Thermo Scientific Orion Star A113 Benchtop and Star A123 Portable Dissolved Oxygen Meters

Reference Guide

Thermo SCIENTIFIC

Thermo Scientific Orion Star A113 Benchtop & Star A123 Portable Dissolved Oxygen Meters

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Chapter 1 Introduction

Thank you for your purchase of the Orion Star A113 benchtop dissolved oxygen (DO) or Star A123 portable dissolved oxygen (DO) meter. These meters are capable of measuring dissolved oxygen levels in % saturation or mg/L units, and temperature of the solution and the membrane. These meters are to be used with Orion's Polarographic dissolved oxygen probe (sold separately).

The Orion Star A113 benchtop DO meters are IP54-rated. The Orion Star A123 portable DO meters feature a waterproof, IP67-rating.

Please read this reference guide thoroughly. Any use outside of these instructions may invalidate your warranty and cause permanent damage to the meter

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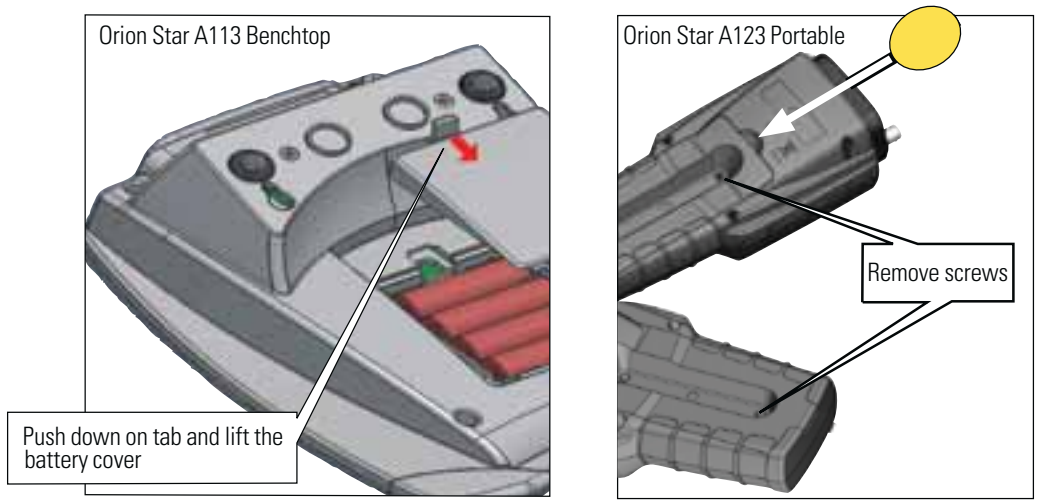
Chapter 2 Meter Overview

Connections

1. Power source:

    a. Power adapter (included with Orion Star A113 benchtop DO meters, sold separately for Star A123 portable DO meters) – Select the appropriate wall socket plug. Slide off the clear plastic cover, and slide on the plug plate into the groove on the back of the adapter.

    b. Batteries (included with and factory-installed on Star A123 portable DO meters, sold separately for Star A113 benchtop DO meters) – Select four AA batteries. Confirm that the meter is off and remove the battery compartment cover. On the Star A123 portable meter, to remove the battery compartment cover:
        i. Loosen the screws.
        ii. Release the top portion of the battery compartment from the meter (using a coin or your finger.)
        iii. Release the bottom portion of the battery compartment (using a coin or your finger). Insert batteries as shown in the battery compartment housing.



2. Prepare the DO probe according to the probe instructions. In general:

    a. Unscrew the membrane cap from the DO probe, fill the membrane cap about ¾ full with polarographic electrolyte solution and screw the membrane cap onto the DO probe.

    b. Connect the DO probe to the meter and allow the probe to polarize for about 30 to 60 minutes.

    Note: A DO reading of zero and no change in temperature indicates that the DO probe is not fully connected to the meter. Disconnect the DO probe and then firmly reconnect the DO probe to the meter.

