

Thermo Scientific Orion Water/Wastewater Products

Key Products

- Optical DO Meters and Probes
- Orion DUAL STAR™ Meter
- Orion Star Plus Meters
- ROSS® Triode™ Electrodes
- Green Electrodes
- ISE
- Colorimetry
- COD



Thermo Scientific Orion Star RDO Series Optical Dissolved Oxygen Meters

New RDO® technology for membrane-free dissolved oxygen measurements combined with Orion Star™ Plus meter benefits

Three portable meter versions to meet your specific requirements



All Meters Feature:

- Dissolved oxygen level measurements using optical DO technology
- No membranes to change—once-a-year cap replacement
- Calibrate for dissolved oxygen using water-saturated air, air-saturated water, zero point, or at a custom point with Winkler titration
- Built-in barometer for automatic pressure correction with option for manual correction for dissolved oxygen readings
- RS232 port for easy data downloading and software updates
- Simultaneous display of measured values on the backlit display
- IP67-rated housing
- Four AA batteries to provide over 1000 hours of operation in Auto-Read™ mode
- 3-year warranty on meter and RDO probe body
- 1-year warranty on RDO sensor cap

3-Star RDO Meters Offer:

- Dissolved oxygen and temperature measurement capabilities
- Data storage for 1000 data sets with time and date stamping

4-Star pH/RDO Meters Offer:

- Dissolved oxygen, pH and temperature measurement capabilities
- pH calibration of up to 5 points with calibration alarm and automatic buffer recognition of USA, NIST and DIN buffers
- Temperature calibration capability for pH
- Data storage for 750 data sets with time and date stamping

5-Star pH/RDO/Conductivity Meters Offer:

- Dissolved oxygen, pH, conductivity, salinity, TDS, resistivity and temperature measurement capabilities
- Conductivity / TDS / salinity / resistivity calibration of up to 5 points and reading reference temperatures of 5 °C, 10 °C, 15 °C, 20 °C or 25 °C
- Automatic salinity correction for dissolved oxygen measurements from the conductivity probe reading
- Temperature calibration capability for pH and conductivity
- Data storage for 500 data sets with time and date stamping

RDO

Thermo Scientific Orion Star meters with RDO require no membranes. Maintenance is just a simple cap replacement. This easy-to-use feature is great for measurements from effluent, aeration basins and even influent, as the sensor is not affected by color or turbidity.

*Check with your regulatory reporting agency for exact acceptance/approval.

Specifications

Thermo Scientific Orion 3-Star, 4-Star and 5-Star Meters

DO	Concentration Range	0.00 to 20.0 mg/L
	Resolution	0.01, 0.1 mg/L
	Relative Accuracy	±0.1 mg/L up to 8 mg/L; ±0.2 mg/L from 8 to 20 mg/L
	% Saturation Range	0.0 to 200%
	Resolution	0.1, 1%
	Relative Accuracy	± 2%
	Barometric Pressure Correction	450 to 850 mm Hg, automatic or manual
Calibration Features	Water saturated air, air saturated water, manual (Winkler) and zero point	
	Probe Type	RDO optical
Temperature (with RDO probe)	Range	0 to 50 °C
	Resolution	0.1 °C
	Relative Accuracy	± 0.3 °C

Thermo Scientific Orion 4-Star and 5-Star Meters

pH	Range	-2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
mV, Rel mV, ORP	Range	± 1999.9 mV
	Resolution	0.1 mV
	Relative Accuracy	± 0.2 mV or 0.05% of rdg, whichever is greater
Temperature (when RDO probe is not used)	Range	-5 to 105 °C
	Resolution	0.1 up to 99.9 °C, 1.0 over 99.9 °C
	Relative Accuracy	±0.1 °C

Thermo Scientific Orion 5-Star Meters

Conductivity	Range	0.000 to 3000 mS/cm, auto resolution, cell constant dependent
	Resolution	4 significant digits down to 0.001 µS/cm, cell constant dependent
	Relative Accuracy	0.5 % ± 1 digit or 0.01 µS/cm, whichever is greater
	Cell Constants	0.001 to 199.9 cm ⁻¹
Resistivity	Range	0.0001 to 100 Megohm
	Resolution	Automatic
	Relative Accuracy	0.5 % ± 1 digit
Salinity	Range	0.1 to 80 ppt NaCl equivalent, 0.1 to 42 ppt practical salinity
	Resolution	0.1ppt
	Relative Accuracy	± 0.1 ± 1 digit
TDS	Range	0 to 19999 mg/L
	Resolution	1 mg/L
	Relative Accuracy	± 0.5% ± 1 digit

Ordering Information

Portable Meter Only	
Cat. No.	Description
1213300	3-star RDO portable meter only
1213310	4-star pH/RDO portable meter only
1213320	5-star pH/RDO/Cond portable meter only
Portable Meter Kits	
Cat. No.	Description
1213301	3-star RDO portable meter, RDO probe with 3m cable, stainless steel RDO probe guard, optical cap, batteries and user guide
1213302	3-star RDO portable meter, RDO probe with 6m cable, stainless steel RDO probe guard, optical cap, carrying case, batteries and user guide
1213311	4-star pH/RDO portable meter, RDO probe with 3m cable, stainless steel RDO probe guard, optical cap, pH/ATC Triode™ with 3m cable (9107WMMD), batteries and user guide
1213312	4-star pH/RDO portable meter, RDO probe with 6m cable, stainless steel RDO probe guard, optical cap, pH/ATC Triode with 6m cable (9107WLMD), carrying case, batteries and user guide
1213321	5-star pH/RDO/Cond portable meter, RDO probe with 3m cable, stainless steel RDO probe guard, optical cap, pH/ATC Triode with 3m cable (9107WMMD), DuraProbe™ 4-electrode conductivity cell with 3m cable (013010MD), batteries and user guide
1213322	5-star pH/RDO/Cond portable meter, RDO probe with 6m cable, stainless steel RDO probe guard, optical cap, pH/ATC Triode with 6m cable (9107WLMD), DuraProbe 4-electrode conductivity cell with 6m cable (013020MD), carrying case, batteries and user guide
Accessories	
Cat. No.	Description
087001	Replacement optical cap
087010MD	RDO optical probe with 3m cable, stainless steel guard and optical cap
087020MD	RDO optical probe with 6m cable, stainless steel guard and optical cap
087030MD	RDO optical probe with 10m cable, stainless steel guard and optical cap
087050MD	RDO optical probe with 15m cable, stainless steel guard and optical cap
087100MD	RDO optical probe with 30m cable, stainless steel guard and optical cap
087002	Replacement stainless steel RDO optical probe guard
087003	Calibration sleeve for RDO optical probes
9107WMMD	pH/ATC Triode, 3m cable, epoxy body, low-maintenance gel
9107WLMD	pH/ATC Triode, 6m cable, epoxy body, low-maintenance gel
013010MD	DuraProbe conductivity cell, 4-electrode, 3m cable, K=0.475cm ⁻¹
013020MD	DuraProbe conductivity cell, 4-electrode, 6m cable, K=0.475cm ⁻¹

