDDLE EAST
Chauvin Arnoux Middle East
PO Box 60-154
1241 2020 Beirut - Lebanon
Tél.: +961 1 890 425
Fax: +961 1 890 424
camie@chauvin-arnoux.com
www.chauvin-arnoux.com

SCANDINAVIA
CA Mätsystem AB
Sjöflygvägen 35
SE-183 62 Taby -Sweden
Tél.: +46 8 50 52 68 00
info@camatsystem.com
www.camatsystem.com

SPAIN
Chauvin Arnoux Ibérica S.A.
C/ Roger de Flor n°293 - 1a Planta
08025 Barcelona - Spain
Tél.: +34 902 20 22 26
comercial@chauvin-arnoux.es
www.chauvin-arnoux.es

SWITZERLAND
Chauvin Arnoux AG
Moosacherstrasse 15
8804 AU
Zurich - Switzerland
Tél.: +41 44 727 75 55
info@chauvin-arnoux.ch
www.chauvin-arnoux.ch

UNITED KINGDOM
Chauvin Arnoux Ltd
Unit 1 Nelson Ct, Flagship Sq Shaw Cross Business Pk
WF127 TH Dewsbury West Yorkshire - UK
Tél.: +44 1924 460 494
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.com

USA
Chauvin Arnoux Inc
15 Faraday Drive
NH 03820 Dover - USA
Tél.: +1 (603) 749-6434 (Ext. 520)
sales@aemc.com
www.aemc.com

906 131 179 - LB - Ed. 2 - 03/2026 - Non-contractual document.

INTERNATIONAL
Chauvin Arnoux
12-16, rue Sarah Bernhardt
92600 Asnières-sur-Seine
Tél : +33 1 44 85 44 38
export@chauvin-arnoux.fr
www.chauvin-arnoux.com

UNITED KINGDOM
Chauvin Arnoux LTD
Unit 1 Nelson Ct, Flagship Sq, Shaw Cross Business Pk
Dewsbury, West Yorkshire - WF12 7TH
Tel: +44 1924 460 494
info@chauvin-arnoux.co.uk
www.chauvin-arnoux.com

MIDDLE EAST
Chauvin Arnoux Middle East
PO Box 60-154
1241 2020 Beirut
Tél. : +961 1 890 425
camie@chauvin-arnoux.com
www.chauvin-arnoux.com

Companies of
CHAUVIN ARNOUX GROUP