Thermo Scientific Orion Meter Overview

Meters you can count on to deliver accurate, reliable data



Orion DUAL STAR™



Thermo Scientific Orion Star™ Series

- Bright displays and reference guide attached to each meter
- SMART STABILITY™ and SMART AVERAGING™ functions for optimized results
- Store readings with time and date stamp
- The RS232 connection allows for easy data downloading and analysis
- Waterproof design for portable meters
- Universal power adapter for worldwide operation included with benchtop meters
- CE, CSA, TUV, UL and FCC Class A limits approvals
- 3 year meter replacement warranty

Thermo Scientific Orion PerpHecT[®] LogR™

- Obtain temperature-compensated readings with any pH electrode – no ATC or 3-in-1 electrode needed, no temperature connection compatibility questions
- CE, CSA and UL approvals

Thermo Scientific Orion Intrinsically Safe

- Waterproof and portable
- Approved to meet US intrinsically safe specifications



5-Star, 4-Star and 3-Star meters are now Star Plus meters with the following bonuses:

- Improved stability algorithm for increased calibration and measurement accuracy
- Average slope and slope of segment printed with measurement
- More datalog points with the ability to turn off datalogging function
- Temperature calibration capabilities
- Increased dissolved oxygen benefits including:
 - separate solution and membrane temperature display
 - printouts containing DO slope and separate temperature information
 - BOD stirrer control on benchtop units
- Enhanced conductivity features such as:
 - expanded reference temperature options
 - cell constant entry up to 3 decimal points
 - temperature compensation to 0.01 resolution
- Stirrer probe control (AutoStirrer) and autosampler interface on benchtop meters

Our newest additions:

3-Star pH benchtop meter

Thermo Scientific Orion DUAL STAR™

- Benchtop meter with an adjustable backlight display
- Toggle between simultaneous dual channel display or single channel display
- Five language choices English, Spanish, French, German and Italian
- Informative meter prompts to make this an easy-to-use, advanced meter
- EZ Startup[™] and shortcut keys for easy access to meter set-up and features
- Works great for ISE readings with incremental methods and low concentration range features
- Direct stirrer probe control from the meter

Thermo Scientific Orion Star Series RDO®

- Optical dissolved oxygen technology
- No need for membranes or electrolyte
- Waterproof, portable meter design
- Built-in barometric for automatic pressurecorrected readings



Looking for the Right Thermo Scientific Orion Star™ Meter for Your Job?

Location	Job	Ideal Candidate	Applicant	Resume Highlights
Educational facility or cost-conscious laboratory	Part-time position Measure pH from clean samples Work with multiple users with little lab experience	Easy to work with Not a lot of training to get started	Thermo Scientific Orion 2-Star Meter Cat. No. 1111208 Page 68	Includes pull-out reference guide 3 point pH calibration Brings low-maintenance, epoxy-body pH/ATC electrode with TRIS compatible experience
QA/QC laboratory with accuracy needs	Full-time position Measure pH from samples containing protein/sulfides Involved in product testing and quality batch testing	0.001 pH resolution Temperature calibration capabilities Future growth opportunity to work with an autosampler	Thermo Scientific Orion 3-Star Plus pH Meter Cat. No. 1112001 Pages 62-63	Able to fulfill all requirements of the ideal candidate Brings a ROSS Ultra [®] pH/ATC Triode™ electrode, pH buffers and electrode stand – ready to start on day 1
Research laboratory	Full-time position Need to measure pH from a variety of samples Work with various stages of product samples Joint project with ISE periodically	0.001 pH resolution Handles ionic species of even low concentrations Future growth opportunity to work with an autosampler	Thermo Scientific Orion 4-Star Plus pH/ISE Meter Cat. No. 1115001 Pages 56-57	Meets all requirements of the ideal candidate Able to support ISEs and work with autosampler as need arises Temperature calibration capabilities Arrives ready to measure pH with a ROSS Ultra refillable glass pH electrode, epoxy ATC probe, pH buffers and electrode stand
Wastewater laboratory	Full-time position Measure pH and ammonia from samples throughout the treatment plant at the same time	Good multitasker Attention to detail Easy to work with and quickly shares information May be involved in	Thermo Scientific Orion DUAL STAR pH/ISE Meter Cat. No. 2115001 Pages 48-49	Displays results from 2 channels simultaneously Data storage for up to 1000 points and 20 total methods with calibrations Screen prompts and hot buttons for quick access to popular meter functions
Research laboratory	Full-time position Measure pH and various ionic species from samples at different testing stages Involved in product developmental, trial testing and quality batch testing	complex calculations involving known addition/subtraction		Able to handle single and double known addition/subtraction methods This candidate has it all: ROSS Ultra refillable pH glass electrode, stainless steel ATC probe, electrode stand, RS232 cable and buffers
Wastewater plant or watershed, river, lake or stream	Full-time position Measure dissolved oxygen from multiple sampling locations	Travel 75% + of the time Able to handle itself in water environments Low-maintenance and durable	Thermo Scientific Orion 3-Star RDO Meter Cat. No. 1213302 Pages 50-51	DO probe uses no membranes or electrolyte Stores up to 1000 data sets with time and date stamp Has its own barometer for automatic pressure-compensated DO readings 6 meter probe cable length reaches far and included case keeps it all together
Watershed, river, lake, stream or estuary	Full-time position Measure pH, DO, conductivity and temperature from a variety of locations	Travel 75% + of the time Multitasker a must Able to handle itself in water environments Low-maintenance and durable	Thermo Scientific Orion 5-Star pH/RDO/ Conductivity Meter Cat. No. 1213322 Pages 50-51	IP67 rated with 6 meter cable length probes pH electrode includes temperature sensor and is low maintenance DO probe uses no membranes or electrolyte Automatic salinity correction of DO readings with the conductivity probe Stores up to 500 results Well organized – comes with a carrying case and ready to work

