



Bench meters

Simplified testing for every laboratory

Orion Lab Star Series Bench Meters brochure



Explore the next generation of Orion meters

Perform routine pH, conductivity and dissolved oxygen testing with Thermo Scientific™ Orion™ Lab Star Series Meters. The large display screen is backlit, making it easy to read and record sample measurements with ease. The meter's small footprint also helps reduce the amount of space it requires on your benchtop.



Since 1962

Thermo Scientific™ Orion™ products have set the standard for quality in analytical testing and measurement.

Orion lab products help scientists solve some of the most challenging issues facing society today. Whether they're used to bring safe drinking water to the community, test the quality and safety of food or beauty products or discover new drug therapies, Orion products deliver precise and accurate readings in the field and laboratory.

Thermo Scientific Orion Lab Star Bench Meters are well suited for academic, water, wastewater and other laboratories seeking a lightweight and easy-to-use instrument for electrochemistry testing. Combined with Thermo Scientific Orion electrodes and solutions, Orion Lab Star Meters offer an economical option for testing and measuring pH, conductivity and dissolved oxygen parameters.

Orion Lab Star PH111 pH/mV Bench Meter

Product feature highlights

Stabilizing and ready indicators identify when measurements are complete

Large 5 in. display with backlight to improve ease of viewing and recording measurements

Durable membrane keypad to support rugged lab use and disinfection needs

Small footprint to save bench space





Each meter comes with a stand that helps facilitate electrode movement into and out of samples.



On-screen icons indicate measurement stability statuses, giving you greater confidence in your readings.



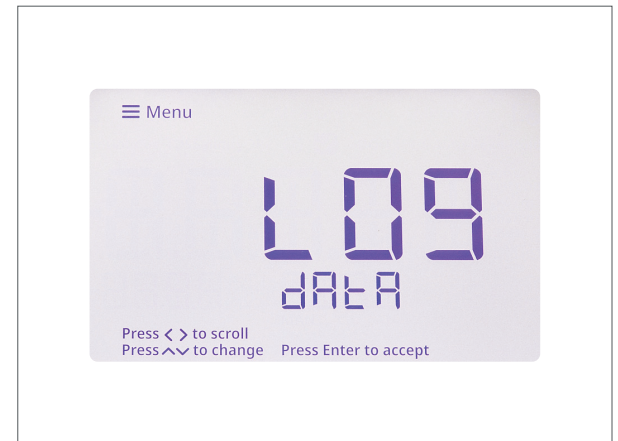
Data logs and calibration logs can be exported via the communication port to a computer or printer.



All data logs and calibration logs are date and time stamped for GLP/GMP reporting.



Keypad is designed with buttons for durability in the lab and easy wipe down or disinfection.



Critical data is automatically saved to the meter's 500-point data log.



Orion Lab Star PH111 pH/mV Bench Meter

Simplify your pH and ORP sample measurements

- Simultaneously read pH, mV and temperature
- Measure -2.000 to +18.000 pH, ±2000.0 mV, -5.0 to +105.0°C (+23.0 to +221.0°F)
- Perform one- to five-point pH calibrations
- Calibrate using automatic buffer recognition or manual entry within the same calibration
- Complete one-point ORP calibration using a custom or Orion ORP standard
- View an electrode condition icon to determine the status of your pH electrode
- Review pH, ORP and temperature calibration logs with date and time stamps

	Specification	Orion Lab Star PH111 pH/mV Meter
pH	Range	-2.000 to +18.000 pH
	Resolution	0.1, 0.01, 0.001 pH
	Relative accuracy	±0.005 pH ±1 LSD
	Calibration points	1 to 5 points
	Automatic buffer sets	US (pH 1.68, 4.01, 7.00, 10.01, 12.46) DIN (pH 1.68, 4.01, 6.86, 9.18, 12.46)
	Calibration method	Automatic buffer recognition with manual buffer entry option
mV/ORP	Slope display	Yes
	Range	±2000.0 mV
	Resolution	0.1 mV
	Relative accuracy	±0.2 mV or ±0.05% of reading, whichever is greater
	Calibration point	1 point
Temperature	Offset adjustment	Up to ±250 mV
	Range	-5.0 to +105.0°C (+23.0 to +221.0°F)
	Resolution	0.1°C, 0.1°F
	Relative accuracy	±0.3°C, ±0.5°F
	Input	Manual or automatic with ATC probe
Meter features	Calibration points	1 point, ±5.0°C
	Display	5 in. LCD with backlight
	Date and time	Yes
	Read types	Continuous, auto-read, timed
	Data log	500 sets with time and date
	Calibration log	Active pH, ORP and temperature with time and date
	Data output	Computer or printer
	Calibration due alarm	1 to 168 hours or off
	Alarms	Visual and on/off audible
	Memory	Non-volatile
	Warranty	3 years

Orion Lab Star PH111 pH/mV Bench Meter Models

Pair the meter and stand with electrodes and solutions of your choice for a custom setup, or pick a preconfigured meter kit to get everything you need. There are so many great combinations to consider.