3. Connect the appropriate item as labeled on the meter and as shown in figure 1:

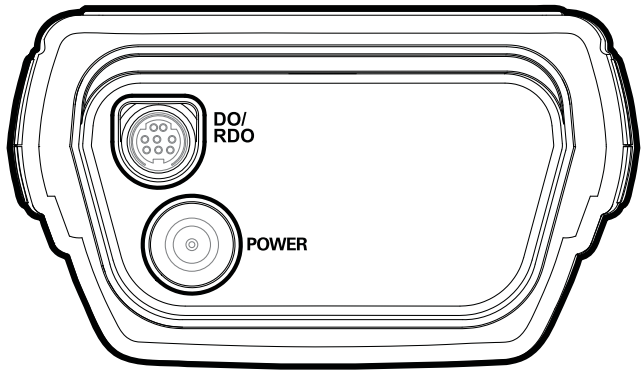
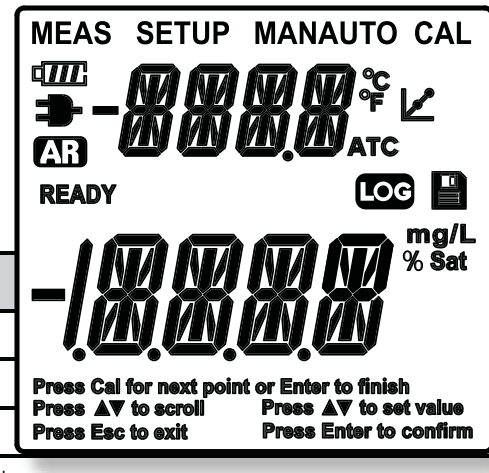


Figure 1



Display Information

Display Icon	Description
MEAS	Indicates that the meter is in the measurement mode.
SETUP	Indicates that the meter is in setup mode.
CAL	Indicates that the meter is the calibration mode.
MAN	Shown when a manual calibration (Winkler titration) is being done.
AUTO	Shown during water-saturated air calibration. Default setting.
	Shows the battery status (more bars = more power remaining). Blinks when power is low and the battery needs to be changed. (Batteries included and factory-installed with the portable meter Orion Star A123 DO meter.)
	Shown when the meter is running on AC power. (Adapter included with the benchtop meter Orion Star A113 DO meter.)
AR	Shown when the meter is on AUTO-READ mode. Default setting. AR and unit of measurements will blink until the reading is stable. When the reading is stable it is held on the screen and AR is lit. Press measure (esc) to take a new reading.
READY	Unit of measure will blink until the reading is stable. When the reading is stable, READY is lit.
	Appears during calibration and after a calibration is done.
	Displayed when a reading is stored into the memory.
LOG	Displayed when viewing stored readings.
Secondary display	Upper display which shows temperature reading in measurement mode and setup menu in setup mode.
Primary display	Lower, larger display showing measured value in selected mode.
Instructions	Located below the primary display. These phrases aid in the setup menu and calibration modes.

Keypad Information

measure (esc)	*In the measurement screen:* Press to take a measurement. *In the setup screen:* Press to escape the setup menu. *In the calibration screen:* Press to abort calibration.		
⏻	Press to turn the meter on or off.	mode (enter)	*In the measurement screen:* Press to switch between modes. *In the setup screen:* Press to confirm the selection.
cal	Press to enter the calibration mode.	setup	Press to enter the setup mode.
store ▲	*In the measurement screen:* Press to store the data on the screen in continuous read mode and with data logging on. *In the setup screen:* Press to scroll up in the list of options.	▼ recall	*In the measurement screen:* Press to see the stored data. *In the setup screen:* Press to scroll down in the list of options.

Meter Maintenance

For routine meter maintenance, dust and wipe the meter with a damp cloth. If necessary, warm water or a mild water-based detergent can be used. Meter maintenance can be performed on a daily, weekly or monthly basis, as required by the environment in which the meter is operated. Immediately remove any spilled substance from the meter using the proper cleaning procedure for the type of spill.

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Chapter 3 Meter Setup

Pressing (setup) will take you to the setup menu.

Navigating the Setup Menu

A complete chart showing the main setup levels and submenus is shown after these steps.

1. In the setup menu, press store ▲ or ▼ recall until the desired main setup level is shown on the top (secondary display) line.
2. Press (mode (enter)) to enter into the submenu options.
3. For main setup options with more than one submenu:

   1.0 Configuration

   5.0 Datalog Clear

   a. Press store ▲ or ▼ recall until the desired submenu is shown.

   b. Press (mode (enter)) to enter into the submenu.

   c. Press store ▲ or ▼ recall until the desired option is shown.

   d. Press (mode (enter)) to save your selection.

   For main setup options with one submenu:

   2.0 General Meter Setup

   3.0 Temperature Settings

   4.0 Read Type

   6.0 Calibration Data

   7.0 Factory Reset

   a. Press store ▲ or ▼ recall until the desired option is shown.

   b. Press (mode (enter)) to save your selection.