Thermo Scientific Orion Meter Selection Guide

Series					Orion Star™				
Model	DUAL STAR	5-Star Plus	5-Star Plus	5-Star Plus	4-Star Plus	4-Star Plus	4-Star Plus	4-Star Plus	3-Star Plus
Parameters	pH/ORP/ISE	pH/ORP/ISE/ Cond/DO	pH/ORP/ Cond/RDO	pH/ORP/ Cond/DO	pH/ORP/ISE	pH/ORP/Cond	pH/ORP/RDO	pH/ORP/DO	pH/ORP
Page(s) in Catalog	48-49	54-55	50-51	52-53	56-57	58-59	50-51	60-61	62-63
Portable Design		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Benchtop Design	\checkmark	\checkmark			\checkmark	\checkmark		\checkmark	\checkmark
рН	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999	-2.000 to 19.999
mV/Rel mV/ORP	± 1999.9	± 1999.9	± 1999.9	± 1999.9	± 1999.9	± 1999.9	± 1999.9	± 1999.9	± 1999.9
ISE	0 to 19,999	0 to 19,999			0 to 19,999				
Conductivity		0.000 to 3000 mS	0.000 to 3000 mS	0.000 to 3000 mS		0.000 to 3000 mS			
Resistivity		0.0001 to 100 Mohm	0.0001 to 100 Mohm	0.0001 to 100 Mohm		0.0001 to 100 Mohm			
Salinity		0.1 to 80.0 ppt NaCl	0.1 to 80.0 ppt NaCl	0.1 to 80.0 ppt NaCl		0.1 to 80.0 ppt NaCl			
TDS		0 to 19,999	0 to 19,999	0 to 19,999		0 to 19,999			
DO		0.00 to 90.0 mg/L, 0.0 to 600%		0.00 to 90.0 mg/L, 0.0 to 600%				0.00 to 90.0 mg/L, 0.0 to 600%	
RDO (Optical DO)			0.00 to 20.0 mg/L, 0.0 to 200%				0.00 to 20.0 mg/L, 0.0 to 200%		
Temperature (RDO only)			0 to 50.0 °C				0 to 50.0 °C		
Temperature	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C
Number of Electrode Pr	obe Connection	ns							
pH/ORP and where available ISE – BNC	2	1	1	1	1	1	1	1	1
Conductivity/Resistivity/ Salinity/TDS		1*	1*	1*		1*			
DO		1		1				1	
RDO			1				1		
Temperature	2	1*	1*	1*	1	1*	1	1	1
Benchtop Versions with AutoStirrer	\checkmark	\checkmark			\checkmark	\checkmark		\checkmark	\checkmark
Method Storage	20	10	10	10	10	10	10	10	10
Datalog Points	1000	500	500	500	750	750	750	750	1000
GLP	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Star/Star Plus Navigator Software	N/A	Included	N/A	Included	Optional	Optional	N/A	Optional	Optional
Outputs	RS232, USB	RS232	RS232	RS232	RS232	RS232	RS232	RS232	RS232

Orion Star™		PerpHecT [®] LogR™		Intrinsically Safe						
3-Star Plus	3-Star Plus	3-Star Plus	2-Star Plus	370	350	320	266S	261S	136S	131S
Cond	RDO	DO	pH/ORP	pH/ORP	pH/ORP	pH/mV	pH/mV	pH/mV	Cond	Cond
64-65	50-51	66-67	68	70	70	70	71	71	71	71
\checkmark	\checkmark	\checkmark					\checkmark	\checkmark	\checkmark	\checkmark
~		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark				
			0.000 to 14.999	0.000 to 14.999	0.000 to 14.000	0.000 to 14.000	-2.00 to 16.00	-2.00 to 16.00		
			± 1999.9	± 1999.9	± 1999.9	± 1999 mV only	± 1300.0 mV only	± 1300.0 mV only		
				0.000 to 19900						
0.000 to 3000 mS									0.00 to 500 mS	0.00 to 500 mS
0.0001 to 100 Mohm										
0.1 to 80.0 ppt NaCl									0 to 45.0	0 to 45.0
0 to 19,999									0 to 1999 mg/L	0 to 1999 mg/L
		0.00 to 90.0 mg/L, 0.0 to 600%								
	0.00 to 20.0 mg/L, 0.0 to 200%									
	0 to 50.0 °C									
-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	-5 to 105.0 °C	0 to 100.0 °C	0 to 100.0 °C	0 to 100.0 °C	20.0 to 120.0 °C	20.0 to 120.0 °C	20.0 to 120.0 °C	20.0 to 120.0 °C
Number of El	ectrode Probe (Connections <i>co</i>	nt.							
			1	1	1	1	1	1		
1*									1	1
		1								
	1									
1*	1	1	1	1	1	1	1	1	1	1
~		~								
10	10	10								
1000	1000	1000	50				100		100	
\checkmark	\checkmark	\checkmark					\checkmark		\checkmark	
Optional	N/A	Optional	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RS232	RS232	RS232	RS232 – printer format only	RS232, recorder output	RS232, recorder output	None	RS232	None	RS232	None

*The conductivity cell and temperature probe use the same connector. Only one can be used at a time, and there is a temperature sensor in the conductivity cell.

Thermo Scientific Orion DUAL STAR™

Dual Channel pH/ISE Benchtop Meter



Channel key toggles display to show both channels simultaneously or just one. Single channel display also shows electrode serial number, sample ID, date and time.

