Handheld pH/Ion Meter Selection Guide

Oakton® handheld meters offer a wide range of features ideal for portability in the field. These meters are generally available with either a separate pH electrode and temperature probe, or a combination "All-in-One" pH and temperature sensor. Designed for a variety of applications, many of these meters offer special features such as:

- mV readings for ORP measurement
- Ion concentration readings
- IP67-rated waterproof, dustproof housing
- Auto-buffer recognition and selectable buffer sets
- Up to five-point pH calibration
- Auto shutoff, Hold function, and error messages
- Optional AC adapter and built-in table stand for benchtop use
- Data management functions such as memory and RS-232 output

Calibration kits and multiparameter meters that read pH and conductivity, TDS, or dissolved oxygen are also available.

Acorn® series

Standard series

Waterproof 300 series

Waterproof 600 series

Use this chart to find the best pH meter for your application.

Meter	Acorn® series Models 5/6	Standard series Models 11/110	Waterproof 300 series Models 300/310	Waterproof 600 series Models 600/610/620
See pages	11–12	13–14	15	16–17
Description	Low-cost, rugged compact	Economical, dual-display meter	Handles rough environments	Most powerful, ideal for the field
Display	Single-line LCD	Dual LCD	Dual LCD	Multi-line dot matrix
IP67 housing	—	—	Yes	Yes
Memory	—	Up to 100 points	Up to 100 points	Up to 500 points
Communication	—	RS-232 available	—	IrDA
Real-time clock	—	—	Available	Available
pH calibration points	3	5 or 6	5 or 6	5 or 6
Auto buffer recognition	Yes	Yes	Yes	Yes
Selectable buffer sets	Yes	Yes	Yes	Yes
Automatic endpoint	—	—	Yes	Yes
Automatic shutoff	After 17 minutes	After 20 minutes	After 20 minutes	Yes, adjustable
Hold function	Yes	Yes	Available	Available
Ready/stability indicator	—	Yes	Yes	Yes
Error messages	Yes	Yes	Yes	Yes
Protective rubber boot	Included	—	—	Optional
Built-in stand	Yes (in boot)	Yes	—	Yes (in boot)
Optional AC power	—	Yes	—	Yes

Acorn® pH 5 and 6 Meters

These rugged, compact meters offer high accuracy at an extremely affordable price!

Left: pH 6 handheld meter shown with pH electrode 35801-00 and temperature probe 35613-05.

Above top: pH meter kit includes everything you need for calibration and measurement.

Above bottom: Protective rubber boot features a built-in stand.

Simple push-button operation
▼ So fast and easy, anyone can use it—no trimpots to adjust!

Toggle between pH and temperature in °C with a press of a button

Three-point pH calibration
▼ Choose from standard US, NIST, and pure water; gives you high ±0.01 pH accuracy

Auto buffer recognition
▼ Automatically identifies the correct pH buffer for rapid calibration

Calibration instructions are printed on back of meter
▼ For quick reference and added convenience

Automatic temperature compensation (ATC)
▼ For the highest accuracy in changing temperature conditions

Hold and Auto-off functions

Protective boot
▼ Helps shield your meter from drops and dings and features a convenient built-in stand

Meter kits available
▼ Contain everything you need for calibration and measurement packaged in a hard carrying case—the best option.

pH 6 also features:

Measurements in pH, mV, and °C
▼ Use for ORP (Redox) measurements

A wide range of electrodes are available for use with your Acorn pH Meters. See pages 26–29 to order.

Applications

Water Quality Testing: Analyzing water in pools or spas, lithographic processes, boiler and cooling tower water analysis, and all types of quality assurance and water quality testing.
Environmental/Agricultural: Use in ecology studies, aquariums, and hydroponics.
Educational: Ideal for quick, accurate checks in labs and schools.

ISO 9001:2000 CERTIFIED SUPPLIER CE 3 year warranty meter only

Specifications

Model	pH 5 and pH 6 meters		pH 6 meter only
Mode	pH	Temperature	mV
Range	0.00 to 14.00 pH	0.0 to 100.0°C	±1000 mV
Resolution	0.01 pH	0.1°C	1 mV
Accuracy	±0.01 pH	±0.5°C	±2 mV
Calibration	Up to 3 buffer values: choose from standard US, NIST, and pure water buffer values	Offset 0.1°C increments	±20 mV

Temperature compensation:
automatic from 0.0 to 100.0°C
Operating temperature: 0 to 50°C (32 to 122°F)
Power: four 1.5 V AAA batteries (included), >70 hours continuous use

Dimensions
Meter: 5.5"L x 2.7"W x 1.3"H (14 x 7 x 3.5 cm)
Boxed: 9.25"L x 6.5"W x 3.0"H (23.5 x 16.5 x 7.5 cm)
Weight
Meter: 0.9 lb (408 g); Boxed: 1 lb (450 g)

Ordering Information

Catalog number	Description	Included
WD-35613-01	pH 5 meter only	Meter, protective rubber boot, and batteries
WD-35613-11	pH 6 meter only	
WD-35613-00	pH 5 meter with probes	Meter, pH electrode 35801-00, temperature probe 35613-05, protective rubber boot, and batteries
WD-35613-10	pH 6 meter with probes	
WD-35613-70	pH 5 meter kit	Meter, pH electrode 35801-00, temperature probe 35613-05, pH "Singles" buffer pouches (pH 4.01, 7.00, 10.00 and rinse water), three sample bottles, squeeze bottle, batteries, and hard carrying case
WD-35613-72	pH 6 meter kit	

Acorn® Ion 5 and 6 Meters

Direct readout of ion concentration at breakthrough pricing!

Left: Acorn Ion 6 meter

Top right: Protective rubber boot features a built-in stand.

Lower right: ISE labware kit 35613-60 contains the glassware you need for making serial dilutions.

Simple to use
▼ Preprogrammed calibration points allow even beginners to take readings in minutes!

Works with many ion-selective electrodes
▼ ±500 mV ranges covers the vast majority of ISEs

Compact size
▼ Take your Acorn Ion meter anywhere!

mV measurement mode
▼ Allows you to check performance and calibration of your ion-selective electrode

All push-button operation
▼ For fast, easy use—no trimpots to adjust!

Hold and Auto-off functions

Protective boot
▼ Helps shield your meter from drops and dings and features a built-in stand

Ion 6 meter also features:

pH and temperature (°C) readout
▼ With high ±0.01 pH/±0.5°C accuracy

Automatic temperature compensation (ATC) for pH
▼ For the highest accuracy in changing temperature conditions

Use with most pH electrodes with BNC connector

See pages 30–31 for ion-selective electrodes

Specifications

ISO 9001:2000 CERTIFIED SUPPLIER · CE · 3 year warranty

Mode	Ion 5 and Ion 6 meters		Ion 6 meter only	
Parameter	Ion	mV	pH	Temperature
Range	0.01 to 1999 units	–500 to +500 mV	0.00 to 14.00 pH	0.0 to 100.0°C
Resolution	0.01 unit (0.01 to 0.99 units), 0.1 unit (0.1 to 199.9 units), 1 unit (200 to 1999 units)	0.1 mV within ±199.9 mV, 1 mV beyond ±200 mV	0.01 pH	0.1°C
Accuracy	±1% full-scale	±0.2 mV within ±199.9 mV, ±2 mV beyond ±200 mV	±0.01 pH	±0.5°C
Calibration	2 or 3 points; 0.1, 1, 10, 100 ppm (minimum 2 points)	Not available	Up to 3 buffer values (pH 4.01, 7.00, 10.0), auto-buffer recognition	Offset 0.1°C increments

Minimum slope during ion calibration: 40 mV/decade for monovalent ions; 20 mV/decade for divalent ions

pH slope range (Ion 6 only): 80 to 120%

Temperature compensation (Ion 6 only): manual or automatic from 0.0 to 100.0°C

Operating temperature: 0 to 50°C (32 to 122°F)

Power: four 1.5 V AAA batteries (included), >200 hours continuous use

Dimensions
Meter: 5.5" x 2.7" x 1.3" (14 x 7 x 3.5 cm)
Boxed: 9.25" x 6.5" x 3.0" (23.5 x 16.5 x 7.5 cm)

Weight
Meter only: 0.9 lb (408 g); Boxed: 1 lb (450 g)

Applications

ISE: Use with any ISE electrode with BNC connection to take direct measurements of ion concentration. Titration methods allow measurement of many other types of ions.