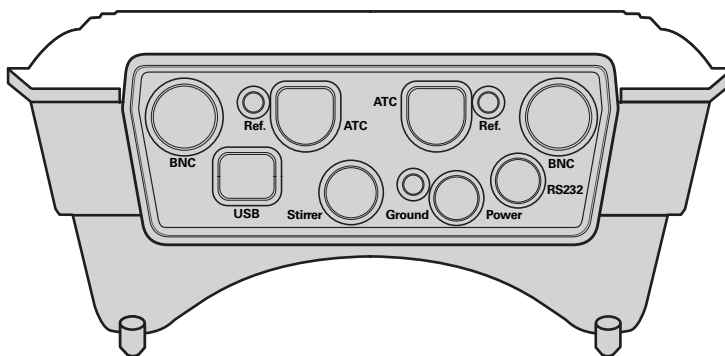
Thermo Scientific Orion DUAL STAR Meter

The Orion DUAL STAR™ meter makes it easy to do two things at once

Advantages

- Dual channel with simultaneously displayed measurements
- Low concentration range reading stability
- Known addition and subtraction incremental methods
- 5 language choices: English, Spanish, French, German and Italian
- Meter prompts and shortcut keys
- Thermo Scientific Orion EZ Startup for quick and easy meter set up
- E_H ORP calibration capability
- 10 methods stored per channel – retains calibrations among multiple electrodes
- 1000 point datalogging with time and date stamping
- Calibration, high point and low point alarms
- Calibration graph with slope data for on-screen viewing
- Star stirrer probe controlled directly from the meter
- Autosampler compatibility*

Descriptions



Display shows results, electrode status, ATC temperature and channel settings. If a method is selected, the number shows as well.

Power key turns on/off the meter and the backlighting

Shortcut keys for direct access to commonly used functions

Channel key toggles display to show both channels simultaneously or just one. Single channel display also shows electrode serial number.

Function keys update according to the menu for easy selection

Numeric keypad for select data entry in submenus



Specifications

pH	Range	- 2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
	Calibration Points	1 to 6
	Auto-Buffer Recognition	USA/NIST and EURO/DIN
ISE	Range	0 to 19999
	Resolution	1, 2 or 3 significant digits
	Relative Accuracy	± 0.2 mV or 0.05 %, whichever is greater
	Units	ppm, ppb, M, % or unitless
	Technique Options	Single known addition and subtraction Double known addition and subtraction
	Calibration Points	2 to 6
mV/Rel mV/ORP	Range	± 1999.9
	Resolution	0.1
	Relative Accuracy	± 0.2 mV or 0.05 %, whichever is greater
	E _H Calibration Capability	Yes
Temperature	Range	- 5 to 105 °C
	Resolution	0.1 °C
	Relative Accuracy	± 0.1 °C

Features

Method Storage	20 (10 per channel with calibration data)
Password Protection	Yes
Datalog Points	1000 with time/date stamp
Data Transfer	RS232, USB*
IP Rating	IP54
Power	Universal AC adapter (110 V / 220 V / 240 V) included with meter
Warranty	36 months

Ordering Information

Cat. No.	Description
2115000	Orion DUAL STAR pH/ISE meter, stainless steel ATC probe (927007MD), swing arm electrode stand (090043), RS232 cable (1010053), universal power adapter and user guide
2115101	Orion DUAL STAR pH/ISE meter, 8102BNUWP ROSS Ultra [®] pH electrode, stainless steel ATC probe (927007MD), RS232 cable (1010053), swing arm electrode stand (090043), universal power adapter and user guide
2115102	Orion DUAL STAR pH/ISE meter, 8157BNUMD ROSS Ultra pH/ATC Triode™ refillable electrode, RS232 cable (1010053), universal power adapter and user guide
2115001	Orion DUAL STAR pH/ISE meter, 8102BNUWP ROSS Ultra pH electrode, stainless steel ATC probe (927007MD), RS232 cable (1010053), swing arm electrode stand (090043), pint of pH 4 buffer (910104), pint of pH 7 buffer (910107), pint of pH 10 buffer (910110), pint of ROSS [®] electrode storage solution (810001), universal power adapter and user guide
096019	Thermo Scientific Orion stirrer probe with paddle

Simple Tips for Calibration

- Check the date – calibrating with expired solutions can lead to a lot of wasted effort.
- Pour out just what you need for calibration.
- Store the rest of the solutions tightly closed and out of direct sunlight.
- Solutions can lose their effectiveness in just a couple of hours. Be mindful of when you use them.