> Function keys update according to the menu for easy selection

Numeric keypad for select data entry in submenus

Features and Benefits

- 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
- Thermo Scientific Orion SMART STABILITY™ and SMART AVERAGING™ for accurate and fast results

- 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*
- 3 year meter replacement warranty

Making it easy to do two things at once – the Orion **DUAL STAR™ combines** the best of the Orion 720A+/ 920A+ and the Orion Star **Plus meters**



Features

CE | TUV | EPA

- 2.000 to 19.999

0.1, 0.01, 0.001

USA/NIST and EURO/DIN

1,2 or 3 significant

± 0.2 mV or 0.05%, whichever is greater

ppm, ppb, M, % or unitless

Single known addition and

Linear, point to

point, non-linear selectable auto-bank

± 0.2 or 0.05%,

whichever is greater

- 5 to 105 °C

± 0.1 °C

± 1999.9

0.1

Yes

0.1

subtraction Double known addition and subtraction

2 to 6

0 to 19999

digits

± 0.002

1 to 6

Product Specifications

Range

Relative

Points

Range

Accuracy Calibration

Auto-Buffer Recognition

Resolution

Relative

Units

Accuracy

Technique

Calibration

Points Calibration

Options

Range

Resolution

Relative

Accuracy

E_H Calibration Capability

Resolution Relative

Accuracy

Range

Options

Resolution

pН

ISE

mV • Rel mV • ORP

Temperature

Backlight	5 adjustable levels
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 (110V/220V/240V) included with meter
Warranty	36 months replacement

Benchtop Meter Kits

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 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 user guide
2115102	 Orion DUAL STAR pH/ISE meter 8157BNUMD ROSS Ultra pH/ATC Triode[™] refillable electrode RS232 cable (1010053) universal power adapter 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 4.01 buffer (910104) pint of pH 7.00 buffer (910107) pint of pH 10.01 buffer (910110) pint of ROSS[®] electrode storage solution (810001) universal power adapter

user guide

Accessories

Cat. No.	Description
096019	Thermo Scientific Orion stirrer probe with paddle
910104	pH 4.01 buffer, 475 mL
910107	pH 7.00 buffer, 475 mL
910110	pH 10.01 buffer, 475 mL

*Available as a software update for complimentary download. Visit www.thermo.com/water in December 2009.

n data)
/240V) included with meter



Thermo Scientific Orion Star RDO[®] Optical Dissolved Oxygen Meters

RDO technology meets the requirements of ASTM D888 - 05 Method C – Measuring dissolved oxygen with a luminescence-based sensor



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 Meter



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
- Data storage for 750 data sets with time and date stamping

5-Star pH/RDO/Conductivity Meter



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
- Data storage for 500 data sets with time and date stamping

Advantages of RDO optical/ luminescence-based dissolved oxygen (LDO) technology over first generation LDO technologies on the market:

- No dehydration concerns, even if the probe is not stored in the included calibration sleeve
- Superior abrasion and chemical resistance
- Stored data in the RDO optical/luminescence-based cap – no codes to enter or match up

Features and Benefits for All Versions

- Dissolved oxygen level measurements using optical/ luminescence-based dissolved oxygen (LDO) technology
- No membranes to change once-a-year cap replacement
- Not affected by color, turbidity or sulfides
- RDO probes include calibration sleeve and stainless steel probe guard for use anywhere
- Calibrate for dissolved oxygen using water-saturated air, air-saturated water, zero point, or at a custom point with Winkler titration
- Temperature calibration capability

- 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
- 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 optical/ luminescence-based cap



3-Star, 4-Star and 5-Star Meters

Product Specifications				
DO	Concentration Range	0.00 to 20.0 mg/L		
	Resolution	0.1, 0.01 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/luminescence-based		
Temperature	Range	0 to 50 °C		
	Resolution	0.1 °C		
	Relative Accuracy	± 0.3 °C		

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

4-Star and 5-Star Meters

Product Specifications				
pН	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 reading, whichever is greater		
Temperature	Range	-5 to 105 °C		
(RDO probe not used)	Resolution	0.1 up to 99.9 °C, 1.0 over 99.9 °C		
	Relative Accuracy	± 0.1 °C		

5-Star Meters

Product Specifications			
Conductivity	Range	0.000 to 3000 mS/cm, auto resolution, cell constant dependent	
	Resolution	4 significant digits down to 0.001 $\mu\text{S/cm},$ cell constant dependent	
	Relative Accuracy	0.5 % \pm 1 digit or 0.01 $\mu\text{S/cm},$ 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	0.1 ppt	
	Relative Accuracy	± 0.1 ± 1 digit	
TDS	Range	0 to 19999 mg/L	
	Resolution	1 mg/L	
	Relative Accuracy	± 0.5% ± 1 digit	

M	eters	On	V
	CLCIS		LY.

CE | CSA | EPA*

Cat. No.	Description
1213300	3-Star RDO meter, batteries and user guide
1213310	4-Star pH/RDO meter, batteries and user guide
1213320	5-Star pH/RDO/Conductivity meter, batteries and user guide

Portable Meter Kits

Cat. No.	Description
1213301	3-Star RDO portable meter, RDO probe with 3 meter cable, stainless steel RDO probe guard, optical/luminescence-based cap, calibration sleeve, batteries and user guide
1213302	3-Star RDO portable meter, RDO probe with 6 meter cable, stainless steel RDO probe guard, optical/luminescence-based cap, calibration sleeve, carrying case, batteries and user guide
1213311	4-Star pH/RDO portable meter, RDO probe with 3 meter cable, stainless steel RDO probe guard, optical/luminescence-based cap, calibration sleeve, pH/ATC Triode™ with 3 meter cable (9107WMMD), batteries and user guide
1213312	4-Star pH/RDO portable meter, RDO probe with 6 meter cable, stainless steel RDO probe guard, optical/luminescence-based cap, calibration sleeve, pH/ATC Triode with 6 meter cable (9107WLMD), carrying case, batteries and user guide
1213321	5-Star pH/RDO/Cond portable meter, RDO probe with 3 meter cable, stainless steel RDO probe guard, optical/luminescence- based cap, calibration sleeve, pH/ATC Triode with 3 meter cable (9107WMMD), DuraProbe ^M 4-electrode conductivity cell with 3 meter cable (013010MD), batteries and user guide
1213322	5-Star pH/RDO/Cond portable meter, RDO probe with 6 meter cable, stainless steel RDO probe guard, optical/luminescence- based cap, calibration sleeve, pH/ATC Triode with 6 meter cable (9107WLMD), DuraProbe 4-electrode conductivity cell with 6 meter cable (013020MD), carrying case, batteries and user guide