Water Quality Testing: Ideal for quick fluoride level checks.

Environmental/Agricultural: Use for checking nutrient levels in aquariums, aquaculture, and hydroponics.

Educational: Ideal for quick, accurate tests in labs and schools.

Laboratory/Industrial: Use for water hardness testing or other ions in feed or wastewater, sewage treatment, soil testing, fertilizer testing, plant tissue testing, food processing (check sodium and potassium levels), geological testing, and metal plating. Also use in the paper/pulp and pharmaceutical industries.

Ordering Information

Catalog number	Description	Included
WD-35613-21	Ion 5 meter only	Meter, protective rubber boot, and batteries
WD-35613-31	Ion 6 meter only	
WD-35613-74	Ion 6 meter kit	Meter, temperature probe, pH electrode, pH sample bottles, calibration pouches, rinse bottle, carrying case, protective rubber boot, and batteries

WD-35613-60 ISE Labware kit is ideal for standard and sample preparations. Kit includes one 10-mL graduated pipette and bulb, one 10-mL graduated cylinder, and three 250-mL beakers

pH 11 Economy Meter

Our most economical meter with dual display lets you see BOTH pH or mV and temperature at a glance!

Left: pH 11 meter shown with "All-in-One" pH electrode/temperature probe.

Above top: Large LCD simultaneously displays measured parameter and temperature.

Above bottom: pH 11 meter kit contains everything you need for calibration and measurement in a hard carrying case.

Measurements in both pH and mV

Five-point pH calibration
- Choose US or NIST buffer sets

Auto buffer recognition
- Automatically identifies the correct pH buffer for rapid calibration

Selectable manual or automatic temperature compensation (ATC)
- For the highest accuracy in any situation

Built-in memory function
- Stores up to 50 readings

Ready indicator
- Indicates when reading has stabilized, so you always record the best reading

Hold function
- Freezes measurements for convenient reading and recording

Auto-off function
- Turns off meter to save batteries

Power with batteries or optional AC adapter
- For use in the field or at your benchtop using built-in stand

Use with most electrodes with BNC connector

Available as a kit
- Complete with calibration buffers, rinse bottle, and protective carrying case

ISO 9001:2000 CERTIFIED SUPPLIER CE 2 year warranty meter only

Specifications

Mode	pH	mV	Temperature
Range	–2.00 to 16.00 pH	–199.9 to +199.9 mV, –1999 to +1999 mV	–10.0 to 110.0°C
Resolution	0.01 pH	0.1 mV/1 mV	0.1°C
Accuracy	±0.01 pH	±0.2 mV ±199.9 mV, ±2 mV beyond ±199.9 mV	±0.5°C
Calibration	Up to 5 buffer values: pH 1.68, 4.01, 6.86/7.00, 9.18/10.01, 12.45	—	Offset 0.1°C increments

Temperature compensation: automatic or manual from 0 to 50°C

Operating temperature: 0 to 50°C (32 to 122°F)

Power: four 1.5 V AAA batteries (included), >600 hours continuous use; 9 V, 500 mA AC adapter (optional)

Dimensions
Meter: 7.5"L x 3.5"W x 1.75"H (19 x 9 x 4.5 cm)
Boxed: 9.2"L x 9.2"W x 2.75"H (23 x 23 x 7 cm)

Weight
Meter: 10 lb (0.5 kg); Boxed: 1.4 lb (0.7 kg)

Ordering Information

Catalog number	Description	Included
WD-35614-22	pH 11 meter only	Meter, two electrodes holders, and batteries
WD-35614-20	pH 11 meter	Meter, "All-in-One" pH/temperature probe 35811-71, two electrode holders, and batteries
WD-35614-80	pH 11 meter kit	Meter, "All-in-One" pH/temperature probe 35811-71, 20 pH buffer pouches, three sample bottles, rinse bottle, hard carrying case, two electrode holders, and batteries

WD-35615-07 AC adapter, 110 VAC

WD-35615-08 AC adapter, 220 VAC

WD-35811-72 Double-junction "All-in-One" electrode

WD-09376-00 Replacement batteries, 1.5 V AAA. Pack of 12

WD-35615-75 Portable meter carrying case. Protects your instrument while still letting you take measurements—case's top and side openings let probe and probe connections remain accessible. (Meter and probes not included).

Applications

Water Quality Testing: Great for analyzing water in pools or spas, photographic developing processes, and all types of quality assurance and water quality testing.

Environmental/Agricultural: Use in ecology studies, aquariums, and hydroponics.

Educational: Ideal for quick, accurate routine pH checks in labs and schools.

pH 110 Meter

Features RS-232 output and advanced setup mode!

FREE Oakton® datalog software on a CD-ROM
- Helps organize data to import into many popular spreadsheet programs

Five-point pH calibration
- Choose from US, NIST or DIN buffer sets

Automatic buffer recognition
- For quick pH calibration

Features mV offset
- For calibration to ORP standards, zeroing the mV value, and pH electrode diagnostics

Recall electrode slope, electrode offset value, and previous calibration data

Built-in memory function
- Stores up to 100 pH, mV, or relative mV readings, along with temperature data

Selectable manual or automatic temperature compensation (ATC)
- For highest accuracy in any situation

°C/°F selectable

Hold and Auto-off functions; Error messages

Power with batteries or optional AC adapter
- Use in the field or at your benchtop using built-in meter stand

Available as a kit
- Complete with calibration buffers, rinse bottle, and protective carrying case.

Right: pH 110 meter

Left top: Easily download data readings into your computer.

Left bottom: Use an optional printer with the pH 110 meter to create hard copies of your readings.

ISO 9001:2000 CERTIFIED SUPPLIER CE 3 year warranty meter only

Specifications

Mode	pH	mV	Temperature
Range	–2.00 to 16.00 pH	±2000 mV (same for relative mV)	–10 to 110.0°C (14 to 230°F)
Resolution	0.01 and 0.1 pH (selectable)	0.1 mV ±399.9 mV, 1 mV beyond	0.1°C
Accuracy	±0.01 pH	±0.2 mV ±399.9 mV, 2 mV beyond	±0.5°C
Calibration	Up to 5 buffer values: 1.09, 1.68/3.06, 4.01/4.65, 6.79/6.86/ 6.97/7.01, 9.18/10.01, 12.45/12.75	Offset to ±2000 mV	Offset 0.1°C increments

Temperature compensation: manual or automatic (selectable) from 0 to 100°C

Operating temperature: 0 to 50°C (32 to 122°F)

Memory: stores up to 100 sets

RS-232 specifications
Baud rate: 2.4; 4.8; 9.6 and 19.2 kbps selectable
Stop bit: 1 or 2 selectable
Parity: odd (1); even (2); or none (0) selectable

RS-232 output connector: 9-pin female

Computer requirements: 386 and above that can run Microsoft Windows® 95 or higher, CD-ROM drive, hard disk with approx. 500 KB free disk space, EGA monitor or above, 9-pin serial port connecting cable, mouse

Power: four 1.5 V AAA batteries (included), >600 hours continuous use; 9 V, 500 mA AC adapter (optional)

Dimensions
Meter: 7.5" x 3.5" x 1.75" (19 x 9 x 4.5 cm)
Boxed: 9.2" x 9.2" x 2.75" (23 x 23 x 7 cm)

Weight
Meter: 1.0 lb (0.5 kg); Boxed: 1.4 lb (0.6 kg)

Ordering Information

Cat. no.	Description	Included
WD-35615-22	pH 110 meter only	Meter, two electrode holders, software, and batteries
WD-35615-20	pH 110 meter	Meter, "All-in-One" pH/temperature probe 35811-71, two electrode holders, software, and batteries
WD-35615-80	pH 110 meter kit	Meter, "All-in-One" probe, pH buffer pouches, three sample bottles, rinse bottle, two electrode holders, software, hard carrying case, and batteries

Applications

Industrial: Ideal for pH checks in water conditioning plants, cooling towers, plating and finishing operations, food processing water testing (for HACCP compliance), printing and chemical industries, and water/wastewater treatment.