Description	Cat. No.
Orion Lab Star PH111 pH/mV Bench Meter, includes: - Meter with electrode stand and computer cable 100 to 240V, 50/60Hz universal power adapter with twist-and-lock connection	LSTAR1110
Orion Lab Star PH111 pH/mV Bench Meter standard kit, includes: - Meter with electrode stand, computer cable, and universal power adapter - Refillable epoxy-body pH/ATC electrode (Cat. No. 9157BNMD) - pH buffer and solution kit (Cat. No. 916099)	LSTAR1115
Orion Lab Star PH111 pH/mV Bench Meter easy-to-clean bio kit, includes: - Meter with electrode stand, computer cable, and universal power adapter - Double junction refillable epoxy-body pH electrode (Cat. No. GD9156BNWP) - Stainless-steel ATC temperature probe (Cat. No. 927007MD) - pH buffer and solution kit (Cat. No. 916099)	LSTAR1116
Orion Lab Star PH111 pH/mV Bench Meter low-maintenance bio kit, includes: - Meter with electrode stand, computer cable, and universal power adapter - Double junction gel-filled epoxy-body pH electrode (Cat. No. GD9106BNWP) - Stainless-steel ATC temperature probe (Cat. No. 927007MD) - pH buffer and solution kit (Cat. No. 916099)	LSTAR1117
Orion Lab Star PH111 pH/mV Bench Meter difficult sample kit, includes: - Meter with electrode stand, computer cable, and universal power adapter - Thermo Scientific™ Orion™ Sure-Flow™ refillable epoxy-body pH electrode (Cat. No. 9165BNWP) - Stainless-steel ATC temperature probe (Cat. No. 927007MD) - pH buffer and solution kit (Cat. No. 916099)	LSTAR1118



Select the standard kit (Cat. No. LSTAR1115) for common samples like drinking and tap water, buffers (non-TRIS) and general-purpose student use.



Select the easy-to-clean bio kit (Cat. No. LSTAR1116) for samples containing TRIS buffers, proteins, sulfides, halides or other components that can interfere with silver chloride. This refillable pH electrode is easy to clean and restore.



Select the low-maintenance bio kit (Cat. No. LSTAR1117) for samples containing TRIS buffers, proteins, sulfides, halides or other components that can interfere with silver chloride. This gel-filled pH electrode is low-maintenance and easy to operate.



Select the difficult sample kit (Cat. No. LSTAR1118) for samples that are thick, viscous or semi-solid, including foods, beverages, wastewaters, emulsions, soils, slurries, suspended solids or sludges.

Orion pH, temperature and ORP electrodes and solutions

Orion electrodes offer a variety of features to support a wide array of sample types and applications.