4. Press (measure (esc)) to exit the setup menu and return to measurement mode.

Setup Menu Level	Secondary Display	Primary Display	Description	Information
Main	1.0	CONF	Configuration	Select resolution, barometric pressure correction value, salinity correction factor and calibration type.
Submenu	SRES	0.1, 1	Percent Saturation Unit Resolution	0.1 is the default.
Submenu	CRES	0.01, 01	Concentration Unit Resolution	0.01 is the default.
Submenu	PRES	450.0 to 850.0	Value for Manual Barometric Pressure Correction	The default value is 760.0 mm Hg.
Submenu	SALT	0 to 45	Value for Manual Salinity Correction Factor	The default value is 0 ppt.
Submenu	CALT	AIR, MAN	DO Calibration Type	AIR is for water-saturated air. MAN is for a manual calibration (Winkler titration). The default is AIR.
Main	2.0	GEN	General Meter Setup	Automatic meter shut-off
Submenu	AUTO	ON, OFF	Automatic Meter Shut-Off	To save battery life, the meter will turn off after 15 minutes without button presses. On is the default setting. ***Note:*** *The meters will supply a polarization current even when the meter is powered off.*
Main	3.0	TEMP	Temperature Settings	Select temperature units and the temperature used for manual temperature compensation
Submenu	UNIT	DEGC, DEGF	Temperature Unit	The default setting is for temperature readout to be displayed in °C.
Main	4.0	READ	Read Type	
Submenu	READ	AUTO, CONT	AUTO is for AUTO-READ. CONT is for continuous read.	In AUTO-READ mode, the meter will display the measurement as it stabilizes and lock and hold the measurement when it is stable. Press measure (esc) to take a new measurement. In Continuous read mode, the meter will continuously measure and update the display. The unit of measure will flash. When the reading has been stable, "READY" will appear. The default setting is AUTO-READ.
Main	5.0	LOG	Datalog Clear	
Submenu	DATA	ON, OFF	To enable data storage	The default is off.
Submenu	DEL	LAST, ALL, NO	Clears stored readings in the datalog.	The default is no. "NO" does not delete any readings. "LAST" deletes only the last reading. "ALL" deletes all of the logged data.
Main	6.0	CAL	Calibration Data	
Submenu	CLR	NO, YES	Clears the calibration data.	The default is no.
Main	7.0	RST	Factory Reset	
Submenu	RST	NO, YES	Returns all meter settings to the factory defaults and deletes all stored data (calibration and datalog).	The default is no. Before selecting yes, please make sure any data that you would like to keep has been recorded.

Setup Examples

DO Calibration Selection

This meter can be calibrated using water-saturated air or the Winkler titration method for a manual calibration. Air calibration is the default setting on the meter.

1. In measurement mode, press setup.
2. Press mode (enter) five times so that the top line reads "CALT".
3. Press store ▲ to select the calibration type as AIR for water-saturated air calibration or MAN for a manual calibration (Winkler titration).
    a. AIR – An air calibration is performed in water-saturated air using the calibration sleeve. This is the simplest and most accurate calibration. Due to the inherent differences between water-saturated air and air-saturated water, 102.3% will be displayed when the calibrations reading is stable.
        i. For the highest accuracy, the calibration temperature should be the same as the measuring temperature.
        ii. Use distilled water to moisten the sponge in the calibration sleeve. Insert the probe into the sleeve without touching the sponge.
    b. MAN – A manual calibration is performed using a water sample with a known concentration of dissolved oxygen. This method can be used to calibrate the dissolved oxygen probe to the value achieved by a Winkler titration.
        i. A manual calibration involves performing a Winkler titration and using that sample as a calibration standard. The oxygen level result from the titration is entered in a manual calibration as the dissolved oxygen value.
4. Press mode (enter) to save configuration and measure (esc) to return measurement mode.

Read Type Selection

1. In measurement mode, press setup.
2. Press store ▲ in setup until "4.0" is shown on the top line and "READ" is shown on the lower line. Press mode (enter).
3. Press store ▲ or ▼ recall to select the measurement mode:

   CONT = Continuous

   AUTO = AUTO-READ™

   Note: *In AUTO-READ mode, the meter will display the measurement as it stabilizes and lock and hold the measurement when it is stable. AR and unit of measure will blink until the reading is stable. When the reading is stable it is held on the screen and AR is lit.*

   Press measure (esc) to take a new measurement.