Environmental/Agricultural: Use in ecology studies, aquariums, and hydroponics.

Laboratory: Use in all types of food processing, environmental studies, chemical labs, titrations, and quality assurance testing, especially where GLP data management is required.

ORP: Use with an ORP electrode to monitor plating operations, ozonation system efficiency, and other redox measurements.

Accessories

WD-35615-07 AC adapter, 110 VAC

WD-35615-08 AC adapter, 220 VAC

WD-35811-72 Double-junction "All-in-One" electrode

WD-09376-00 Replacement batteries, 1.5 V AAA. Pack of 12

WD-35615-75 Portable meter carrying case. Protects your instrument while still letting you take measurements

RS-232 Computer/Printer Accessories

WD-35615-09 Computer cable, 9-pin male to 9-pin female connects meter to your PC

WD-35622-00 Portable printer, 110 VAC, rechargeable. Shpg wt 2 lb (0.9 kg)

WD-35622-05 Portable printer, 220 VAC, rechargeable. Shpg wt 2 lb (0.9 kg)

WD-35622-59 Printer cable, 25-pin male to 9-pin male connects meter to your printer

pH 300 and pH 310 Meters

Highly advanced microprocessor-based pH meters with a superior waterproof housing...and they FLOAT!

Durable waterproof and dustproof design with IP67 rating

Push-button pH calibration at five points
- 1.68, 4.01, 7.01, 10.01, and 12.45

Automatic buffer recognition

Selectable manual or automatic temperature compensation (ATC)
- For the highest accuracy in any situation

Store and recall pH with temperature readings

Easy-to-clean housing
- Ideal for dirty, wet environments or food-related applications

Advanced setup mode
- Lets you customize meter to your application

Hold, Ready indicator, and Automatic shutoff functions

Available as a complete field calibration kit, most convenient option

pH 310 also features:

Built-in real-time clock
- Stamps stored data and calibration data with date and time—meets standards for GLP (Good Laboratory Practices)

Expanded memory
- Stores and recalls up to 50 readings with temperature

°C/°F selection

Automatic endpoint
- Automatically freezes reading when stable

Selectable buffer sets for Standard US, NIST, and DIN buffers

Far right: Large dual LCD shows measurement plus temperature, units, and current function. pH 300 portable meter shown with "All-in-One" combination pH electrode/ temperature sensor and electrode holder

Right: Superior waterproof housing that floats for those accidental drops into water.

ISO9001:2000 CERTIFIED SUPPLIER CE 3 year warranty meter only

Specifications

Mode		pH 300 meter	pH 310 meter
Range	pH	–2.00 to 16.00	–2.00 to 16.00
	Temp	0.0 to 100.0°C	0.0 to 100.0°C; 32.0 to 212.0°F (selectable)
	mV	±2000 mV	±2000 mV
Resolution	pH	0.01 pH	0.01 pH
	Temp	0.1°C	0.1°C; 0.1°F
	mV	0.1 mV ±199.9 mV, 1 mV beyond ±199.9 mV	0.1 mV ±199.9 mV, mV beyond ±199.9 mV
Accuracy	pH	±0.01 pH	±0.01 pH
	Temp	±0.5°C	±0.5°C; ±0.5°F ±2 mV beyond ±199.9 mV
	mV	±0.2 mV ±199.9 mV, ±2 mV beyond ±199.9 mV	±0.2mV ±199.9 mV, ±2 mV beyond ±199.9 mV
Calibration	pH	Up to 5 buffer values: 1.68, 4.01, 7.01, 10.01, 12.45	Up to 6 buffer values (select from 3 sets): USA: 1.68,4.01, 7.01, 10.00, 12.45 NIST: 1.68, 4.01, 6.86, 9.18, 12.45 DIN: 1.09, 2.06, 4.65, 6.79, 9.23, 12.75
	Temp	Offset 0.1°C increments	Offset 0.1°C or 0.1°F increments
	mV	Offset up to ±150 mV	Offset up to ±150 mV
Memory		Up to 16 sets	Up to 50 sets with date and time
Real-time clock		None	Time-and-date stamp on calibration and stored data

Temperature compensation: automatic or manual (selectable) from 0 to 100°C
Ambient operating temperature: 0 to 50°C (32 to 122°F)
Power: four 1.5 V AAA batteries (included), >100 hours continuous use

Dimensions
Meter: 7.5"L x 3.75"W x 2.25"H (19 x 9.5 x 5.7 cm)
Boxed: 9.2"L x 9.2"W x 2.75"H (23 x 23 x 7 cm)
Weight
Meter: 1.0 lb (0.45 kg); Boxed: 2.0 lb (0.9 kg)

Ordering Information

Catalog number	Description	Included
WD-35618-02	pH 300 meter only	Meter and batteries
WD-35618-12	pH 310 meter only	Meter and batteries
WD-35618-03	pH 300 meter	Meter, "All-in-One" probe 35808-71, and batteries
WD-35618-13	pH 310 meter	Meter, "All-in-One" probe 35808-71, and batteries
WD-35618-70	pH 300 meter kit	Meter, "All-in-One" probe, pH "Singles" buffer pouches (five each of 4.01, 7.00, 10.00, and rinse water), three sample bottles, rinse bottle, two electrode holders, batteries, and hard carrying case
WD-35618-72	pH 310 meter kit	Meter, "All-in-One" probe, pH "Singles" buffer pouches (five each of 4.01, 7.00, 10.00, and rinse water), three sample bottles, rinse bottle, two electrode holders, batteries, and hard carrying case

WD-35808-71 Replacement "All-in-One" pH/ temperature probe, single junction, epoxy body
WD-35808-72 "All-in-One" pH/temperature probe, double junction, epoxy body
WD-35614-79 Calibration kit includes "Singles" pH buffer pouches (five each of 4.01, 7.00, 10.00, and rinse water), squeeze bottle, and hard carrying case. (Meter not included)

pH 600 and pH 610 Meters

Expanded range, resolution, and accuracy—plus increased memory and advanced communications!

Durable waterproof and dustproof design with IP67 rating
- Even with no probes attached and the battery compartment open

Push-button pH calibration at up to six points
- Up to 15 buffer options with auto-buffer recognition of USA, NIST, DIN, and PWB standards

Large backlit graphic display
- Multi-line display with electrode status indicator, calibration data, and more

User-settable "calibration due" alarm
- Out-of-date or unperformed calibrations are now things of the past!

Built-in real-time clock
- Time-and-date stamping meets Good Laboratory Practice (GLP) standards

Store up to 500 data sets
- Infrared IrDA wireless technology makes PC downloading convenient and easy

Set point alarms
- Audible warning when readings are outside set points limit

Research-grade accuracy
- Resolution to 0.001 pH and accuracy to ±0.002 pH on pH 610 model

Electrode status indicator
- Calibration data provides electrode diagnostic tool

Password protection
- Security for calibration and setup menus

Multiparameter models available. See pages 56–59.

Right: pH 610 meter

Left top: Easily download data readings into your computer.