*Available for complimentary download at www.thermo.com/water in early 2009

Thermo Scientific Orion 4-Star Plus pH/ISE Meters

Featuring the accuracy and reliability you need for ISE measurements

Features and Benefits



- Display of temperature with pH, mV or ISE measurements on the backlit LCD
- Thermo Scientific Orion SMART STABILITY and SMART AVERAGING functions for automatically optimized accuracy, precision and response time
- Temperature calibration capability
- pH calibration of up to 5 points with calibration alarm and automatic buffer recognition of USA, NIST and DIN buffers
- ISE calibration of up to 5 points with automatic blank correction feature
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures
- Data storage for 750 points with time and date stamp
- Average slope and slope of segment printed with measurements
- RS232 port for easy data downloading and software communication
- Benchtop units can control an autosampler and the 096010 stirrer probe (each sold separately)
- Benchtop units are splashproof with an IP54-rated housing and include a universal power supply
- Portable units are waterproof with an IP67-rated housing and run for over 2,000 hours on four AA batteries
- 3 year meter replacement warranty



Specifications

pH	Range	- 2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
ISE	Range	0 to 19999
	Resolution	1, 2, or 3 significant digits
	Relative Accuracy	± 0.2 mV or 0.05%, whichever is greater
	Units	M, mg/L, %, ppb, or no units
	Calibration Features	Linear point to point, non-linear selectable auto-blank, low concentration range stability
mV/Rel mV/ ORP	Range	± 1999.9 mV
	Resolution	0.1 mV
	Relative Accuracy	± 0.2 or 0.05%, whichever is greater
Temperature	Range	- 5 to 105 °C
	Resolution	0.1 up to 99.9 °C, 1.0 over 99.9 °C
	Relative Accuracy	± 0.1 °C

Ordering Information

Meters Only		
Cat. No.	Description	
1115000	4-Star pH/ISE benchtop meter, universal power and user guide	
1215000	4-Star Plus pH/ISE portable meter, batteries and user guide	
Benchtop Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1115001	<ul style="list-style-type: none"> • 8102BNUWP ROSS Ultra refillable glass pH electrode • 927005MD Epoxy ATC probe 	<ul style="list-style-type: none"> • Swing arm electrode stand • pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles)
1010109	<ul style="list-style-type: none"> • 9512HPBNWP Ammonia ion selective electrode • 096019 Stirrer probe 	<ul style="list-style-type: none"> • Ammonia standards and solutions (pint bottles) • Swing arm electrode stand • Method Note - Ammonia in Wastewater 
1010103	<ul style="list-style-type: none"> • 9609BNWP Fluoride ion selective electrode • 096019 Stirrer probe 	<ul style="list-style-type: none"> • Fluoride standards and solutions (pint bottles) • Swing arm electrode stand • Method Note - Fluoride in Drinking Water
1010102	<ul style="list-style-type: none"> • 9512HPBNWP Ammonia ion selective electrode • 096019 Stirrer probe 	<ul style="list-style-type: none"> • Ammonia standards and solutions (pint bottles) • Swing arm electrode stand • Method Note - Ammonia in Drinking Water 
Portable Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1215001	<ul style="list-style-type: none"> • 9107BNMD Low maintenance epoxy pH/ATC Triode electrode 	<ul style="list-style-type: none"> • pH electrode storage solution (5 x 60 mL bottles) • pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) • Hard field case

Thermo Scientific Orion 3-Star Plus pH Meters

Ideal for a variety of pH measurements including water and process water

Features and Benefits

- Simultaneous display of pH or mV and temperature measurements on the backlit LCD
- Thermo Scientific Orion SMART STABILITY and SMART AVERAGING functions for automatically optimized accuracy, precision and response time
- Temperature calibration capability
- pH calibration of up to 5 points with calibration alarm
- Automatic buffer recognition of USA, NIST and DIN buffers
- Storage of up to 10 individually password protected methods for easy retrieval of operation procedures
- Datalog up to 1000 points with time and date stamp
- Average slope and slope of segment printed with pH measurements
- RS232 port for data downloads and communication
- Benchtop units can control an autosampler and the 096010 stirrer probe (each sold separately)
- Benchtop units are splashproof with an IP54-rated housing and include a universal power supply
- Portable units are waterproof with an IP67-rated housing and run for over 2,000 hours on four AA batteries
- 3 year meter replacement warranty



Thermo Scientific Orion
3-Star Plus pH

Specifications

pH	Range	- 2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
mV/Rel mV/ ORP	Range	± 1999.9 mV
	Resolution	0.1 mV
	Relative Accuracy	± 0.2 or 0.05%, whichever is greater
Temperature	Range	- 5 to 105 °C
	Resolution	0.1 up to 99.9 °C, 1.0 over 99.9 °C
	Relative Accuracy	± 0.1 °C

Ordering Information

Meters Only		
Cat. No.	Description	
1112000	3-Star benchtop meter, universal power and user guide	
1212000	3-Star portable meter, batteries and user guide	
Benchtop Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1112001	• 8157BNUMD ROSS Ultra refillable pH/ATC Triode electrode	• Swing arm electrode stand • pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles)
1112003	• 8102BNUWP ROSS Ultra refillable glass pH electrode • 927005MD Epoxy ATC probe	• Swing arm electrode stand • pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles)
1112104	• 9157BNMD Refillable epoxy pH/ATC Triode electrode	• —
Portable Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1212001	• 9107BNMD Low maintenance epoxy pH/ATC Triode electrode	• Beaker • Electrode storage chamber • pH electrode storage solution (5 x 60 mL bottles) • pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) • Hard field case
1212002	• 5107BNMD No Cal refillable pH/ATC electrode	• Beaker • pH electrode storage solution (5 x 60 mL bottles) • pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) • Hard field case
1212101	• 9107BNMD Low maintenance epoxy pH/ATC Triode electrode	• —

pH and Temperature

It's important to measure temperature at the same time as pH. Electrode slope and buffer values change with temperature. To get the most accurate reading, use an ATC probe or an electrode with a built-in temperature sensor, like the Thermo Scientific Orion Triode electrode.