Description	pH/ORP range	Temperature range	Relative accuracy	Body material	Junction type	Fill solution (Cat. No.)	Dimensions (L x W)	Cable	Cat. No.
General-purpose pH electrode with chemical-resistant body	pH 0 to 14	0 to 90°C	pH ± 0.02	Glass	Single junction, ceramic	900011	120 x 12 mm	1 m, BNC	9102BNWP
General-purpose gel-filled pH electrode with durable body	pH 0 to 14	0 to 80°C	pH ± 0.05	Epoxy	Single junction, wick	Sealed gel	120 x 12 mm	1 m, BNC	9106BNWP
General-purpose refillable pH electrode with durable body	pH 0 to 14	0 to 90°C	pH ± 0.02	Epoxy	Single junction, glass fiber	900011	120 x 12 mm	1 m, BNC	9156BNWP
Double junction pH electrode with chemical-resistant body	pH 0 to 14	0 to 60°C	pH ± 0.02	Glass	Double junction, ceramic	910008-WA	120 x 12 mm	1 m, BNC	9102DJWP
Double junction gel-filled pH electrode with durable body	pH 0 to 14	0 to 90°C	pH ± 0.02	Epoxy	Double junction, glass capillary	Sealed gel	120 x 12 mm	1 m, BNC	GD9106BNWP
Double junction refillable pH electrode with durable body	pH 0 to 14	0 to 90°C	pH ± 0.02	Epoxy	Double junction, glass fiber	910008-WA	120 x 12 mm	1 m, BNC	GD9156BNWP
Triode gel-filled pH/temperature electrode	pH 0 to 14	0 to 80°C	pH ± 0.02 , $\pm 2^\circ\text{C}$	Epoxy	Single junction, wick	Sealed gel	120 x 12 mm	1 m, BNC and MiniDIN	9107BNMD
Triode polymer-filled pH/temperature electrode	pH 0 to 14	0 to 60°C	pH ± 0.02 , $\pm 2^\circ\text{C}$	Epoxy	Double junction, open	Sealed polymer	120 x 12 mm	1 m, BNC and MiniDIN	9107APMD
Triode refillable pH/temperature electrode	pH 0 to 14	0 to 90°C	pH ± 0.02 , $\pm 2^\circ\text{C}$	Epoxy	Single junction, glass fiber	900011	120 x 12 mm	1 m, BNC and MiniDIN	9157BNMD
Sure-Flow pH electrode with chemical-resistant body	pH 0 to 14	0 to 100°C	pH ± 0.02	Glass	Single junction, open sleeve	900011	120 x 12 mm	1 m, BNC	9172BNWP
Sure-Flow pH electrode with durable body	pH 0 to 14	0 to 100°C	pH ± 0.02	Epoxy	Single junction, open sleeve	900011	120 x 12 mm	1 m, BNC	9165BNWP
ATC temperature probe	–	0 to 80°C	$\pm 2^\circ\text{C}$	Epoxy	–	–	120 x 6 mm	1 m, MiniDIN	927005MD
	–	0 to 100°C	$\pm 2^\circ\text{C}$	Stainless steel	–	–	120 x 6 mm	1 m, MiniDIN	927007MD
Triode refillable ORP/temperature electrode	–1000 to +1000 mV	0 to 90°C	± 2 mV, $\pm 2^\circ\text{C}$	Epoxy	Single junction, glass fiber	900011	120 x 12 mm	1 m, BNC and MiniDIN	9180BNMD
Sure-Flow ORP electrode with durable body	–1000 to +1000 mV	0 to 90°C	± 2 mV	Epoxy	Single junction, open sleeve	900011	110 x 13 mm	1 m, BNC	9678BNWP

Description	Cat. No.
Standard all-in-one pH buffer kit: 475 mL each of pH 4.01, 7.00 and 10.01 buffers; 475 mL of pH electrode storage solution; electrode storage bottle	910199
All-in-one pH buffer kit: 60 mL each of pH 4.01, 7.00 and 10.01 buffers; 60 mL of pH electrode storage solution; 60 mL of pH electrode cleaning solution	916099
pH electrode cleaning kit: 30 mL each of protein and general cleaning solutions; 60 mL each of bacteria and oil cleaning solutions; beaker and pipet	900020
pH 1.68 buffer, 5 x 60 mL	9116860
pH 1.68 buffer, 475 mL	910168
pH 4.01 buffer, 5 x 60 mL	910460
pH 4.01 buffer, 475 mL	910104
pH 4.01 buffer, 19 L container	9104CB
pH 6.86 buffer, 5 x 60 mL	916860
pH 6.86 buffer, 475 mL	910686
pH 7.00 buffer, 5 x 60 mL	910760
pH 7.00 buffer, 475 mL	910107
pH 7.00 buffer, 19 L container	9107CB
pH 9.18 buffer, 5 x 60 mL	9191860
pH 9.18 buffer, 475 mL	910918
pH 10.01 buffer, 5 x 60 mL	911060
pH 10.01 buffer, 475 mL	910110
pH 10.01 buffer, 19 L container	9110CB
pH 12.46 buffer, 5 x 60 mL	911260-WA
pH 12.46 buffer, 475 mL	910112
Electrode storage solution, 5 x 60 mL	910060
Electrode storage solution, 475 mL	910001
Electrode storage solution, 19 L container	9100CB
ORP standard, +420 mV standard hydrogen electrode, E_{H^+} , 5 x 60 mL	967961
ORP standard, +420 mV standard hydrogen electrode, E_{H^+} , 475 mL	967901
Single junction silver chloride pH and ORP electrode filling solution, 5 x 60 mL	900011
Double junction silver chloride pH and ORP electrode filling solution, 5 x 60 mL	910008-WA
Electrode storage sleeve, 12 mm diameter electrodes with stand	810017



Orion pH buffers and ORP standards are traceable to NIST standard reference materials and are labeled with a lot code and expiration date.