Left bottom: Complete kits available; includes meter, carrying case and solutions.

Specifications

CE 3 year warranty

Mode		pH 600 meter	pH 610 meter
Range	pH	–2.00 to 19.99	–2.000 to 19.999
	mV	±2000 mV	±2000 mV
	Temperature	–10.0 to 110.0°C (14.0 to 230.0°F), selectable	–10.0 to 110.0°C (14.0 to 230.0°F), selectable
Resolution	pH	0.1/0.01 pH	0.1/0.01/0.001 pH
	mV	0.1 mV	0.1 mV
	Temperature	0.1°C (0.1°F)	0.1°C (0.1°F)
Accuracy	pH	±0.01 pH	±0.002 pH
	mV	±0.2 mV	±0.2 mV
	Temperature	±0.5°C (±0.9°F)	±0.5°C (±0.9°F)
Calibration	pH	Up to 6 buffer values (select from 4 sets): USA 1.68, 4.01, 7.01, 10.01, 12.45; NIST: 1.68, 4.01, 6.86, 9.18, 12.45; DIN: 1.09, 2.06, 4.65, 6.79, 9.23, 12.75, or custom buffers	
	mV	Offset up to ±150 mV	
	Temperature	Offset 0.1°C (0.1°F) increments	

Memory: up to 500 sets with GLP date and time
Output: infrared, IrDA
Real-time clock: time-and-date stamp on calibration and stored data
Temperature compensation: automatic or manual (selectable) from 0 to 100°C
Ambient operating temperature: 0 to 50°C (32 to 122°F)

Power: four 1.5 V AA batteries (included) or optional universal AC adapter, up to 500 hours continuous use
Dimensions
Meter: 7.25"L x 3.25"W x 2.25"H
Boxed: 9.2"L x 9.2"W x 2.75"H (23 x 23 x 7 cm)
Weight
Meter: 1.0 lb (0.45 kg); Boxed: 2.0 lb (0.9 kg)

Ordering Information

Catalog number	Description	Included
WD-35418-02	pH 600 meter only	Meter and batteries
WD-35418-12	pH 610 meter only	Meter and batteries
WD-35418-00	pH 600 meter	Meter, "All-in-One" probe 35816-71, and batteries
WD-35418-10	pH 610 meter	Meter, "All-in-One" probe 35816-71, and batteries
WD-35418-70	pH 600 meter kit	Meter, "All-in-One" probe, pH buffers (60 mL each of 4.01, 7.00, electrode storage solution, and rinse water), rubber boot, two electrode holders, batteries, and hard carrying case
WD-35418-80	pH 610 meter kit	Meter, "All-in-One" probe, pH buffers (60 mL each of 4.01, 7.00, electrode storage solution, and rinse water), rubber boot, two electrode holders, batteries, and hard carrying case

WD-35816-71 Replacement "All-in-One" pH/temperature probe, single-junction, epoxy body
WD-35816-72 "All-in-One" pH/temperature probe, double-junction, epoxy body
WD-35418-05 ATC probe. Use for temperature compensation with any pH electrode without built-in ATC
WD-35418-83 Optional adapter, 110/220 VAC

pH 620 Meter

Research-grade ion-selective performance in a waterproof portable unit

Durable waterproof and dustproof design with IP67 rating
- Even with no probes attached and the battery compartment open

Push-button pH calibration at up to six points
- Up to 15 buffer options with auto-buffer recognition of USA, NIST, DIN, and PWB standards

Large backlit graphic display
- Multi-line display with electrode status indicator, calibration data, and more

User-settable "calibration due" alarm
- Out-of-date or unperformed calibrations are now things of the past!

Built-in real-time clock
- Time-and-date stamping meets Good Laboratory Practice (GLP) standards

Store up to 500 data sets
- Infrared IrDA wireless technology makes PC downloading convenient and easy

Set point alarms
- Audible warning when readings are outside set points limit

Research-grade accuracy
- Resolution to 0.001 pH and accuracy to ±0.002 pH

Electrode status indicator
- Calibration data provides electrode diagnostic tool

Password protection
- Security for calibration and setup menus

Ion Selective electrodes are available for 21 different ions. See pages 30–31.

Right: pH 620 meter

Above top: BNC connector for quick, easy connections.

Above middle: Infrared output for easy data transfer.

Above bottom: Connector for optional VAC adapter.

Specifications

CE 3 year warranty

Mode		pH 620 meter
Range	pH	–2.000 to 19.999
	Ion	0.001 to 19,900 ppm, molar, or mg/L
	mV	±2000 mV
	Temperature	–10.0 to 110.0°C (14.0 to 230.0°F), selectable
Resolution	pH	0.1/0.01/0.001 pH
	Ion	2 or 3 digits
	mV	0.1 mV
	Temperature	0.1°C (0.1°F)
Accuracy	pH	±0.002 pH
	Ion	±0.5% full-scale (monovalent); ±1% full-scale (divalent)
	mV	±0.2 mV
	Temperature	±0.5°C (±0.9°F)
Calibration	pH	Up to 6 buffer values (select from 4 sets): USA 1.68, 4.01, 7.01, 10.01, 12.45 NIST: 1.68, 4.01, 6.86, 9.18, 12.45 DIN: 1.09, 2.06, 4.65, 6.79, 9.23, 12.75, or custom buffers
	Ion	Up to 6 points
	mV	Offset up to ±150 mV
	Temperature	Offset 0.1°C or 0.1°F increments

Memory: up to 500 sets with GLP date and time
Output: infrared, IrDA
Real-time clock: time-and-date stamp on calibration and stored data
Temperature compensation: automatic or manual (selectable) from 0 to 100°C
Ambient operating temperature: 0 to 50°C (32 to 122°F)

Power: four 1.5 V AA batteries (included) or optional universal AC adapter, up to 500 hours continuous use
Dimensions
Meter: 7.25"L x 3.25"W x 2.25"H
Boxed: 9.2"L x 9.2"W x 2.75"H (23 x 23 x 7 cm)
Weight
Meter: 1.0 lb (0.45 kg); Boxed: 2.0 lb (0.9 kg)

Ordering Information

Catalog number	Description	Included
WD-35418-22	pH 620 meter only	Meter and batteries
WD-35418-20	pH 620 meter	Meter, "All-in-One" probe 35816-71, and batteries
WD-35418-90	pH 620 meter kit	Meter, "All-in-One" probe, pH buffers (60 mL each of 4.01, 7.00, electrode storage solution, and rinse water), rubber boot, two electrode holders, batteries, and hard carrying case

WD-35816-71 Replacement "All-in-One" pH/temperature probe, single-junction, epoxy body
WD-35816-72 "All-in-One" pH/temperature probe, double-junction, epoxy body
WD-35418-05 ATC probe. Use for temperature compensation with any pH electrode without built-in ATC
WD-35418-83 Optional adapter, 110/220 VAC

pH Buffer Solutions

Labeled with pH vs temperature tables for accurate calibration reference

Economical one-pint buffer solution bottles are freshness dated, and standardized against NIST-certified references to ensure quality. Bottles are labeled with the name and CAS number for all ingredients (for "Right-to-Know" requirements). The high-accuracy solutions are ideal for pH meters with 0.001 resolution.

00654-00

Ordering Information

Catalog number	Description	Accuracy at 25°C
WD-00654-01	Buffer solution, pH 1.68	±0.01 pH
WD-00654-00	Buffer solution, pH 4.01	±0.01 pH
WD-00654-04	Buffer solution, pH 7.00	±0.01 pH
WD-00654-08	Buffer solution, pH 10.00	±0.01 pH
WD-00654-12	Buffer solution, pH 12.45	±0.01 pH
WD-05942-26	High-accuracy solution, pH 4.000	±0.002 pH
WD-05942-46	High-accuracy solution, pH 7.000	±0.002 pH
WD-05942-66	High-accuracy solution, pH 10.000	±0.005 pH

pH "Singles" Buffer Pouches

Convenient and accurate

Single-use, air-tight pouches with high-precision calibration standards. All are freshness dated, and standardized against NIST-certified references to ensure quality. Accuracy is ±0.01 pH at 25°C. Each box contains twenty 20-mL pouches.