Accessories

USP

Cat. No.	Description
087001	Replacement optical/luminescence-based cap
087010MD	RDO optical/luminescence-based probe with 3 meter cable, stainless steel guard, calibration sleeve and optical/ luminescence-based cap
087020MD	RDO optical/luminescence-based probe with 6 meter cable, stainless steel guard, calibration sleeve and optical/ luminescence-based cap
087030MD	RDO optical/luminescence-based probe with 10 meter cable, stainless steel guard, calibration sleeve and optical/ luminescence-based cap
087050MD	RDO optical/luminescence-based probe with 15 meter cable, stainless steel guard, calibration sleeve and optical/ luminescence-based cap
087100MD	RDO optical/luminescence-based probe with 30 meter cable, stainless steel guard, calibration sleeve and optical/ luminescence-based cap
087002	Replacement stainless steel RDO optical/luminescence- based probe guard
087003	Calibration sleeve for RDO optical/luminescence-based probes
9107WMMD	pH/ATC Triode, 3 meter cable, epoxy body, low-maintenance gel
9107WLMD	pH/ATC Triode, 6 meter cable, epoxy body, low-maintenance gel
013010MD	DuraProbe conductivity cell, 4-electrode, 3 meter cable, K=0.475 \mbox{c}^{m-1}
013020MD	DuraProbe conductivity cell, 4-electrode, 6 meter cable, K=0.475 $c^{m\cdot 1}$

For technical information about RDO optical/luminescencebased dissolved oxygen (LDO) technology; see page 40

рН	
ISE	
ORP	
Cond	
DO	
Temp	

Thermo Scientific Orion 5-Star Plus

pH/ORP/Conductivity/Dissolved Oxygen Portable Meter



One meter to measure a variety of parameters at once – from a field, stream or any environment

Features and Benefits

- Simultaneous display of pH, mV or ORP; conductivity; dissolved oxygen and temperature measurements on the backlit LCD
- The 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
- 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
- Built-in barometer for automatic pressure correction with option of manual correction for dissolved oxygen measurements
- Automatic salinity correction for dissolved oxygen measurements from the conductivity probe reading

- Separate dissolved oxygen membrane and solution temperature displays and calibrations
- Full complement of GLP-related features including Star Plus Navigator 21 software
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures
- Data storage for 500 data sets with time and date stamping
- RS232 port for easy data downloading and software updates
- IP67-rated housing for waterproof and dustproof protection
- Four AA batteries deliver over 2,000 hours of continuous operation
- 3 year meter replacement warranty

Accessories

Field Cases

page 72

Going out? Keep your meter and supplies ready to move with our hard and soft field cases. Perfect for making accurate measurements where you need them.



CE UL CSA TUV USP EPA

Product Specifications			
рН	Range	- 2.000 to 19.999	
	Resolution	0.1, 0.01, 0.001	
	Relative Accuracy	± 0.002	
mV • Rel mV • ORP	Range	± 1999.9	
	Resolution	0.1	
	Relative Accuracy	± 0.2 or 0.05%, whichever is greater	
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	$0.5\% \pm 1$ 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 80.0 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	
DO	Range	0.00 to 90.0 mg/L	
	Resolution	0.1, 0.01 mg/L	
	Relative Accuracy	± 0.2 mg/L	
	% Saturation Range	0.0 to 600 %	
	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	Polarographic	
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	

Meters Only

Cat. No.

Portable Meter Kits

Package

Cat. No.	Sensor (s)	Accessories and Solutions
1218001	 9107WMMD low maintenance epoxy pH/ATC Triode[™] electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 013010MD DuraProbe[™] conductivity cell, K = 0.475, includes 3 meter cable, 1 µS/cm to 200 mS/cm 	 Meter impact jacket with electrode storage chamber Beaker Star Plus Navigator 21 software with RS232 computer cable pH electrode storage solution (5 × 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 × 15 mL pouches) DO probe maintenance kit (080513) Protective probe guard 1413 µS/cm conductivity standard (10 × 15 mL pouches) Hard field case
1218501	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 013010MD DuraProbe conductivity cell, K = 0.475, includes 3 meter cable, 1 µS/cm to 200 mS/cm 	 Meter impact jacket with electrode storage chamber Beaker Star Plus Navigator 21 software with RS232 computer cable pH electrode storage solution (5 × 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 × 15 mL pouches) DO probe maintenance kit (080513) Protective probe guard 1413 µS/cm conductivity standard (10 × 15 mL pouches) Soft field case

1218000 Includes portable meter, batteries and user guide

pH ISE ORP Cond DO

Temp

Thermo Scientific Orion 5-Star Plus

pH/ORP/ISE/Conductivity/Dissolved Oxygen Meters



Features and Benefits

One meter with all the parameters, including ISE, to handle every application in the field, the lab, the



production floor, anywhere

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Stirrer Probe

Mix your sample without a separate stirrer and don't worry about a stir bar. The Thermo Scientific Orion stirrer probe connects directly to the Star Plus benchtop meters for sample mixing the easy way.

page 25

- Simultaneous display of pH, mV, ORP or ISE; conductivity; dissolved oxygen and temperature measurement on the backlit LCD
- The 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
- 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
- Built-in barometer for automatic pressure correction with option of manual correction for dissolved oxygen measurements
- Automatic salinity correction for dissolved oxygen measurements from the conductivity cell reading

- Separate dissolved oxygen membrane and solution temperature displays and calibrations
- Full complement of GLP-related features including Star Plus Navigator 21 software
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures
- Data storage for 500 data sets with time and date stamping
- RS232 port for easy data downloading and software updates
- Benchtop units can control an autosampler and the 096019 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 2000 hours on 4 AA batteries
- 3 year meter replacement warranty