   In Continuous read mode, the meter will continuously measure and update the display. The unit of measure will flash. When the reading has been stable, "READY" will appear. This read type is useful when performing an experiment that requires continuous measurements to be taken, regardless of the measurement stability.

4. Press mode (enter) to save selection. Press the measure (esc) key to return to measurement mode.

Chapter 4 Calibration and Measurement

DO Calibration and Measurement

Entering Barometric Pressure

Dissolved oxygen readings are dependent on barometric pressure. This needs to be entered manually as mm Hg. 1 mm Hg = 0.03937 inch Hg = 1.3332 hPA (mBar) = 0.01934 PSI.

1. In DO measurement mode, press setup .
2. Press mode (enter) three times so that the top line reads "PRES".
3. Press store ▲ or ▼ recall to enter the barometric pressure.

   Note: *Holding the button down will make the value change faster.*

4. Press mode (enter) to save configuration and measure (esc) to return measurement mode.

Entering Salinity Correction Value

Since the presence of dissolved salts limits the amount of oxygen that can dissolve in water, the relationship between oxygen concentration and partial pressure varies with sample salinity. The meter default has a salinity correction factor of 0. To compensate for variations in ionic concentration, enter the salinity of the sample in parts per thousand (ppt). A table of conductivity versus salinity can be found in the appendix.

1. In DO measurement mode, setup press .
2. Press mode (enter) four times so that the top line reads "SALT".
3. Press store ▲ or ▼ recall to enter the salinity in ppt.

   Note: Holding the button down will make the value change faster.

4. Press mode (enter) to save configuration and measure (esc) to return measurement mode.

DO Calibration

This meter can be calibrated using water-saturated air or the Winkler titration method for a manual calibration. This is dependent on the calibration type chosen in the setup menu.

Water-Saturated Air Calibration

1. In DO measurement mode, press mode (enter) to display the unit "% Sat" or "mg/L".
2. Make sure the DO probe is connected to the meter and fully polarized.
3. Prepare the calibration sleeve or BOD bottle.
    i. For the calibration sleeve, remove the cap from the sleeve and remove the sponge from the cap. Wet the sponge with distilled water and squeeze out excess water. Reassemble the calibration sleeve and insert the DO probe.
    ii. For a BOD bottle, fill the bottle with about 50 mL of distilled water. Insert the DO probe into the BOD bottle. Use a Thermo Scientific Orion BOD bottle adapter if the DO probe does not fit directly into the bottle. Make sure that the probe is suspended about half an inch above the distilled water and there is no water on the surface of the DO probe membrane.
4. Insert the DO probe and wait five minutes for equilibrium. Press cal.
5. "CAL" will appear in the upper right of the display. Wait for "READY" to appear and % Sat to stop blinking. The meter will display 102.3 % saturation and will proceed to the measurement mode.

Manual Calibration (Winkler Titration)

1. In DO measurement mode, press mode (enter) to display unit "% Sat" or "mg/L".
2. Make sure the DO probe is connected to the meter and fully polarized.
3. Insert the DO probe and wait five minutes for equilibrium. Press cal. "CAL" will appear in the upper right of the display. Wait for "READY" to appear and mg/L to stop blinking.
4. Press store ▲ or ▼ recall to change the display to match the titrated value.
5. Press mode (enter) to confirm the value. The meter will display slope and will proceed to the measurement mode.

DO Measurement

1. Check the barometric pressure and if needed, change value for barometric pressure correction in setup menu 1.0.

2. Press mode (enter) to display DO readings in % saturation or mg/L (units of measure).

3. Rinse the DO probe with distilled water and blot dry. Place the probe into the sample and stir gently.

4. If the meter is in AUTO-READ mode (meter default), press measure (esc) .
   If the meter is in continuous read mode, the meter will immediately start taking readings.
   Record the DO result and temperature of the sample when "READY" is displayed and the unit of measurements stops blinking.

   Note: *If in AUTO-READ mode and memory storage is enabled, the reading will automatically be stored when the "AR" appears. If in continuous read mode and memory storage is enabled, press* **store** ▲ *to store into the meter's memory.*

5. Remove the DO probe from the sample, rinse with distilled water and blot dry. To continue taking measurements, place the probe into the next sample and repeat steps 4 and 5.