Freshness-dated Singles ensure more accurate results.

Ordering Information

Catalog number	Description
WD-35653-01	"Singles" pH 4.01
WD-35653-02	"Singles" pH 7.00
WD-35653-03	"Singles" pH 10.00
WD-35653-00	"Singles" deionized rinse water pouches
WD-35653-04	"Singles" assortment; five each of pH 4.01, 7.00,10.00, and rinse water

Precision pH/mV Simulator

Ideal for testing benchtop or handheld meters, controllers, and transmitters!

Simulate any of following pH values: 1.00, 1.68, 4.01 6.86, 7.00, 9.18, 10.01 and 12.45; and any of following mV values: –1800, –900, –390, 390, 900, and 1800.

Ordering Information

Catalog number	Description	Includes
WD-35652-00	pH/mV simulator	Simulator, protective rubber boot, 3-ft cable with BNC connectors, and batteries

pH Electrode Care Solutions

Extend the life of your electrode!

Use these solutions to extend the life of your electrode, increase speed of response, and get accurate readings. Electrodes should be cleaned or rinsed between sampling. Always keep your electrode moist by storing it in a solution when not in use. When adding fill solution, fill up to, but not past, the refill hole.

00653-06

00653-04

Ordering Information

Catalog number	Description
WD-00653-06	pH/ORP electrode cleaning solution, one pint. Removes buildup from electrodes to maintain bulb sensitivity.
WD-00653-04	pH electrode storage solution, one pint. Use with storage bottle (sold separately below table); keep bulb moist for quicker, more accurate pH readings.
WD-35803-73	Reference fill solution for single-junction pH electrodes. 4M KCl saturated with AgCl, 125 mL
WD-35803-74	Reference fill solution for double-junction or calomel reference refillable pH electrodes. 4M KCl, 125 mL
WD-35803-83	Reference fill solution, Lithium chloride (LiCl)/methanol, for double-junction refillable pH electrodes. Use where organics are present. 125 mL
WD-35803-84	Reference fill solution, KCl with glycerol, for double-junction refillable pH electrodes. Use for low-temperature samples. 125 mL

WD-35805-50 Electrode storage bottle accepts one electrode up to 12-mm dia

Portable Printer

Use with pH 1100 and pH/ION 2100 meters

Create permanent records of your data from Oakton® meters with RS-232 output! This printer's compact size and rechargeable battery pack make it the perfect printer for both field use and crowded benchtop space. Pre-configured setup selections match the exact parameters of your meter. Printer accepts standard-sized adding machine rolls and printer ribbons; order separately below table.

Ordering Information

Catalog number	Description	Power
WD-35622-00	Portable printer	110 VAC
WD-35622-05		220 VAC

WD-35622-59 Printer cable, connects printer to your pH 1100 or pH/ION 2100 meter (or other meters with RS-232 output)

WD-35622-60 Replacement ribbon cartridge

WD-35622-62 Replacement paper roll

Electrode Selection Guide

Double-junction, glass-body, refillable pH electrode 35805-04

The right electrode

While the basic principles of pH measurement are simple, getting an accurate measurement can often be challenging. There are hundreds of applications for pH measurement and each presents different problems. Selecting the right electrode can make the most difficult samples easy to accurately measure.

Gel-filled vs refillable electrodes

Gel-filled electrodes are convenient and easier to maintain than refillable liquid-filled electrodes. However the liquid-filled electrode will provide a faster response. In addition the user can adjust the fill solution to optimize performance, for example adding glycol for better performance at low temperatures.

Glass vs epoxy body electrodes

Glass body electrodes will typically be able to withstand higher, temperatures (100°C as opposed to 80°C for epoxy). In addition, the glass design offers better sealing, fusing glass to glass instead of relying on adhesives. The epoxy body however is less susceptible to breakage. **Note:** Even though the body of an epoxy electrode is plastic, the measuring bulb will still be glass.

Body design

Oakton® offers electrodes in a variety of lengths and diameters. Small diameter probes are ideal for measuring samples in test tubes. Electrodes with wider barrels, greater weight, and longer cable lengths are available for measurements in streams. lakes, or ponds.

Bulb design

Oakton pH electrodes are handblown by experienced craftsmen. The bulb shape can be modified to provide a semi-dome for increased ruggedness, a spear tip for soft penetration applications, or even a flat surface. In addition, the glass formulation can provide increased range.

Reference design

To achieve accurate results, the reference electrode must allow electrolyte solution (or ions, in the case of a gel-filled electrode) to flow into the sample. Depending on the size and material of the junction, this flow rate can be increased or kept to a minimum. Faster flow produces stable readings faster but results in greater service requirements or premature electrode failure.

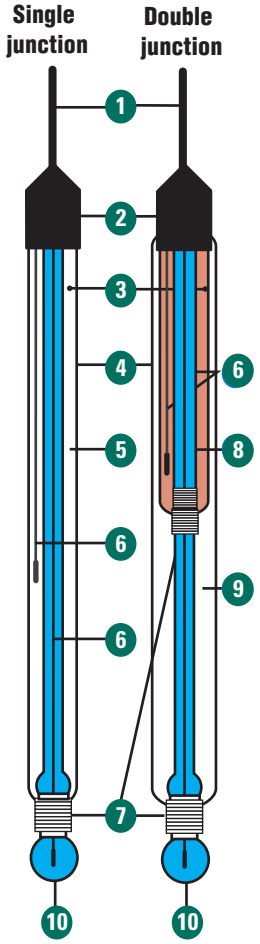
Reference chemistry

The leading cause of electrode failure is reference contamination. The most popular electrodes use a silver chloride (AgCl) reference solution that can react with heavy metals, sulfides, and organics. If your application has any of these contaminants present, be sure to select either a double-junction or calomel electrode. The double-junction electrode uses a second internal reference junction, restricting the AgCl solution to the upper chamber where it is isolated from the sample. The calomel electrode replaces the AgCl with HgCl.

Single-junction, epoxy-body, gel-filled pH electrode 35808-71

Submersible pH electrode 35805-24

ph Electrode Anatomy



1) Cable
2) Cap
3) Fill hole
4) Body—glass or epoxy
5) Outer reference chamber filled with internal fill solution
6) Ag/AgCl wire
7) Annular reference junction allows reference solution to leak
8) Inner reference chamber
9) Outer reference chamber
10) pH sensing bulb

Electrodes for Laboratory and Field Applications

All Oakton® electrodes have a BNC-connected combination reference cell and measuring cell in one housing for easy use

Oakton offers a variety of electrodes for your general-purpose and specialty laboratory applications. The "Application Guide" below provides information to help you find the electrode that best fits your application. Carefully choose the electrode best suited for your application to ensure accurate pH measurements. The guide only offers suggestions—contact your Oakton Technical Product Specialist for more specific recommendations or clarification. Shipping dimensions for all electrodes are 9.25" x 1.75" x 2.75". Shipping weight 0.5 lb each.