CE | UL | CSA | TUV | USP | EPA

B 1 1 0 1 0		
Product Specific		2 000 to 10 000
pH	Range Resolution	- 2.000 to 19.999 0.1, 0.01, 0.001
	Relative	± 0.002
	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
	Resolution	0.1
	Relative Accuracy	± 0.2 or 0.05%, whichever is greater
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
		0.5% \pm 1 digit or 0.01 μ S/ 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 80.0 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
DO	Concentration Range	0.00 to 90.0 mg/L
	Resolution	0.1, 0.01 mg/L
	Relative Accuracy	± 0.2 mg/L
	% Saturation Range	0.0 to 600 %
	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	Polarographic
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

Meters Only

Cat. No.	Package
1119000	Includes benchtop meter, universal power and user guide
1219000	Includes portable meter, batteries and user guide

Benchtop Meter Kits

Cat. No.	Sensor(s)	Accessories and Solutions
1119001	 8102BNUWP ROSS Ultra[®] refillable glass pH electrode 927005MD epoxy ATC probe 081010MD DO probe with 3 meter cable 013605MD DuraProbe[™] conductivity cell, K = 0.55, 10 µS/cm to 200 mS/cm 	 Star Plus Navigator 21 software with RS232 computer cable Swing arm electrode stand pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles) DO calibration sleeve BOD reservoir, stirrer and adapter DO probe maintenance kit (080113) 1413 µS/cm conductivity standard (5 x 60 mL bottles)
1010152	 8102BNUWP ROSS Ultra refillable glass pH electrode 013016MD conductivity cell, K = 0.1, includes flow cell, 0.01 μS/cm to 300 μS/cm 096019 stirrer probe 	 Conductivity calibration resistor kit Star Plus Navigator 21 software with RS232 computer cable Swing arm electrode stand pH electrode storage solution (5 x 60 mL bottles) ROSS electrode filling solution (5 x 60 mL bottles) pH 4.01, 7.00, and 10.01 buffers (pint bottles) 100 µS/cm conductivity standard (5 x 60 mL bottles) Method Note - Water Conductivity USP 645
1119201	 8102BNUWP ROSS Ultra refillable glass pH electrode 927005MD Epoxy ATC probe 081010MD DO probe with 3 meter cable 013005MD DuraProbe Conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm 	 Star Plus Navigator 21 software with RS232 computer cable Swing arm electrode stand DO calibration sleeve BOD reservoir, stirrer and adapter DO probe maintenance kit (080113)

Portable Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1219001	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 013010MD DuraProbe conductivity cell, K = 0.475, includes 3 meter cable, 1 μS/cm to 200 mS/cm 	 Beaker Meter impact jacket with electrode storage chamber Star Plus Navigator 21 software with RS232 computer cable pH electrode storage solution (5 × 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 × 15 mL pouches) Protective probe guard DO probe maintenance kit (080513) 1413 µS/cm conductivity standard (10 × 15 mL pouches) Hard field case
1219101	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 013010MD DuraProbe conductivity cell, K = 0.475, includes 3 meter cable, 1 µS/cm to 200 mS/cm 	 Meter impact jacket with electrode storage chamber Star Plus Navigator 21 software with RS232 computer cable DO probe maintenance kit (080513)

Temp

Thermo Scientific Orion 4-Star Plus

pH/ISE Meters





Features and Benefits

- Simultaneous display of pH, mV or ISE and temperature measurements on the backlit LCD
 - The 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 096019 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

Ideal for optimum ISE measurements from any sample



Star Plus Navigator Software page 69

Thermo Scientific Orion Star Plus Navigator software makes it easy to interface your meter with the computer. Generate real-time data graphs, download meter data with one click and perform data analysis the easy way. The data security are ideal for meeting FDA 21 CFR Part 11 compliance

CE | UL | CSA | TUV | EPA

Product Specifications			
рН	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	
	Resolution	0.1	
	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	

Meters Only

Cat. No.	Package
1115000	Includes benchtop meter, universal power and user guide
1215000	Includes portable meter, batteries and user guide

Benchtop Meter Kits

Sensor (s)	Accessories and Solutions
 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)
 9172BNWP Sure-Flow[®] refillable glass pH electrode 927005MD epoxy ATC probe 	 Swing arm electrode stand pH 4.01, 700, and 10.01 buffers and pH electrode storage solution (pint bottles)
 8611BNWP ROSS[®] sodium ion selective electrode 	 Sodium standards and solutions (pint bottles) Swing arm electrode stand
 9512HPBNWP ammonia ion selective electrode 096019 stirrer probe 	 Ammonia standards and solutions (pint bottles) Swing arm electrode stand Method Note - Ammonia in Wastewater
 9609BNWP fluoride ion selective electrode 096019 stirrer probe 	 Fluoride standards and solutions (pint bottles) Swing arm electrode stand Method Note - Fluoride in Drinking Water
 9707BNWP nitrate ion selective electrode 096019 stirrer probe 	 Nitrate standards and solutions (pint bottles) Swing arm electrode stand Method Note - Nitrate in Drinking Water
 9512HPBNWP ammonia ion selective electrode 096019 stirrer probe 	 Ammonia standards and solutions (pint bottles) Swing arm electrode stand Method Note - Ammonia in Drinking Water
	 8102BNUWP ROSS Ultra® refillable glass pH electrode 927005MD epoxy ATC probe 9172BNWP Sure-Flow® refillable glass pH electrode 927005MD epoxy ATC probe 8611BNWP ROSS® sodium ion selective electrode 9512HPBNWP ammonia ion selective electrode 9609BNWP fluoride ion selective electrode 9609BNWP fluoride ion selective electrode 9609BNWP fluoride ion selective electrode 9609BNWP fluoride ion selective electrode 960019 stirrer probe 9707BNWP nitrate ion selective electrode 996019 stirrer probe 9512HPBNWP ammonia ion selective electrode

Portable Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1215001	 9107BNMD low maintenance epoxy 	 pH electrode storage solution (5 x 60 mL bottles)
	pH/ATC Triode [™] electrode	 pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches)
		Hard field case
1215501	 9107BNMD low maintenance epoxy 	 pH electrode storage solution (5 x 60 mL bottles)
	pH/ATC Triode electrode	 pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches)
		Soft field case
A Circlificate becaute a shutter. Can target and any ditions for		

 $\textcircled{\ }$ Signifies a hazardous solution. See terms and conditions for important shipping information at www.thermo.com/water.