Orion Lab Star EC112 Conductivity Bench Meter

Streamline your conductivity, salinity and TDS measurements

- Simultaneously read conductivity, salinity or TDS with temperature
- Measure 0.00 $\mu\text{S}/\text{cm}$ to 500.0 mS/cm conductivity, 0.00 to 80.0 ppt salinity, 0.00 to 42.0 PSU salinity, 0.00 ppm to 500.0 ppt TDS and -5.0 to $+105.0^\circ\text{C}$ ($+23.0$ to $+221.0^\circ\text{F}$)
- Perform one- to five-point conductivity calibrations
- Calibrate using automatic standard recognition or manual entry within the same calibration
- Complete one-point salinity and one- to five-point TDS calibrations
- View conductivity, salinity, TDS and temperature calibration logs with date and time stamps

	Specification	Orion Lab Star EC112 Conductivity Meter
Conductivity	Range	0.00 $\mu\text{S}/\text{cm}$ to 500.0 mS/cm
	Resolution	0.01, 0.1, 1 $\mu\text{S}/\text{cm}$; 0.01, 0.1 mS/cm
	Relative accuracy	$\pm 0.5\%$ reading ± 1 LSD
	Calibration points	1 to 5 points
	Temperature compensation	Linear (0 to 10%/°C) or off
	Reference temperature	15.0, 20.0, 25.0 or 30.0°C
TDS	Range	0.00 ppm to 500.0 ppt (1.00 factor)
	Resolution	0.01, 0.1, 1 ppm; 0.01, 0.1 ppt
	Relative accuracy	$\pm 0.5\%$ reading ± 1 LSD
	Calibration points	1 to 5 points
Salinity	TDS factor	0.40 to 1.00
	Range	0.00 to 80.0 ppt; 0.00 to 42.0 PSU
	Resolution	0.01, 0.1 ppt; 0.01, 0.1 PSU
	Relative accuracy	$\pm 0.5\%$ reading ± 1 LSD
	Calibration point	1 point
	Modes	Natural seawater or practical salinity
Temperature	Range	-5.0 to $+105.0^\circ\text{C}$ ($+23.0$ to $+221.0^\circ\text{F}$)
	Resolution	0.1°C; 0.1°F
	Relative accuracy	$\pm 0.3^\circ\text{C}$, $\pm 0.5^\circ\text{F}$
	Input	Manual or automatic with built-in ATC
Meter features	Calibration point	1 point, $\pm 5^\circ\text{C}$
	Display	5 in. LCD with backlight
	Date and time	Yes
	Read types	Continuous, auto-read, timed
	Data log	500 sets with time and date
	Calibration log	Conductivity, TDS, salinity and temperature with time and date
	Data output	Computer or printer
	Calibration due alarm	1 to 168 hours or off
	Alarms	Visual and on/off audible
	Memory	Non-volatile
	Warranty	3 years

Orion Lab Star EC112 Conductivity Bench Meter Models

Pair the meter and stand with your own conductivity probe and standards or choose the preconfigured kit to get everything you need.

Description	Cat. No.
Orion Lab Star EC112 Conductivity Bench Meter, includes: - Meter with electrode stand - Computer cable 100 to 240V, 50/60Hz universal power adapter with twist-and-lock connection	LSTAR1120
Orion Lab Star EC112 Conductivity Bench Meter standard kit, includes: - Meter with electrode stand, computer cable and universal power adapter 2-cell epoxy-body conductivity/ATC probe, K = 1.0 (Cat. No. 011050MD) 1,413 μS conductivity standard, 5 x 60 mL (Cat. No. 011007)	LSTAR1125



For a wide variety of conductivity samples in the 1 $\mu\text{S}/\text{cm}$ to 20 mS/cm range.