Application Guide

Application	Suggested electrode
Drinking water	Standard Ag/AgCl with single junction
Wastewater, solutions with heavy metals	Double junction solutions
Biological samples, proteins, and Tris buffers	Calomel or double junction
Pharmaceuticals	
Low ionic strength samples	Flushable or sleeve-type refillable electrode
Boiler feed water and distilled water	
Soil samples	Soil electrode, double junction
Moist flat surfaces, concrete, cheese, agar, paper, and skin	Flat-surface, calomel
Semisolid samples, food, fruits, cheese, and meat	Spear tip
Nonaqueous samples, solvents, alcohols, viscous samples, slurries, suspended solids, sludges, emulsions and oils, paints, and inks	Sleeve-type, flushable, or double junction electrode and fill with electrolyte containing methanol
Environmental, surface water, neutralization tanks	Double junction submersible

Electrode Types

Built-in temp sensor	Use electrode with the following meters
Standard: Most economical electrode; includes cable.	
No	pHTestr BNC, pH 5/6, Ion 6, pH 10/11/100/110, pH 300/310, pH 500/510, Ion 510, pH 1000/1100/2100/2500, pH/DO 300, pH/CON 300, pH/CON 510, pH 600/610/620, PC600, PD600, PDC650, and non-Oakton meters with BNC pH electrodes
All-in-One: Combination pH electrode/temperature sensor; includes cable.	
Yes	Standard: pH 10/100, pH 500, pH 1000/2500
	Acorn®: pH 5/6, Ion 6, pH 11/110, pH 510, Ion 510, pH 1100/2100
	Waterproof: pH 300/310, pH/CON 300, pH/CON 510
	WP600: pH 600/610/620, PC600, PD600, PCD650
Direct connect: Electrode connects directly to meter; no cable.	
No	pHTestr BNC
ORP: Takes mV readings; includes cable.	
No	Ion 5/6, pH 6, pH 10/100, pH 300/310, pH 500, pH 510, Ion 510, pH 1000/2100/2500, pH/CON 510
ISE: Takes ion-selective readings; includes cable. See pages 40-41 for ISEs	
No	Ion 5/6, pH 10/100, pH 300/310, pH 500, pH/CON 510; pH 510, Ion 510, pH 1000/1100/2100/2500

Use and Care of Electrodes

Handling—Electrodes should be rinsed between samples with distilled or deionized water. Never wipe an electrode—wiping can cause erroneous readings due to static charges. Gently blot the end of the electrode with lint-free paper to remove excess water.

Refillable Electrodes—see page 32 for reference solutions.

The filling solution in refillable electrodes should be filled up to, but not past, the refill hole. Make sure the refill hole is left open when measuring to ensure that the fill solution flows properly through the reference junction.

Storage—see page 29 for storage products.

Always keep your pH electrode moist. We recommend that you store your electrode in an electrode storage solution of 4 M KCl (see page 29). If 4 M KCl is not available, use a pH 4 or 7 buffer solution. **DO NOT** store electrode in distilled or deionized water—this will cause ions to leach out of the glass bulb and reference electrolyte, rendering your electrode useless.

Oakton electrodes are shipped with a protective electrode storage bottle to help prevent cracking or scratching, and to keep the bulb moist. Remove the electrode storage bottle before using your electrode. Keep your electrode in the bottle for long-term storage—just fill the bottle with enough 4 M KCl solution to cover the glass bulb and replenish as needed.

Temperature Probes

Order a temperature probe if you have an electrode without a built-in temperature sensor and you want to take readings with Automatic Temperature Compensation (ATC). Separate temperature probes offer faster temperature response and lower pH electrode replacement cost.

Catalog number	Use with
WD-35615-05	pH 10, pH 100, pH 500, pH 1000, and pH 2500 meters
WD-35613-05	pH 5, pH 6, and Ion 6 Acorn® meters; pH 11, pH 110, pH 510, Ion 510, pH 1100, and pH 2100 benchtop meters
WD-35618-05	pH 300, pH 310, and pH/CON 300 waterproof meters; pH/CON 510 benchtop meter
WD-35418-05	pH 600/610/620, PC600, PD600, PCD650 meters

Electrode storage bottle

All 12-mm dia electrodes come with one electrode storage bottle and solution. Order additional storage bottles as needed.

WD-35805-50 Electrode storage bottle

Single junction, epoxy-body, gel-filled pH electrodes

- ▼ Our most economical electrodes!
- ▼ 0 to 14 pH models available—use for high sodium/high pH solutions

These economical electrodes are ideal for field, clean water, and general-purpose applications. They feature a rugged epoxy housing. Pin-type junction provides low electrolyte flow for long life.

Specifications & Ordering Information

Max temperature: 80°C (except 35801-00: 70°C)
Diameter: 12 mm (except 35804-50: 12.5 mm)

Catalog number	Type*	Cable length
Standard range of 0 to 12 pH		
WD-35801-00	Standard	3 ft
WD-35801-71	All-in-One Standard	30"
WD-35811-71	All-in-One Acorn®	30"
WD-35808-71	All-in-One Waterproof	30"
WD-35816-71	All-in-One WP600	30"
WD-35804-00	Direct connect	No cable
High range of 0 to 14 pH		
WD-35805-05	Standard	3 ft
WD-35801-76	All in One	30"

Double junction, epoxy-body, gel-filled pH electrodes

- ▼ Use to test dirty water and for other rugged field applications
- ▼ 0 to 14 pH models available—use for high sodium/high pH solutions

Ideal for most applications, including dirty field water and solutions with heavy metals or organics. Pin-type junction provides low electrolyte flow for long life.

Specifications & Ordering Information

Max temperature: 80°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
Standard range of 0 to 12 pH		
WD-35805-01	Standard	3 ft
WD-35641-51	Standard, poly-gel	3 ft
WD-35801-72	All-in-One Standard	30"
WD-35811-72	All-in-One Acorn	30"
WD-35808-72	All-in-One Waterproof	30"
WD-35816-72	All-in-One WP600	30"
WD-35804-02	Direct connect	No cable
High range of 0 to 14 pH		
WD-35805-06	Standard	3 ft
WD-35801-77	All-in-One Standard	30"

Double junction, glass-body, refillable pH electrodes

- ▼ Use for high-grade laboratory applications

These laboratory-grade electrodes are ideal for testing dirty water and solutions with heavy metals or organics. Annular-type junction provides faster electrode response. Order replacement electrode fill solution on page 29.

Specifications & Ordering Information

Max temperature: 100°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
Standard range of 0 to 12 pH		
WD-35805-04	Standard	3 ft
WD-35801-74	All-in-One Standard	3 ft
High range of 0 to 14 pH		
WD-35805-08	Standard	3 ft
WD-35801-79	All-in-One Standard	3 ft
WD-35811-74	All-in-One Acorn	3 ft

Double junction, epoxy-body, refillable pH electrodes

- ▼ Features flushable Teflon® junction—use with substances that ordinarily clog standard electrodes

Ideal for testing dirty water, slurries, oils, paints, pastes, low ionic strength solutions, and solutions with heavy metals or organics. Flushable annular junction lets you refresh junction by pressing electrode cap—cleans clogs instantly.

Specifications & Ordering Information

Range: 0 to 12 pH **Max temperature:** 80°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
WD-35805-09	Standard	3 ft
WD-35801-80	All-in-One Standard	3 ft

Glass-body, spear-tip pH electrodes

- ▼ Test gels, semisolids, and plant or animal materials

Spear tip feature is ideal for testing semisolids. Choose single or double junction electrodes; both have an annular-type junction for faster electrode response.

Specifications & Ordering Information

Range: 0 to 12 pH **Max temperature:** 100°C **Diameter:** 12 mm OD, 8 mm tip

Catalog number	Type*	Junction	Cable length
WD-35805-18	Standard	Double	3 ft
WD-35804-06	Standard	Single	3 ft

*See "Electrode Types" chart on facing page.

Electrodes for Laboratory and Field Applications

Submersible pH electrodes

▼ Completely submersible up to 9 feet

These ABS plastic electrodes are ideal for field applications. Use double junction for testing dirty water and solutions with heavy metals or organics. Completely submersible—including the extra-long 10-ft cable. Annular junction provides fast response and resists pressure effects of submersion.