Thermo Scientific Orion 3-Star Plus Conductivity Meters

Works for a variety of applications and liquid purities

Features and Benefits

- Simultaneous display of conductivity, resistivity, TDS or salinity and temperature measurements on the backlit LCD
- Thermo Scientific Orion SMART STABILITY and SMART AVERAGING functions for automatically optimized accuracy, precision and response time
- Meets all U.S. Pharmacopeia (USP) requirements
- Accepts cell constants from 0.001 to 199.9 cm⁻¹
- Compatible with 2-electrode and 4-electrode conductivity cells
- Temperature calibration capability
- Conductivity / TDS / salinity / resistivity calibration of up to 5 points
- Reading reference temperatures at 5 °C, 10 °C, 15 °C, 20 °C or 25 °C
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures
- Datalogs up to 1000 points with time and date stamp
- RS232 port for easy data downloading and software updates
- Benchtop units can control an autosampler and the 096010 stirrer probe (each sold separately)
- Benchtop units are splashproof with an IP54-rated housing and include a universal power supply
- Portable units are waterproof with an IP67-rated housing and run for over 2,000 hours on four AA batteries
- 3 year meter replacement warranty



Specifications

Conductivity	Range	0.000 to 3000 mS/cm, auto resolution with cell constant dependence
	Resolution	4 significant digits down to 0.001 μS/cm, cell constant dependent
	Relative Accuracy	0.5% ± 1 digit or 0.01 μS/cm, whichever is greater
	Cell	0.001 to 199.9 cm ⁻¹
Resistivity	Range	0.0001 to 100 Megohm
	Resolution	Automatic
	Relative Accuracy	0.5 % ± 1 digit
Salinity	Range	0.1 to 80.0 ppt NaCl equivalent, 0.1 to 42 ppt practical salinity
	Resolution	0.1 ppt
	Relative Accuracy	± 0.1 ± 1 digit
TDS	Range	0 to 19999 mg/L
	Resolution	1 mg/L
	Relative Accuracy	± 0.5 % ± 1 digit
Temperature	Range	- 5 to 105 °C
	Resolution	0.1 up to 99.9 °C, 1.0 over 99.9 °C
	Relative Accuracy	± 0.1 °C

Ordering Information

Meters Only		
Cat. No.	Description	
1114000	Includes benchtop meter, universal power and user guide	
1214000	Includes portable meter, batteries and user guide	
Benchtop Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1114001	• 013005MD DuraProbe conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm	• 1413 μS/cm conductivity standard (5 x 60 mL bottles) • Swing arm electrode stand
1114002	• 013016MD Conductivity cell, K = 0.1, includes flow cell, 0.01 μS/cm to 300 μS/cm	• 100 μS/cm conductivity standard (5 x 60 mL bottles) • Swing arm electrode stand
Portable Meter Kits		
Cat. No.	Sensor (s)	Accessories and Solutions
1214001	• 013005MD DuraProbe conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm	• 1413 μS/cm conductivity standard (10 x 15 mL pouches) • Hard field case
1214003	• 013610MD Conductivity cell, K = 0.55, includes 3 meter cable, 10 μS/cm to 200 mS/cm)	• 1413 μS/cm conductivity standard (10 x 15 mL pouches) • Hard field case

Conductivity

Conductivity is a great way to check for salt water intrusion at well sites.

Thermo Scientific Orion ROSS Ultra Triode

Convenience with the performance of a ROSS

ROSS Ultra® Triode™ electrodes offer the convenience of a built-in temperature sensor with the high performance of a ROSS® pH electrode. They provide accurate, reliable and reproducible results.

- Unmatched temperature response—stable to 0.01 pH within 30 seconds in 7.00 pH between 25°C and 70°C
- Double junction design, compatible with dirty samples, proteins and sulfides
- Durable epoxy body
- Industry's best for Triode—2 year warranty

Sealed, gel-filled versions available



Thermo Scientific Orion
ROSS Electrodes

Cat. No.	Description	Cable Configuration	Meter Compatibility
8157BNUMD	Refillable, epoxy body	1 meter length with waterproof BNC and 8-pin miniDIN connector	Orion Star™ & Star Plus
8157UWMMD	Refillable, epoxy body	3 meter length with waterproof BNC and 8-pin miniDIN connector	Orion Star™ & Star Plus
8257BNU	Refillable, epoxy body	1 meter cable with waterproof BNC and 3.5 mm connector	Orion PerpHecT
8157BNU	Refillable, epoxy body	1 meter length with waterproof BNC and 8-pin DIN connector	Orion A+

Thermo Scientific Orion ROSS Sure-Flow pH Electrodes

The ideal electrode for the worst samples—simply press down on the cap to refresh the junction and rejuvenate the electrode response

ROSS Sure-Flow® electrode junctions prevent clogging—ideal for sludge, colloids and viscous materials. They provide accurate, reliable and reproducible results with dirty samples.

- Unmatched at measuring dirty samples
- Double junction design, compatible with dirty samples: proteins and sulfides
- Durable epoxy body or high chemical compatibility glass body
- 1 year warranty



Cat. No.	Description
8165BNWP	Refillable, epoxy body; 1m cable with waterproof BNC connector
8172BNWP	Refillable, glass body; 1m cable with waterproof BNC connector
810001	ROSS storage solution, 475mL bottle
810007	ROSS fill solution, 5 x 60mL bottles
910199	pH buffer kit: 475mL bottle each of 4.01, 7.00, 10.01 buffers and pH electrode storage solution and pH electrode storage bottle

Choosing the Right Electrode

Slow/poor electrode performance in dirty samples can be the result of a clogged junction. You can try to refresh the junction by following the instructions for that electrode, but the best way is to select the right electrode for the job.

Thermo Scientific Orion Green pH Electrodes

Support using environmentally-friendly electrodes

Thermo Scientific Orion Green electrodes are the first pH electrodes to meet all the requirements of RoHS. The Green electrodes contain no lead, mercury or other hazardous substance making disposal of old electrodes easy and hassle free. All Thermo Scientific Orion Green electrodes are durable epoxy body electrodes with a waterproof BNC connector that is compatible with any pH meter with a BNC input.