Orion conductivity probes and standards

Description	Conductivity range	Temperature range	Cell constant	Body material	Dimensions (L x W)	Cable	Cat. No.
Conductivity/ATC 4-electrode cell for difficult samples	1 $\mu\text{S}/\text{cm}$ to 200 mS/cm	0 to 90°C	0.475 cm^1	Epoxy/graphite	120 x 15 mm	1.5 m, MiniDIN	013005MD
Conductivity/ATC 4-electrode cell, small diameter	10 $\mu\text{S}/\text{cm}$ to 200 mS/cm	0 to 90°C	0.55 cm^1	Epoxy/graphite	120 x 12 mm	1.5 m, MiniDIN	013605MD
Conductivity/ATC 2-electrode cell for pure water	0.01 $\mu\text{S}/\text{cm}$ to 300 $\mu\text{S}/\text{cm}$	0 to 90°C	0.1 cm^1	Steel, V4A	120 x 13 mm	1.5 m, MiniDIN	013016MD
Conductivity/ATC 2-electrode cell with durable body	10 $\mu\text{S}/\text{cm}$ to 200 mS/cm	0 to 90°C	1.0 cm^1	Epoxy/graphite	134 x 18 mm	3 m, MiniDIN	011510MD
Conductivity/ATC 2-electrode cell for standard samples	1 $\mu\text{S}/\text{cm}$ to 20 mS/cm	0 to 90°C	1.0 cm^1	Epoxy/platinum	120 x 12 mm	1.5 m, MiniDIN	011050MD
Conductivity 2-electrode cell for high-conductivity samples	10 $\mu\text{S}/\text{cm}$ to 2000 mS/cm	N/A	10 cm^1	Glass/platinum	115 x 16 mm	1.5 m, MiniDIN	018020MD

Description	Cat. No.
100 $\mu\text{S}/\text{cm}$ conductivity standard, 5 x 60 mL	011008
147 $\mu\text{S}/\text{cm}$ conductivity standard, 10 pouches	01100910
1,413 $\mu\text{S}/\text{cm}$ conductivity standard, 5 x 60 mL	011007
1,413 $\mu\text{S}/\text{cm}$ conductivity standard, 10 pouches	01100710
12.9 mS/cm conductivity standard, 5 x 60 mL	011006
12.9 mS/cm conductivity standard, 10 pouches	01100610

Description	Cat. No.
111.9 mS/cm conductivity standard, 5 x 60 mL	011005
111.9 mS/cm conductivity standard, 10 pouches	01100510
0.1 M KCl conductivity standard, 475 mL	990106
Conditioning solution for conductivity probe (Cat. No. 011050MD)	011001



Orion Lab Star DO113 Dissolved Oxygen Bench Meter

Complete your dissolved oxygen measurements

- Simultaneously read dissolved oxygen as percent saturation or concentration with temperature
- Measure 0.0 to 300.0 percent saturation, 0.00 to 30.0 mg/L or ppm and -5.0 to +105.0°C (+23.0 to +221.0°F)
- Perform 100% and 0% saturation calibrations or one-point concentration calibration using a custom value (Winkler)
- Use automatic barometric pressure compensation for DO measurements with manual value entry in mmHg or bar
- Use automatic salinity compensation for DO measurements with manual value entry of 0.0 to 50.0 ppt
- View dissolved oxygen and temperature calibration logs with date and time stamps

	Specification	Orion Lab Star DO113 Dissolved Oxygen Meter
Dissolved oxygen	Range, percent saturation	0.0 to 300.0% saturation
	Resolution, percent saturation	0.1, 1% saturation
	Relative accuracy, percent saturation	Saturation $\pm$ 1 LSD
	Range, concentration	0.00 to 30.0 mg/L or ppm
	Resolution, concentration	0.01, 0.1 mg/L or ppm
	Relative accuracy, concentration	$\pm$ 0.2 mg/L or ppm $\pm$ 1 LSD
	Calibration types	100% and 0% saturation; custom concentration value
	Barometric pressure compensation	400.0 to 850.0 mmHg; 0.533 to 1.133 bar
Temperature	Salinity compensation	0.0 to 50.0 ppt
	Range	-5.0 to +105.0°C (+23.0 to +221.0°F)
	Resolution	0.1°C; 0.1°F
	Relative accuracy	$\pm$ 0.3°C, $\pm$ 0.5°F
	Input	Manual or automatic with built-in ATC
Meter features	Calibration point	1 point, $\pm$ 5°C
	Display	5 in. LCD with backlight
	Date and Time	Yes
	Read types	Continuous, auto-read, timed
	Data log	500 sets with time and date
	Calibration log	Dissolved oxygen and temperature with time and date
	Data output	Computer or printer
	Calibration due alarm	1 to 168 hours or off
	Alarms	Visual and on/off audible
	Memory	Non-volatile
	Warranty	3 years

Orion Lab Star DO113 Dissolved Oxygen Bench Meter Models

Pair the meter and stand with your own DO probe and solutions or choose the preconfigured kit to get everything you need.