Specifications & Ordering Information

Range: 0 to 12 pH **Max temperature:** 80°C **Diameter:** 25 mm

Catalog number	Type*	Junction	Cable length
WD-35805-24	Standard	Double	10 ft
WD-35801-85	All-in-One	Double	10 ft
WD-35805-23	Standard	Single	10 ft
WD-35805-25	ORP	Single	10 ft

Epoxy-body ORP electrodes

▼ Use to take mV readings

Choose a single-junction electrode for field, clean water, and general-purpose applications; choose a double junction electrode for most applications including field, dirty water, heavy metals, and organics. Both models have a pin-type junction that provides low electrolyte leakage. Use the gold disk sensor for ozone applications.

Specifications & Ordering Information

Range: ±2000 mV

Max temperature: 80°C (except 35805-13: 70°C) **Diameter:** 12 mm

Catalog number	Type*	Junction	Cable length
Platinum band sensor			
WD-35805-13	Standard	Single	3 ft
WD-35805-15	Standard	Double	3 ft
Gold disk sensor			
WD-35805-27	Standard	Double	3 ft

Electrode storage bottle

All 12-mm dia electrodes come with one electrode storage bottle and solution. Order additional storage bottles as needed.

WD-35805-50 Electrode storage bottle

Small-diameter pH electrodes

▼ Ideal for measurements in test tubes, NMR tubes, and other applications where space is limited

These electrodes feature a diameter from 6 to 9 mm—ideal for test tube applications. Replacement electrode fill solution for refillable electrodes is available on facing page.

Specifications & Ordering Information

Range: 0 to 12 pH

Max temperature: 80°C epoxy body or 100°C glass body

Catalog number	Type*	Junction	Dia x L	Cable length
Epoxy-body electrodes, sealed				
WD-35805-22	Standard	Single	6 x 220 mm	3 ft
WD-35804-01	Direct connect	Single	9 x 100 mm	No cable
WD-35804-03	Direct connect	Double	9 x 100 mm	No cable
Epoxy-body electrodes, refillable				
WD-35804-05	Direct connect	Double	9 x 100 mm	No cable
Glass-body electrodes, refillable				
WD-35805-21	Standard	Double	8 x 325 mm	3 ft

Calomel pH electrodes

▼ Calomel reference solution is ideal for biotechnology applications with organics, proteins, Tris buffers, or metals

These electrodes use a Hg/Cl reference to withstand solutions that react with the silver typically used in pH reference electrodes. Ideal for solutions containing organics. Choose from pin or annular junction. Pin-type junction provides low electrolyte flow for long life. Annular-type junction provides faster electrode response. Replacement electrode fill solution for refillable electrodes is available on facing page.

Specifications & Ordering Information

Range: 0 to 12 pH **Max temperature:** 70°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
Epoxy-body electrodes, gel-filled, pin junction		
WD-35805-10	Standard	3 ft
WD-35801-81	All-in-One Standard	3 ft
WD-35804-09	Direct connect	No cable
Glass-body electrode, gel-filled, annular junction		
WD-35805-11	Standard	3 ft
Glass-body electrodes, liquid-filled, refillable, annular junction		
WD-35805-12	Standard	3 ft
WD-35801-82	All-in-One Standard	3 ft
WD-35804-69	Direct connect	3 ft

*See "Electrode types" chart on page 28.

Flat surface, single-junction pH electrodes

▼ Ideal for flat surface measurements such as paper or skin

These single-junction electrodes are available with sealed epoxy body, or refillable glass body. Replacement electrode fill solution for refillable electrode is available on facing page.

Specifications & Ordering Information

Range: 0 to 12 pH
Max temperature: 80°C epoxy body or 100°C glass body **Diameter:** 12 mm

Catalog number	Type*	Cable length
Epoxy-body electrodes, sealed		
WD-35805-19	Standard	3 ft
WD-35804-10	Direct connect	No cable
Glass-body electrode, refillable		
WD-35805-20	Standard	3 ft

Semi-dome, epoxy-body, gel-filled pH electrodes

▼ Rugged semi-dome bulb design

Special close-knit ceramic junction prevents back diffusion problems and resists clogging. Vortexing junction design enhances electrolyte flow and self-cleans in flowing applications. Epoxy body; polymer gel reference fill won't break down over time, enhancing electrode performance and longevity.

Specifications & Ordering Information

Range: 0 to 13 pH **Max temperature:** 100°C **Diameter:** 12 mm

Catalog number	Type*	Junction	Cable length
WD-35808-88	All-in-One Waterproof	Single	3 ft
WD-35808-89	All-in-One Waterproof	Double	3 ft

Polymer gel, single-junction pH electrode

▼ Polymer gel reference fill won't break down over time, enhancing electrode performance and longevity

Specifications & Ordering Information

Range: 0 to 13 pH **Max temperature:** 100°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
WD-35808-90	All-in-One Waterproof	3 ft

Sleeve-type, single-junction, refillable pH electrode

▼ Ideal for viscous liquids and low ionic strength samples

Sleeve design gives high electrolyte flow. Unique reference design and fill solution minimize drift and give excellent performance at high temperatures.

Specifications & Ordering Information

Range: 0 to 12 pH **Max temperature:** 100°C **Diameter:** 12 mm

Catalog number	Type*	Cable length
WD-35805-26	Standard	3 ft

*See "Electrode Types" chart on page 28.

Oakton® Electrode Care

▼ Extend the life of your electrode, increase speed of response, and get accurate readings

▼ Solutions to clean, store, and fill electrodes

WD-00653-04 pH electrode storage solution, one pint. Use with saver bottles; keep bulb moist for quicker, more accurate pH readings

WD-00653-06 pH/ORP electrode cleaning solution, one pint. Removes build-up from electrodes to maintain bulb sensitivity

00653-06

WD-35805-50 Replacement pH electrode saver bottle. For pH electrodes up to 12 mm dia. 44.5 mm H x 25.4 mm dia

00653-04

WD-35803-73 Reference fill solution for single junction pH electrodes. 4 M KCl saturated with AgCl, 125 mL

WD-35803-74 Reference fill solution for double junction or calomel reference refillable pH electrodes. 4 M KCl, 125 mL

WD-35803-83 Reference fill solution, lithium chloride (LiCl)/methanol, for double junction refillable pH electrodes. Use where organics are present. 125 mL

WD-35803-84 Reference fill solution, KCl with glycerol, for double junction refillable pH electrodes. Use for low-temperature samples. 125 mL

35805-50

Accessories

WD-35820-64 In-line threaded housing. Use to install any 12-mm diameter electrode into pipe for in-line use or submersible monitoring; ¾" NPT(M), nylon

Ion-Selective Electrodes and Solution Kits

Ion-Selective Electrodes

Oakton® has a large selection of ion-selective electrodes (ISEs) to suit a wide variety of applications. Each electrode has a typical response time of 20 to 30 seconds but will vary with solution concentration. Oakton offers four electrode types: membrane, solid-state, gas sensing, and glass bulb. Gas sensing electrodes also include replacement membranes.

Choose from single-junction or double-junction electrodes. Single-junction electrodes are ideal for clean water applications. Use double-junction electrodes for testing dirty water and solutions with heavy metals or organics. All electrodes are refillable and include 15 mL of electrolyte and a filling pipette. Solid-state electrodes also include polishing strips.

Use these ion-selective electrodes (ISEs) with:

Ion 510 benchtop meter (see page 20)

pH/Ion 2100 benchtop meter (see page 22)

Acorn® Ion handheld meters (see page 12)

Or use with any other ion meter, or with any meter with 0.1-mV resolution.