- RoHS compliant—no lead, mercury or hazardous materials
- Free from disposal issues or costs
- Range of styles for versatility in measurements



Cat. No.	Description	Cable Configuration
Ideal for Clean Water:		
GS9106BNWP	Single junction, low-maintenance gel, epoxy body	1m length with waterproof BNC connector
GS9156BNWP	Single junction, refillable, epoxy body	1m length with waterproof BNC connector
Ideal for Dirty Water:		
GD9106BNWP	Double junction, low-maintenance gel, epoxy body	1m length with waterproof BNC connector
GD9156BNWP	Double junction, refillable, epoxy body	1m length with waterproof BNC connector

Thermo Scientific Orion AquaPro Professional pH Electrodes

Ideal for environmental testing of water and wastewater samples

AquaPro Professional electrodes are durable epoxy body, double junction electrodes. Manufactured to meet the demands of true water professionals. All AquaPro electrodes have a waterproof BNC connector that is compatible with any pH meter.

- Low maintenance polymer gel
- Durable epoxy body and double junction
- Range of styles for versatility in measurements
- Triode™ version measures pH and temperature with one electrode



Cat. No.	Description	Cable Configuration	Meter Compatibility
9156APWP	Double junction, polymer gel, epoxy body	1m length with waterproof BNC connector	Any meter with a BNC connector
9135APWP	Flat surface, double junction, polymer gel, epoxy body	1m length with waterproof BNC connector	Any meter with a BNC connector
9107APMD	pH/ATCTriode, double junction, polymer gel, epoxy body	1 meter length with waterproof BNC and 8-pin MiniDIN connector	Orion Star™ & Star Plus

Save Money and the Environment

By selecting electrodes without lead or mercury, no special hazardous disposal procedures are needed.

Thermo Scientific Orion High Performance Ammonia Ion Selective Electrode

The best ammonia ISE available!

The Thermo Scientific Orion high performance ammonia electrode offers reliable measurements at low detection levels. It can measure accurately down to 0.01 parts per million, while providing rapid response. All Thermo Scientific Orion high performance electrodes come with two 60 mL bottles of fill solution, a pack of 20 loose membranes, one pre-assembled body and membrane and have either a waterproof BNC connector that is compatible with any meter with a BNC input or a U.S. standard connection for meters with a U.S. standard input.

- Low detection limits—accurate results down to 0.01 ppm
- Rapid response—1 minute for samples 1 ppm and higher
- Easy electrode maintenance – translucent body allows user to monitor solution level and provides ease in assembling with pre-marked fill solution line
- Choose between pre-assembled outer body with membrane cap or loose membranes
- Durable chemical resistant body

Cat. No.	Description
9512HPBNWP	Ammonia HP ISE, waterproof BNC Connector, 1m cable
9512HP01	Ammonia HP ISE, U.S. standard connector, 1m cable
951215	Replacement preassembled electrode body and membrane, pack of 3
951209	Ammonia HP ISE fill solution, 60mL bottle
951011	Ammonia low-level ISA, 475mL bottle
951211	Ammonia ISA, 475mL bottle
951007	Calibration standard, 1000 ppm N, 475 mL bottle



Thermo Scientific Orion Ion Selective Electrodes

The best in performance and reliability

The Thermo Scientific Orion products offer half-cell or combination electrodes to meet your EPA and ASTM methods testing.

Cat. No.	Description
Chloride Species	
9617BNWP	Chloride ISE, ionplus design, combination, epoxy body; waterproof BNC connector, 1m cable
900062	Fill solution, chloride ISE, 5 x 60mL bottles
941707	Calibration standard, 100 ppm Cl ⁻ , 475mL bottle
940011	Chloride ISA, 475mL bottle
Chlorine Species	
9770BNWP	Chlorine ISE, solid state design, combination, epoxy body; waterproof BNC connector, 1m cable
977007	Calibration standard, 100 ppm Cl ₂ , 475mL bottle
977010	Iodide reagent, chlorine ISA, 5 x 50mL bottles
977011	Acid reagent, 475mL bottle
Fluoride Species	
9609BNWP	Fluoride ISE, ionplus design, combination, epoxy body; waterproof BNC connector, 1m cable
9409BN	Fluoride ISE, solid state design, half-cell, epoxy body; BNC connector, 1m cable
900061	Fill solution, fluoride ionplus ISE, 5 x 60mL bottles
900001	Fill solution, fluoride half-cell ISE, 5 x 50mL bottles
040906	Calibration standard, 1ppm F ⁻ w/TISAB II, 475mL bottle
940909	TISAB II, fluoride ISA, 1 gallon container
940911	TISAB III, fluoride ISA, 475mL bottle

Cat. No.	Description
Nitrate Species	
9707BNWP	Nitrate ISE, ionplus design, combination, epoxy body; waterproof BNC connector, 1m cable
9307BNWP	Nitrate ISE, plastic membrane design, half-cell, epoxy body; waterproof BNC connector, 1m cable
900046	Fill solution, nitrate ionplus ISE, 5 x 60mL bottles
920707	Calibration standard, 1000ppm N, 475mL bottle
930710	Nitrate ISA, 475mL bottle
Sulfide Species	
9616BNWP	Sulfide/silver ISE, ionplus design, combination, epoxy body; waterproof BNC connector, 1m cable
900061	Fill solution, 5 x 60mL bottles
941609	Sulfide ISA, 4 x 475 mL bottles
Reference Electrode for Fluoride and Nitrate Half Cells	
900200	Double junction, Sure-Flow reference, epoxy body; pin tip connector, 1m cable

For a complete listing of specifications, solutions, standards and accessories, see our catalog or visit our website at www.thermo.com/water.