рН
ISE
IJL
ORP
Canad
Cond
DO
Tomp
Temp

Thermo Scientific Orion 4-Star Plus

pH/Conductivity Meters





Features and Benefits

Measure pH and conductivity with one meter, whether it's for water quality or pharmacology

Accessories

USB Adapter

er

page 72

Do you have plenty of USB ports, but no open COM ports? The RS232 to USB cable adapter 1010005 can be used to download data from your meter to your computer through a USB connection.

- Simultaneous display of pH, conductivity and temperature measurements on the backlit LCD
- The Thermo Scientific Orion SMART STABILITY[™] and SMART AVERAGING[™] functions for automatically optimized accuracy, precision and response time
- Meet all U.S. Pharmacopeia (USP) requirements
- Temperature calibration capability
- pH calibration of up to 5 points with calibration alarm and automatic buffer recognition of USA, NIST and DIN buffers
- Conductivity / TDS / salinity / resistivity calibration of up to 5 points with reading reference temperatures at 5 °C, 10 °C, 15 °C, 20 °C or 25 °C
- Compatible with 2-electrode
 and 4-electrode conductivity
 cells

- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures
- Datalog up to 750 points with time and date stamp
- Average slope and slope of segment printed with pH measurements
- RS232 port for easy data downloading and software updates
- Benchtop units can control an autosampler and the 096019 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

CE | UL | CSA | TUV | USP | EPA

PH Range - 2.000 to 19.99 Resolution 0.1, 0.01, 0.001 Relative Accuracy ± 0.002 MV • Rel mV • (RPP Range ± 1999.9	Э
Relative ± 0.002 Accuracy ± 1999.9	
Accuracy mV • Rel mV • Range ± 1999.9	
UNF	
Resolution 0.1	
Relative ± 0.2 or 0.05%, Accuracy whichever is greater	
Conductivity Range 0.000 to 3000 m cm, auto resolut with cell constant dependence	ion
Resolution 4 significant digi down to 0.001 µ cm, cell constan dependent	S/
Relative 0.5% ± 1 digit o Accuracy 0.01 µS/cm, whichever is greater	r
Cell 0.001 to 199.9 c Constants	m ⁻¹
Resistivity Range 0.0001 to 100 Megohm	
Resolution Automatic	
Relative 0.5 % ± 1 digit Accuracy	
Salinity Range 0.1 to 80.0 ppt N equivalent, 0.1 to 42 ppt practical salinity	laCl
Resolution 0.1	
Relative ± 0.1 ± 1 digit Accuracy	
TDS Range 0 to 19999	
Resolution 1 mg/L	
Resolution 1 mg/L Relative Accuracy ± 0.5 % ± 1 dig	t
Relative ± 0.5 % ± 1 dig	t
Relative ± 0.5 % ± 1 digi	

Meters Only

Cat. No.	Package
1117000	Includes benchtop meter, universal power and user guide
1217000	Includes portable meter, batteries and user guide

Benchtop Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1117001	 9157BNMD refillable epoxy pH/ATC Triode[™] electrode 013605MD DuraProbe[™] conductivity cell, K = 0.55, 10 µS/cm to 200 mS/cm 	 Swing arm electrode stand pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 700, 10.01 buffers (pint bottles) 1413 µS/cm conductivity standard (5 x 60 mL bottles)
1117201	 9157BNMD refillable epoxy pH/ATC Triode electrode 013005MD DuraProbe conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm 	Swing arm electrode stand

Portable Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1217001	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 013005MD DuraProbe conductivity cell, K = 0.475, 1 µS/cm to 200 mS/cm 	 pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) 1413 µS/cm conductivity standard (10 x 15 mL pouches) Hard field case
1217002	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 013010MD DuraProbe conductivity cell, K = 0.475, includes 3 meter cable, 1 μS/cm to 200 mS/cm 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) 1413 µS/cm conductivity standard (10 x 15 mL pouches) Hard field case
1217501	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 013005MD DuraProbe conductivity cell, K = 0.475, 1 µS/cm to 200 mS/cm 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 700, 10.01 buffers (10 x 15 mL pouches) 1413 µS/cm conductivity standard (10 x 15 mL pouches) Soft field case
1217101	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 013005MD DuraProbe conductivity cell, K = 0.475, 1 µS/cm to 200 mS/cm 	_



Thermo Scientific Orion 4-Star Plus

pH/Dissolved Oxygen Meters



Features and Benefits

Check pH and dissolved oxygen levels at the same time from a variety of water sources



Accessories

Buffers

pages 26-27

A great calibration requires great buffers and solutions. Make sure what you are using is fresh and the correct range when you perform calibrations. Thermo Scientific Orion buffers and solutions come in a variety of points, volumes and packaging to meet your quality needs.

- Simultaneous display of pH, dissolved oxygen and temperature measurements on the backlit LCD
- The Thermo Scientific Orion SMART STABILITY[™] and SMART AVERAGING[™] functions for automatically optimized accuracy, precision and response time
- pH calibration of up to 5 points with calibration alarm and automatic buffer recognition of USA, NIST and DIN buffers
- Salinity correction and built-in automatic barometric pressure compensation for dissolved oxygen measurements
- Separate dissolved oxygen membrane and solution temperature displays and calibrations
- Dissolved oxygen calibration to the Winkler Titration for BOD analysis
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures

- Data storage for up to 750 points with time and date stamp
- Average slope and slope of segment printed with pH measurements
- RS232 port for easy data downloading and software updates
- Portable units are waterproof with an IP67-rated housing and run for over 2,000 hours on four AA batteries
- Benchtop units can control an autosampler and the 096019 stirrer probe (*each sold separately*)
- Benchtop units are splashproof with an IP54-rated housing and include a universal power supply
- 3 year meter replacement warranty