Epoxy-body, double-junction fluoride electrode 35812-18

Ordering Information

Ion	Electrodes			Solution Kits†			
	Epoxy body, single junction	Epoxy body, double junction	Glass body, double junction	Single-junction solution kit	Double-junction solution kit	Replacement calibration standard	Replacement ISA
Ammonia NH_3 High-purity power station water, fish tanks, sea water, wastewater, plating baths, air/stack gases, and biological samples. **Range:** 17,000 to 0.01 ppm **Type:** gas sensing	WD-35802-00	—	—	WD-35802-50*	—	WD-35803-01	—
Ammonium NH_4^+ Boiler feed water, natural water and fertilizers. User must supply calibration standard. **Range:** 18,000 to 0.1 ppm **Type:** polymer membrane	WD-35802-02	WD-35812-02	WD-35802-03	WD-35802-52	WD-35802-53	—	WD-35803-53
Bromide Br^- Water, wine, soil, plant tissue, blood electrolytes, and clinical analysis. **Range:** 79,000 to 0.4 ppm **Type:** solid-state	WD-35802-04	WD-35812-04	WD-35802-05	WD-35802-54	WD-35802-55	WD-35803-03	WD-35803-51
Cadmium Cd^{+2} Plating baths. User must supply calibration standard. **Range:** 11,200 to 0.01 ppm **Type:** solid-state	WD-35802-06	WD-35812-06	WD-35802-07	WD-35802-56	WD-35802-57	—	WD-35803-51
Calcium Ca^{+2} Water softening systems, boiler feed water, drinking/ mineral water, blood electrolytes, clinical analysis, and food applications. **Range:** 40,000 to 0.2 ppm **Type:** polymer membrane	WD-35802-08	WD-35812-08	WD-35802-09	WD-35802-58	WD-35802-59	WD-35803-05	WD-35803-52
Carbon Dioxide CO_2 and Carbonate CO_3^{-2} Soft drinks/carbonated beverages, wine, beer, fermentation processes, bacterial cultures. **Range:** 440 to 4.4 ppm **Type:** gas sensing	WD-35802-10	—	—	WD-35802-60	—	WD-35803-07	WD-35803-55
Chloride Cl^- River/tap water, plant tissue, soils, boiler feed water, blood electrolytes,clinical analysis, sweat, urine, cement, plating baths, and food samples. **Range:** 35,500 to 1.8 ppm **Type:** solid-state	WD-35802-12	WD-35812-12	WD-35802-13	WD-35802-62	WD-35802-63	WD-35803-09	WD-35803-51
Copper Cu^{+2} Plating baths and water **Range:** 6350 to 6.4 x 10^{-4} ppm **Type:** solid-state	WD-35802-14	WD-35812-14	WD-35802-15	WD-35802-64	WD-35802-65	WD-35803-11	WD-35803-51
Cyanide CN^- Plating baths, wastewater and plant tissue. User must supply calibration standard. **Range:** 260 to 0.13 ppm **Type:** solid-state	WD-35802-16	WD-35812-16	WD-35802-17	—	—	—	WD-35803-50
Fluoride F^- Drinking/natural water, wastewater, air/stack gases, acids, sea water minerals, soils, food, biological fluids, toothpaste/mouthwash, coal, carbonated beverages, and bone. **Range:** saturated to 0.02 ppm **Type:** solid-state	WD-35802-18	WD-35812-18	WD-35802-19	WD-35802-68	WD-35802-69	WD-35803-13	WD-35803-58

*Ammonia solution kit does not include ISA. †Contact your authorized Oakton Distributor for replacement electrolyte solutions.

Solution Kits

Be sure to select both the electrode and solution kit to complete your measurement system. Solution kits contain the solutions and accessories needed for calibration, sample preparation, and measurement of ion concentration and activity. All solutions are supplied with MSDS (Material Safety Data Sheet) and have a value of 1000 ppm. Make serial dilutions for lower values using the ISE labware kit 35613-60 (at right). Solution kits include replacement reference electrolyte, ISA (ionic strength adjustor)*, calibration standard, and filling pipette. Solution kits for solid-state electrodes also include polishing strips. Solution kits for gas sensing electrodes also include replacement membranes.

ISE Labware Kit

Kit contains beakers, volumetric flask, pipette, and pipette bulb needed for serial dilution of ISE standards and ISA additions.

WD-35613-60 ISE labware kit

Ordering Information

Ion	Electrodes			Solutions†			
	Epoxy body, single junction	Epoxy body, double junction	Glass body, double junction	Single-junction solution kit	Double-junction solution kit	Replacement calibration standard	Replacement ISA
Fluoroborate BF_4^- Plating baths (boron analysis) **Range:** 10,800 to 0.1 ppm **Type:** polymer membrane	WD-35802-20	WD-35812-20	WD-35802-21	WD-35802-70	WD-35802-71	WD-35803-15	WD-35803-60
Iodide I^- Milk, feeds, plants and pharmaceuticals. **Range:** 127,000 to 6 x 10^{-3} ppm **Type:** solid-state	WD-35802-22	WD-35812-22	WD-35802-23	WD-35802-72	WD-35802-73	WD-35803-17	WD-35803-51
Lead Pb^{+2} Plating baths and organic compounds. **Range:** 20,700 to 0.2 ppm **Type:** solid-state	WD-35802-24	WD-35812-24	WD-35802-25	WD-35802-74	WD-35802-75	WD-35803-20	WD-35803-56
Nitrate NO_3^- Surface/drinking water, sewage effluent, soil extracts, fertilizers, plant tissue, meat, potatoes, spinach, beets, baby food. **Range:** 62,000 to 0.5 ppm **Type:** polymer membrane	WD-35802-30	WD-35812-30	WD-35802-31	WD-35802-78	WD-35802-79	WD-35803-24	WD-35803-60
Nitrogen Oxide NO_x Air and stack gases. **Range:** 220 to 0.2 ppm **Type:** gas sensing	WD-35802-32	—	—	WD-35802-82	—	WD-35803-26	WD-35803-57
Perchlorate ClO_4^- Explosives and solid propellants. **Range:** 98,000 to 0.7 ppm **Type:** polymer membrane	WD-35802-34	WD-35812-34	WD-35802-35	WD-35802-84	WD-35802-85	WD-35803-28	WD-35803-60
Potassium K^+ Wastewater, river/tap water, blood electrolytes, clinical analysis, saliva, serum, fertilizers, soils, and wines. **Range:** 39,000 to 0.04 ppm **Type:** polymer membrane	WD-35802-38	WD-35812-38	WD-35802-39	WD-35802-88	WD-35802-89	WD-35803-30	WD-35803-53
Silver/Sulfide Ag^+/S^{-2} Sewage effluent, soils, sediments, plating baths and photographic fixing solution. User must supply solutions for sulfide. **Range:** 107,900 to 0.01 ppm **Type:** solid-state	WD-35802-40	WD-35812-40	WD-35802-41	WD-35802-90	WD-35802-91	WD-35803-32	WD-35803-51
Sodium Na^+ Steam condensates in power plants, blood electrolytes, clinical analysis, serum, foods, wine, glass, sea water, swimming pools, fish farms and aquariums. **Range:** 23,000 to 0.2 ppm **Type:** glass bulb	WD-35802-42	WD-35812-42	WD-35802-43	WD-35802-92	WD-35802-93	WD-35803-34	WD-35803-54
Surfactant X^+, X^- Detergents, dishwashing liquids, cleaning supplies, and food products. For titration only. **Range:** 12,000 to 1.0 ppm **Type:** polymer membrane	WD-35802-44	WD-35812-44	WD-35802-45	WD-35802-94	WD-35802-95	WD-35803-35	WD-35803-59
Water hardness Ca^{+2}, Mg^{+2} Water softening systems, boiler feed water, drinking/mineral water, blood electrolytes, clinical analysis, and food applications. **Range:** 40,000 to 0.4 ppm **Type:** polymer membrane	WD-35802-48	WD-35812-48	WD-35802-49	WD-35802-98	WD-35802-99	WD-35803-05	WD-35803-52

*Ammonia solution kit does not include ISA. †Contact your authorized Oakton Distributor for replacement electrolyte solutions.

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