Description	Cat. No.
Orion Lab Star DO113 Dissolved Oxygen Bench Meter, includes: - Meter with electrode stand - Computer cable 100 to 240V, 50/60Hz universal power adapter with twist-and-lock connection	LSTAR1130
Orion Lab Star DO113 Dissolved Oxygen Bench Meter standard kit, includes: - Meter with electrode stand, computer cable and universal power adapter - Polarographic DO/ATC probe with calibration sleeve (Cat. No. 083005MD) - DO probe maintenance kit (Cat. No. 080513) - BOD adapter (Cat. No. 080360)	LSTAR1135



For a wide variety of dissolved oxygen samples plus BOD with an included adapter.

Orion dissolved oxygen probes and solutions

Description	DO range	Temperature range	Relative accuracy	Temperature sensor	Minimum sample flow	Dimensions (L x W)	Cable	Cat. No.
Polarographic DO/ATC probe, general purpose	0 to 200% saturation; 0 to 20 mg/L	0 to 50°C	±2% DO reading; ±2°C	Integrated, dual source	10 cm/sec	120 x 15 mm	1.5 m, MiniDIN	083005MD
Polarographic DO/ATC probe, long cable	0 to 200% saturation; 0 to 20 mg/L	0 to 50°C	±2% DO reading; ±2°C	Integrated, dual source	10 cm/sec	120 x 15 mm	3 m, MiniDIN	083010MD
Polarographic DO/ATC probe, basic use	0 to 200% saturation; 0 to 20 mg/L	0 to 50°C	±2% DO reading; ±2°C	Integrated, single source	20 cm/sec	120 x 13 mm	3 m, MiniDIN	081010MD

Description	Cat. No.
Maintenance kit, includes electrolyte solution, polishing disk and 2 membrane caps for probes (Cat. Nos. 083005MD and 083010MD)	080513
Maintenance kit, includes electrolyte solution, polishing disk and 2 membrane caps for probe (Cat. No. 081010MD)	080113
1 membrane cap for probes (Cat. Nos. 083005MD and 083010MD)	080515
3 membrane caps for probe (Cat. No. 081010MD)	081003
Polarographic electrolyte solution for probes (Cat. Nos. 083005MD, 083010MD and 081010MD)	080514
BOD adapter for probes (Cat. Nos. 083005MD and 083010MD)	080360
BOD adapter for probe (Cat. No. 081010MD)	080160

Orion Lab Star Series Bench Meter accessories

With the right accessories, you can achieve more efficient workflows every time.



Description	Uses	Compatible Cat. Nos.	Cat. No.
Orion Lab Star Series meter-attached electrode stand	Replaces your electrode stand as needed	PH111, EC112, DO113	LSTAR-ARM
Orion Lab Star Series universal power supply, 100 to 240V, 50/60 Hz	Replaces your power adapter as needed	PH111, EC112, DO113	LSTAR-PWR
Orion Lab Star Series USB computer cable	Replaces your computer cable as needed	PH111, EC112, DO113	LSTAR-USB
Orion Lab Star Series meter dust cover	Protects your meter from dust and debris while in storage	PH111, EC112, DO113	LSTAR-CVR
Orion compact ink-ribbon printer with cable, 100 to 240V	Prints data from your meter to document and retain records	PH111, EC112, DO113	STARA-106
Orion replacement ink ribbon for compact printer, 6 pack	Replaces your ink ribbon as needed	STARA-106 printer	STARA-108
Orion replacement paper for compact printer, 5 pack	Replaces your printer paper as needed	STARA-106 printer	STARA-109
Conductivity calibration resistor kit for Orion Lab Star EC112 Conductivity Meters	Checks conductivity meter function independent of a conductivity probe	EC112	1010001

Bring Orion meters to your bench

Now that you've explored our extensive offering of Orion Lab Star Series benchtop meters, it's time to take the next step. Visit thermofisher.com/electrochemistry to request a demo or select your meter.





Learn more at thermofisher.com/electrochemistry

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