Thermo Scientific Orion Buffers and Solutions

For all your electrochemistry measurement needs

The quality of your analytical results depends upon the quality of your standards, buffers and reagents. We offer a complete selection of quality-assured support solutions for virtually any electrochemistry analysis. Our pH buffers are designed to meet all end user requirements, including laboratory grade and DIN standards. Buffer temperature tables are programmed into the meter software for use with the Auto-Buffer-Recognition feature.



pH Electrode Filling Solutions (All are 5 x 60 mL bottles)		
Cat. No.	Description	For the Following pH Electrodes:
810007	3 M KCl	ROSS Ultra, ROSS, ROSS Triode™, and PerpHecT ROSS Electrodes
900011	4 M KCl with Ag/AgCl	Standard, Specialty, and PerpHecT Ag/AgCl Electrodes
900004	2 M KCl with Ag/AgCl (For low ionic strength samples)	

pH Electrode Cleaning and Storage Solutions	
Cat. No.	Description
910001 910060	pH Electrode Storage Solution— 475 mL 5 x 60 mL
810001	ROSS pH Electrode Storage Solution— Optimize ROSS Ultra pH electrode performance and life, 475 mL

Choose the Right Solutions

Using the right buffer values and solutions ensure accurate readings.

- When calibrating for pH, use at least two pH buffers whose values flank your anticipated reading value.
- For well water, rain water or other “pure water” samples, consider low ionic strength buffers—such as our 700001 Pure Water pH Test Kit. More information can be found at www.thermo.com/water.

pH Buffers	
Cat. No.	Description
910199	All-in-One pH Buffer Kit— 475 mL bottle each of 4.01, 7.00, 10.01 buffers and pH electrode storage solution (910001), pH electrode storage bottle
910168	pH 1.68 Buffer— 475 mL
910104 910410 910425	pH 4.01 Buffer (red)— 475 mL PerpHecT individual buffer pouch, 10 pack PerpHecT individual buffer pouch, 25 pack
910105	pH 5.00 Buffer (orange)— 475 mL
910686	pH 6.86 Buffer— 475 mL
910107 910710 910725	pH 7.00 Buffer (yellow)— 475 mL PerpHecT individual buffer pouch, 10 pack PerpHecT individual buffer pouch, 25 pack
910918	pH 9.18 Buffer— 475 mL (1 pint)
910110 911010 911025	pH 10.01 Buffer (blue)— 475 mL PerpHecT individual buffer pouch, 10 pack PerpHecT individual buffer pouch, 25 pack
910112	pH 12.46 Buffer— 475 mL

Conductivity Standards		NIST
Cat. No.	Description	
011008	100 µS/cm conductivity/TDS standard, 5 x 60 mL	
011007	1413 µS/cm conductivity/TDS standard, 5 x 60 mL	
011006	12.9 mS/cm conductivity/TDS standard, 5 x 60 mL	
011005	111 mS/cm conductivity standard, 5 x 60 mL	

Thermo Scientific Orion AQUAfast III Series Meters

- Large easy-to-read LCD display
- Needs only 10mL volume samples for analysis
- Autoranging capability for faster results
- Accurate, repeatable measurements
- Auto shutoff conserves the power of four AAA batteries
- Portable field case keeps everything handy
- IP67 waterproof-rated housing
- 2-year meter warranty



Coming Soon



AQ3070 Chlorine Meter

Measures free and total chlorine for EPA reporting

- Uses EPA-approved Orion AC4P71 Free Chlorine and AC4P72 Total Chlorine Methods for Drinking Water and Wastewater
- No light cover to worry about - just place the vial in the meter and read results
- Also works with tests for liquid pH test, chlorine dioxide and cyanuric acid levels – no need to purchase separate meters for additional tests!



Cat. No.	Description	Measuring Range	Contents
AQ3070	AQUAfast III meter - chlorine kit	See individual reagent	Meter, three 25mm sample vials, 100 powder packs of AC4P71 free chlorine, 100 powder packs of AC4P72 total chlorine, pH, batteries, vial cleaning brush, tablet tamping/stir rod, user guide and carrying case.
AC4P71	AQUAfast AC4P71 free chlorine powder packets	0.02 to 6.0 mg/L	100 tests
AC4P72	AQUAfast AC4P72 total chlorine powder packets	0.02 to 6.0 mg/L	100 tests
AC2099	Chlorine dioxide reagent tablets	0 to 11.4 mg/L	100 tests
AC3001	pH reagent, 15mL bottle	5.9 to 8.2 pH	30 tests
AC2098	Cyanuric acid reagent tablets	5 to 90 mg/L	100 tests
AC3V25	Replacement 25mm vials	—	3 vials
AC3ROD	Replacement tablet tamping/stir rod	—	1
AC3CBB	Replacement vial cleaning brush	—	1

AQ3010 Turbidity Meter

Autoranges from 0-1000 NTU for fast results

Range and Resolution	0.01 to 19.99 NTU with 0.01 NTU resolution 20.0 to 99.9 NTU with 0.1 NTU resolution 100-1000 NTU with 1 NTU resolution
Accuracy	+/- 2% of reading +/- 1 LSD for 0-500 NTU +/- 3% of reading +/- 1 LSD for 501-1000 NTU
Repeatability	Greater of +/- 0.01 NTU or +/- 1% of reading
Response Time	< 6 seconds
Included Calibration Standards	0.02, 20.0, 100, and 800 NTU

- Uses Nephelometric principle with 90° detection
- Easy autocalibration with selectable number of points
- Meets ISO 7027 standards
- Consistent light source for greater accuracy
- Easy vial indexing with continuous measurement mode for high sample quantities
- Take over 1200 readings on four AAA batteries



Cat. No.	Description	Contents
AQ3010	AQUAfast III turbidity meter kit	Meter; set of EPA-approved, polymer-based primary turbidity standards; batteries; light shield cover; three vials; lint-free cloth; silicone oil and user guide.
AC301S	Replacement set of EPA-approved polymer-based primary turbidity standards	One bottle each of 0.02, 20.0, 100, and 800 NTU standards; 4 vials
AC3SIL	Replacement silicone oil and cloth	1 bottle of silicone oil and one cloth
AC3V25	Replacement 25mm vials	3 vials with caps
AC3ROD	Replacement tablet tamping stir rod	1
AC3CBB	Replacement vial cleaning brush	1

Thermo Scientific Orion AQUAfast III

Thermo Scientific Orion COD Test System

COD testing correlated to BOD readings can save time and money

- Ideal for environmental and wastewater monitoring
- Three ranges for COD reagents
- New COD reagent 150-vial packs for added convenience
- COD Reactor can digest up to 25 samples simultaneously in 2 hours or less
- Works with the AQUAfast IV advanced colorimeter or the new low-cost AQ2040 colorimeter kit

Just add the sample to the COD vial, digest sample in the reactor and read results with the AQUAfast IV colorimeter or by using the AQUAfast II AQ2040.