рН

ORP

Cond

DO

Temp

CE | UL | CSA | TUV | EPA

Product Specifications		
pН	Range	- 2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
mV • Rel mV • ORP	Range	± 1999.9
	Resolution	0.1
	Relative Accuracy	± 0.2 or 0.05%, whichever is greater
DO	Concentration Range	0.00 to 90.0 mg/L
	Resolution	0.01, 0.1 mg/L
	Relative Accuracy	± 0.2 mg/L
	% Saturation Range	0.0 to 600 %
	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	Polarographic
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

Meters Only

Cat. No.	Package
1116000	Includes benchtop meter, universal power and user guide
1216000	Includes portable meter, batteries and user guide

Benchtop Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1116001	 8102BNUWP ROSS Ultra® refillable glass pH electrode 927005MD epoxy ATC probe 081010MD DO probe with 3 meter cable 	 Swing arm electrode stand pH 4.01, 7.00, and 10.01 buffers (pint bottles) DO calibration sleeve BOD reservoir, stirrer and adapter DO probe maintenance kit (080113)
1116201	 9157BNMD refillable epoxy pH/ATC Triode[™] electrode 081010MD DO probe with 3 meter cable 	 Swing arm electrode stand DO calibration sleeve BOD reservoir, stirrer and adapter DO probe maintenance kit (080113)

Portable Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1216001	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 083005MD DO probe with calibration sleeve 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) DO probe maintenance kit (080513) Protective probe guard Hard field case
1216002	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) DO probe maintenance kit (080513) Protective probe guard Hard field case
1216502	 9107WMMD low maintenance epoxy pH/ATC Triode electrode with 3 meter cable 083010MD DO probe with 3 meter cable and calibration sleeve 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00, 10.01 buffers (10 x 15 mL pouches) DO probe maintenance kit (080513) Protective probe guard Soft field case

Thermo Scientific Orion 3-Star Plus

pH Meters



Features and Benefits

- Simultaneous display of pH, mV or ORP, and temperature measurements on the backlit LCD
 - The 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 software updates
- Benchtop units can control an autosampler and the 096019 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



The ideal meter for

QA/QC testing

measuring pH in water,

process, research and

Accessories

Stirrer Probe

page 25

Mix your sample without a separate stirrer and don't worry about a stir bar. The Thermo Scientific Orion stirrer probe connects directly to the Star Plus benchtop meters for sample mixing the easy way.



CE | UL | CSA | TUV | EPA

Product Specifications		
pН	Range	- 2.000 to 19.999
	Resolution	0.1, 0.01, 0.001
	Relative Accuracy	± 0.002
mV • Rel mV • ORP	Range	± 1999.9
	Resolution	0.1
	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

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 	11120
1212002	 5107BNMD No Cal[®] refillable pH/ATC electrode 	 Beaker pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 700, 10.01 buffers (10 x 15 mL pouches) Hard field case 	11122
1212501	9107BNMD low maintenance epoxy pH/ATC Triode electrode	 Beaker Electrode storage chamber pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 700, 10.01 buffers (10 x 15 mL pouches) Soft field case 	11122 11122 11122
1212503	9179BNMD low maintenance epoxy ORP/ATC Triode electrode	 Meter impact jacket with electrode storage chamber ORP standard (5 x 60 mL bottles) Soft field case 	11122
1212101	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 	_	
1010115	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 	 Meter impact jacket with electrode storage chamber Electrode rinse solution (25 x 15 mL pouches) pH electrode storage solution (5 x 60 mL bottles) pH 4.01, 7.00 and 10.01 buffers (10 x 15 mL pouches) Soft field case Method Note - pH of Salt Water 	111200

Meters Only

Cat. No.	Package
1112000	Includes benchtop meter, universal power and user guide
1212000	Includes 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, 700, 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)
1112004	 9172BNWP Sure-Flow® refillable glass pH electrode 927007MD stainless steel ATC probe 	 Swing arm electrode stand pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles)
1112006	 8102BNUWP ROSS Ultra refillable glass pH electrode 927005MD epoxy ATC probe 	 Swing arm electrode stand pH 4.10, 6.97, and 9.15 pure water buffers and pH electrode storage solution (pint bottles) pHISA adjuster solution (5 x 60 mL bottles)
1112201	 9157BNMD refillable epoxy pH/ATC Triode electrode 	Swing arm electrode stand
1112202	 8172BNWP ROSS Sure-Flow refillable glass pH electrode 927006MD glass ATC probe 	 Swing arm electrode stand
1112203	 9156APWP AquaPro low maintenance epoxy pH electrode 	• Swing arm electrode stand
1112204	 9107BNMD low maintenance epoxy pH/ATC Triode electrode 	Swing arm electrode stand
1112205	 9156BNWP refillable epoxy pH electrode 927007MD stainless steel ATC probe 	Swing arm electrode stand
1112102	 8172BNWP ROSS Sure-Flow refillable glass pH electrode 927006MD glass ATC probe 	_
1112002	-	Swing arm electrode stand

рΗ ORP Cond Temp

Thermo Scientific Orion 3-Star Plus

Conductivity Meters





Features and Benefits

- Simultaneous display of conductivity, resistivity, TDS or salinity and temperature measurements on the backlit LCD
- The Thermo Scientific Orion SMART STABILITY[™] and SMART AVERAGING[™] functions for automatically optimized accuracy, precision and response time
- Meet all U.S. Pharmacopeia (USP) requirements
- Accept 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 of 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
- Datalog 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 096019 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



Ideal meter to help meet

USP requirements

Field Cases

page 72

Going out? Keep your meter and supplies ready to move with our hard and soft field cases. Perfect for making accurate measurements where you need them.