The AQUAfast IV AQ4000 Offers:

- 189 preprogrammed methods
- Thermo Scientific Orion Auto-ID for automatic method selection and set-up by the colorimeter
- Storage for up to 10 customer methods with 5 data points each
- Datalogging for 100 points with time and date stamp
- RS232 interface
- Compatibility with 13-, 16- and 24-mm diameter cuvettes
- IP67-waterproof housing
- 2-year warranty

The AQUAfast II AQ2040 Offers:

- Low-cost, dedicated colorimeter design for COD testing
- Compatibility with 25-mm diameter vials
- IP67-waterproof housing
- 2-year warranty



Select One Meter			Cat. No.
AQUAfast IV advanced colorimeter			AQ4000
AQUAfast II dedicated COD meter			AQ2040
Order Digester			
AQUAfast thermoreactor for digestion methods			COD125
Select Your Test Reagents by Range and Quantity			
Range	# of Vials	EPA-Approved Method	
0-150 ppm	25	Yes	CODL00
0-150 ppm	150	Yes	CODL00B
0-1500 ppm	25	Yes	CODH00
0-1500 ppm	150	Yes	CODH00B
0-15000 ppm	25	No	CODHP0
0-15000 ppm	150	No	CODHP0B
Select a Standard			
AQUAfast 1000 ppm COD standard, 475mL			CODS01
AQUAfast 10000 ppm COD standard, 475mL			CODS10



The AQUAfast IV colorimeter supports additional tests, including chlorine, fluoride and ammonia.

Visit www.thermo.com/water for more information and the complete reagent list.

Colorimeter Advantages

Colorimeters quickly provide the concentration value of a parameter based on a preprogrammed calibration curve. The results do not need to be interpreted by the user, unlike test strips and color comparator tests.

This publication only contains a few of the Thermo Scientific Orion products.

Please visit www.thermo.com/water for more information and a complete product listing, including:

- The complete line of Orion Star™ Plus series meters
- pH electrodes and ion selective electrodes to meet any application or budget
- BOD AutoEZ®
- Autosamplers to interface with the Star Plus meters for high output
- Process monitors for all your difficult measurements, including the 2100 ROSS pH industrial series



Looking for warranty information, additional specifications or our terms and conditions?

Please visit www.thermo.com/water.

Our website also includes updates on the latest product offerings, news, access to our applications and technical resources and much more!

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013020MD	Conductivity Cell, 6m Cable, K=0.475	900062	Chloride Fill Solution, 5 x 60mL Bottles
087001	Replacement RDO Optical Cap	900200	DJ, Sure-Flow Reference Electrode
087002	Stainless Steel RDO Probe Guard	920707	100ppm N Standard, 475mL Bottle
087003	Calibration Sleeve for RDO Probes	930710	Nitrate ISA, 475mL Bottle
087010MD	RDO Probe, 3m Cable	940011	Chloride ISA, 475mL Bottle
087020MD	RDO Probe, 6m Cable	940909	TISAB II, Fluoride ISA, 1 Gallon Container
087030MD	RDO Probe, 10m Cable	940911	TISAB III, Fluoride ISA, 475mL Bottle
087050MD	RDO Probe, 15m Cable	941609	Sulfide ISA, 4 x 475mL Bottles
087100MD	RDO Probe, 30m Cable	941707	100 ppm Cl ⁻ Standard, 475mL Bottle
1213300	3-Star RDO Portable Meter Only	951011	HP Ammonia ISE, Low-level ISA, 475mL
1213301	3-Star RDO Meter with 3m Probe	951209	HP Ammonia ISE Fill Solution, 60mL
1213302	3-Star RDO Meter with 6m Probe	951211	HP Ammonia ISE, ISA, 475mL
1213310	4-Star pH/RDO Portable Meter Only	951215	HP Ammonia ISE Body & Membrane, 3/pk
1213311	4-Star pH/RDO Meter with 3m Probe	977007	100 ppm Cl ₂ Standard, 475mL Bottle
1213312	4-Star pH/RDO Meter with 6m Probe	977010	Chlorine ISA, 5 x 50mL Bottles
1213320	5-Star pH/Cond/RDO Meter Only	9307BNWP	Nitrate Half-Cell ISE
1213321	5-Star pH/Cond/RDO with 3m Probe	9409BN	Fluoride Half-Cell ISE
1213322	5-Star pH/Cond/RDO with 6m Probe	9512HP01	HP Ammonia ISE, US Standard, 1m Cable
9107WLMMD	pH/ATC Triode, 6m Cable, Epoxy Body	9512HPBNWP	HP Ammonia ISE, BNC, 1m Cable
9107VMMMD	pH/ATC Triode, 3m Cable, Epoxy Body	9609BNWP	Fluoride ionplus Combination ISE
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096019	Stirrer Probe with Paddle	011005	Cond/TDS Standard, 111mS/cm, 5x60mL
2115000	Orion DUAL STAR pH/ISE Meter Only	011006	Cond/TDS Standard, 12.9mS/cm, 5x60mL
2115101	Orion DUAL STAR and ROSS Ultra	011007	Cond/TDS Standard, 1413uS/cm, 5x60mL
2115001	Orion DUAL STAR pH/ISE Meter Kit	011008	Cond/TDS Standard, 100uS/cm, 5x60mL
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1010102	4-Star pH/ISE Ammonia ISE DW Kit	810001	ROSS pH Electrode Storage Sol'n, 475mL
1010103	4-Star pH/ISE Fluoride ISE DW Kit	810007	3M KCl Electrode Filling Solution, 5x60mL
1010109	4-Star pH/ISE Ammonia ISE VWP Kit	910199	All-in-One pH Buffer Kit
1115000	4-Star pH/ISE Benchtop Meter Only	8157BNU	ROSS Ultra Triode, Epoxy, 1m, A+ Meters
1115001	4-Star pH/ISE Benchtop, ROSS Ultra	8157BNUMD	ROSS Ultra Triode, Epoxy, 1m, Star Meters
1215000	4-Star pH/ISE Portable Meter Only	8157UWMMMD	ROSS Ultra Triode, Epoxy, 3m, Star Meters
1215001	4-Star pH/ISE Portable Meter Kit	8165BNWP	ROSS Sure-Flow, Epoxy, 1m Cable
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1112000	3-Star pH Benchtop Meter Only	AC2098	Cyanuric Acid Reagent Tablets
1112001	3-Star pH Benchtop, Triode & Sol'n's	AC2099	Chlorine Dioxide Reagent Tablets
1112003	3-Star pH BT, ROSS Ultra & Sol'n's	AC3001	pH Reagent for AQ3070, 15 mL
1112104	3-Star pH Benchtop Meter and Triode	AC301S	Repl EPA-approved Turbidity Standard Kit
1212000	3-Star pH Portable Meter Only	AC3C8R	Repl Vial Cleaning Brush
1212001	3-Star pH Portable Triode Meter Kit	AC3ROD	Repl Tablet Tamping/Stir Rod
1212002	3-Star pH Portable No Cal Meter Kit	AC3SIL	Replacement Silicone Oil and Cloth
1212101	3-Star pH Portable Meter and Triode	AC3V25	Replacement 25mm Vials, Pack of 3
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1114000	3-Star Conductivity BT Meter Only	AC4P71	Free Chlorine Reagent Powder Pckts
1114001	3-Star Cond BT, DuraProbe & Stnds	AC4P72	Total Chlorine Reagent Powder Pckts
1114002	3-Star Cond BT, Probe with Flow Cell	AQ3010	AQUAfast III Turbidity Meter Kit
1214000	3-Star Cond Portable Meter Only	AQ3070	AQUAfast III Chlorine Kit
1214001	3-Star Cond Portable DuraProbe Kit	Page 16	
1214003	3-Star Cond Portable 3m Probe Kit	AQ2040	AQUAfast II Colorimeter
Page 9		AQ4000	AQUAfast IV Colorimeter
810001	ROSS pH Electrode Storage Sol'n, 475mL	COD125	AQUAfast Thermoreactor
810007	3M KCl Electrode Filling Solution, 5x60mL	CODH00	COD Reagent, 0-1500ppm, 25/pk
910199	All-in-One pH Buffer Kit	CODH00B	COD Reagent, 0-1500ppm, 150/pk
8157BNU	ROSS Ultra Triode, Epoxy, 1m, A+ Meters	CODHPO	COD Reagent, 0-15000ppm, 25/pk
8157BNUMD	ROSS Ultra Triode, Epoxy, 1m, Star Meters	CODL00	COD Reagent, 0-150ppm, 25/pk
8157UWMMMD	ROSS Ultra Triode, Epoxy, 3m, Star Meters	CODL00B	COD Reagent, 0-150ppm, 150/pk
8165BNWP	ROSS Sure-Flow, Epoxy, 1m Cable	CODS01	AQUAfast 1000 ppm COD Standard
8172BNWP	ROSS Sure-Flow, Glass, 1m Cable	CODS10	AQUAfast 10000 ppm COD Standard
8257BNU	ROSS Ultra Triode, Epoxy, 1m, PerpHecT	Page 17	
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9107APMD	AquaPro Triode, Double, Epoxy	AQ2040	AQUAfast II Colorimeter
9135APWP	AquaPro, Double, Epoxy, Flat Surface	AQ4000	AQUAfast IV Colorimeter
9156APWP	AquaPro, Double, Epoxy	COD125	AQUAfast Thermoreactor
GD9106BNWP	Green Electrode, Dbl, Gel, Epoxy	CODH00	COD Reagent, 0-1500ppm, 25/pk
GD9156BNWP	Green Electrode, Dbl, Refill, Epoxy	CODH00B	COD Reagent, 0-1500ppm, 150/pk
GS9106BNWP	Green Electrode, Single, Gel, Epoxy	CODHPO	COD Reagent, 0-15000ppm, 25/pk
GS9156BNWP	Green Electrode, Single, Refill, Epoxy	CODL00	COD Reagent, 0-150ppm, 25/pk
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040906	1ppm F ⁻ /TISAB II Standard, 475mL Btl	AQ2040	AQUAfast II Colorimeter
900001	Fluoride Half-Cell Fill Solution, 5x50mL Btl	AQ4000	AQUAfast IV Colorimeter
9000046	Nitrate ionplus Fill Solution, 5x60mL Btl	COD125	AQUAfast Thermoreactor
9000061	Fluoride/Sulfide ionplus ISEs Fill Solution, 5x60mL Btl	CODH00	COD Reagent, 0-1500ppm, 25/pk
		CODH00B	COD Reagent, 0-1500ppm, 150/pk
		CODHPO	COD Reagent, 0-15000ppm, 25/pk
		CODL00	COD Reagent, 0-150ppm, 25/pk
		CODL00B	COD Reagent, 0-150ppm, 150/pk
		CODS01	AQUAfast 1000 ppm COD Standard
		CODS10	AQUAfast 10000 ppm COD Standard

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