CE | UL | CSA | TUV | USP | EPA

Product 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	$0.5\% \pm 1$ digit or 0.01 µS/cm, whichever is greater
	Cell Constants	0.001 to 199.9
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
	Relative Accuracy	± 0.1 ± 1 digit
TDS	Range	0 to 19999
	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

Meters Only

Cat. No.	Package
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
1114003	• 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) Conductivity calibration resistor kit 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
1214004	 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) Hard field case
1214501	 013005MD DuraProbe conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm 	 1413 µS/cm conductivity standard (10 x 15 mL pouches) Soft field case
1214504	 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) Soft field case
1214101	 013005MD DuraProbe conductivity cell, K = 0.475, 1 μS/cm to 200 mS/cm 	_



Thermo Scientific Orion 3-Star Plus

Dissolved Oxygen Meters



Features and Benefits

- Simultaneous display of dissolved oxygen and temperature measurements on the backlit LCD
- The Thermo Scientific Orion SMART STABILITY[™] and SMART AVERAGING[™] functions for automatically optimized accuracy, precision and response time
- Separate dissolved oxygen membrane and solution temperature displays and calibrations
- Salinity correction and built-in automatic barometric pressure compensation for dissolved oxygen measurements
- Dissolved oxygen calibration to the Winkler titration for BOD analysis
- Storage of up to 10 individually password-protected methods for easy retrieval of operation procedures

- Dissolved oxygen slope on printout
- Datalog up to 1000 points with time and date stamp
- RS232 port for easy data downloads and software update
- Portable units are waterproof with an IP67-rated housing and run for over 2,000 hours on four AA batteries
- Benchtop units can control an autosampler and the 096019 stirrer probe (*each sold separately*)
- Benchtop units are splashproof with an IP54-rated housing and include a universal power supply
- 3 year meter replacement warranty

Ensure proper oxygen levels for maximum control

Accessories

Star Plus Navigator Software page 69

Thermo Scientific Orion Star Plus Navigator software makes it easy to interface your meter with the computer. Generate real-time data graphs, download meter data with one click and perform data analysis the easy way. The data security are ideal for meeting FDA 21 CFR Part 11 compliance

CE | UL | CSA | TUV | EPA

Product Specifications		
DO	Concentration Range	0.00 to 90.0 mg/L
	Resolution	0.01, 0.1 mg/L
	Relative Accuracy	± 0.2 mg/L
	% Saturation Range	0.0 to 600 %
	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	Polarographic
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

Meters Only

Cat. No.	Package	
1113000	Includes benchtop meter, universal power and user guide	
1213000	Includes portable meter, batteries and user guide	

Benchtop Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1113001	081010MD DO probe with 3 meter cable	 DO calibration sleeve BOD funnel / stirrer (970802) BOD adapter (080160) DO probe maintenance kit (080113) Swing arm electrode stand
1010114	 086030MD AUTO-STIR[™] DO/BOD probe with calibration sleeve 	Polarographic electrolyte solutionMethod Note - BOD of Wastewater

Portable Meter Kits

Cat. No.	Sensor (s)	Accessories and Solutions
1213101	 083010MD DO probe with 3 meter cable and calibration sleeve 	• DO probe maintenance kit (080513)
1213001	 083010MD DO probe with 3 meter cable and calibration sleeve 	DO probe maintenance kit (080513)Hard field case
1213501	 083010MD DO probe with 3 meter cable and calibration sleeve 	DO probe maintenance kit (080513)Soft field case
1010121	083010MD DO probe with 3 meter cable and calibration sleeve	 Electrode storage chamber Polarographic electrolyte solution Hard field case Method Note - DO in Freshwater
1010138	083010MD DO probe with 3 meter cable and calibration sleeve	 Electrode storage chamber Polarographic electrolyte solution Hard field case Method Note - DO in Wine and Beer

Thermo Scientific Orion 2-Star

pH Benchtop Meter







The Thermo Scientific Orion 2-Star pH benchtop meter is easy to use and value priced for your general purpose pH measurements

Features and Benefits

- The Thermo Scientific Orion SMART STABILITY[™] and SMART AVERAGING[™] functions for automatically optimized accuracy, precision and response time
- Built-in pullout guide for quick access to calibration instructions
- Up to 3 point pH calibration
- Automatic buffer recognition of USA or EURO buffers

- E_H autocalibration for accurate ORP calibration and readings
- Data storage for up to 50 points with time and date stamp
- RS232 port for printer output
- IP54-rated housing
- Includes universal power supply
- 3 year meter replacement warranty



Meter Only

Cat. No. Package

1111000 Includes benchtop meter, universal power and user guide

Meter Kit

Cat. No.	Sensor (s)	Accessories and Solutions
1111001	 9157BNMD refillable epoxy pH/ATC Triode[™] electrode 	 Swing arm electrode stand pH 4.01, 7.00, and 10.01 buffers and pH electrode storage solution (pint bottles)

Meter, Electrode and Stand

Cat. No.	Sensor (s)
1111201	9165BNWP Sure-Flow [®] refillable epoxy pH electrode
1111202	9157BNMD refillable epoxy pH/ATC Triode electrode
1111203	9156APWP AquaPro low maintenance epoxy pH electrode, TRIS compatible
1111204	9142BN refillable glass pH electrode 927007MD stainless steel ATC probe
1111206	9145BN low maintenance epoxy pH electrode
1111207	9107BNMD low maintenance epoxy pH/ATC Triode electrode
1111208	9107APMD AquaPro low maintenance epoxy pH/ATC Triode electrode, TRIS compatible

CE UL CSA TUV EPA			
Product Specifications			
pН	Range	0.000 to 14.999	
	Resolution	0.1, 0.01, 0.001	
	Relative Accuracy	± 0.002	
	Auto-Buffer Recognition	4.01, 7.00, 10.01/ 1.68, 6.86, 9.18, 12.46	
	Calibration Points	1, 2 or 3	
	Selectable Calibration Sets	USA or EURO	
	Custom Buffers Accepted	Yes	
mV • Rel mV • ORP	Range	± 1999.9	
	Resolution	0.1	
	Relative Accuracy	± 0.2 or 0.05% of reading, 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	