6. When finished measuring all samples, store probe according to the probe instructions.

Temperature Measurement and Calibration

The Orion Star A113 benchtop dissolved oxygen (DO) and Star A123 portable dissolved oxygen (DO) meter can show the temperatures of the solution or the membrane. To read only temperature and see the temperature on the primary, lower display, follow the instructions below.

Temperature Measurement

1. In the measurement mode, press mode (enter) to display the solution temperature value on the primary display. (The temperature value at the top, secondary display will match that of the lower, primary display field.)
   To view the membrane temperature/electrolyte solution temperature, press mode (enter) . The number will have "m" in front of it.

2. Rinse with probe with distilled water , blot dry and place into the sample. If the meter is in AUTO-READ mode (meter default),
   press measure (esc) .If the meter is in continuous read mode, the meter will immediately start taking readings.

   Note: *If in AUTO-READ mode and memory storage is enabled, the reading will automatically be stored when the "AR" appears. If in continuous read mode and memory storage is enabled, press to store into the meter's memory.*

3. Remove the probe from the sample, rinse with distilled water and blot dry. To continue taking measurements, place the probe into the next sample and repeat steps 2 and 3.

4. When finished measuring all samples, store electrode according to electrode instructions.

Temperature Calibration

The meter temperature display has a relative accuracy of ± 0.1 °C. The temperature sensors on the DO probe may have varying temperature accuracies, usually ± 0.5 °C to ± 2 °C. Use this function only if it is necessary to calibrate the temperature readings. Since the temperature offset calculated during the calibration is applied to all future temperature measurements, recalibrate if a different probe is used.

1. In the measurement mode, press mode (enter) to display the solution temperature or the membrane temperature, denoted by a "m" is front.

2. Rinse the probe and NIST-traceable thermometers with distilled water, blot dry and place into a solution with a known, stable temperature.

   Note: *It is recommended that two NIST-traceable thermometers be used to measure and verify the temperature of the solution.*

   Press cal.

3. Wait for the readings to stabilize (about 5 to 10 minutes) and "READY" to stop flashing.. The meter will display the original temperature read by the probe. Press store ▲ or ▼ recall keys to enter the temperature value read by the thermometer.

   Note: *The calculated offset will be applied to all future temperature readings. To abort, press to end without saving and return to the measurement mode.*

4. When finished, press mode (enter) to save and end calibration.

Chapter 5 Data Storage and Review

Orion Star A113 benchtop dissolved oxygen and A123 portable dissolved oxygen meters have a 50 point datalog memory.

Automatic Datalog with AUTO-READ™ Mode

1. In measurement mode, press setup.
2. Press store three times in setup until "4.0" is shown on the top line and "READ" is shown on the lower line. Press mode (enter).
3. Press the store or recall to show "AUTO" on the second line. Press mode (enter) to save selection.
4. Press store to show "5.0" on the top line and "LOG" on the lower line. Press mode (enter).
5. Press store to show "ON" on the second line. Press mode (enter) to save selection.
6. Press measure (esc) to return to measurement mode. Each time the reading is locked onto the screen with the "AR" icon. The reading will automatically be stored in the datalog.

Manual Datalog with Continuous Read Mode

1. In measurement mode, press setup.
2. Press store three times until "4.0" is shown on the top line and "READ" is shown on the lower line. Press mode (enter).
3. Press store or recall to show "CONT" on the second line. Press mode (enter) key to save selection.
4. Press store to show "5.0" on the top line and "LOG" on the lower line. Press mode (enter).
5. Press store to show "ON" on the second line. Press mode (enter) to save selection.
6. Press measure (esc) to return to measurement mode.
7. In the measurement mode, press store to store the reading into the meter's memory.

Viewing Stored Readings (the Data Log)

1. In measurement mode, press recall.
2. Press store or recall to scroll through the memory points.
3. Press measure (esc) to review the reading stored at that point.

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Chapter 6 Customer Services

Meter Error Codes

Display	Reason	Solution
	Solution or membrane temperature is out of range	Verify that the sample temperature is within the range of 0 to 50 °C. Clean the DO probe according to the probe user guide. Place the probe into the sample and press measure (esc). If error still appears, replace probe.
	Calibration slope error	Connect the probe to the meter, power on the meter and allow the probe to polarize for at least 30 minutes. For an air calibration, check that the sponge in the calibration sleeve is damp and there is no water on the probe membrane. Clean the DO probe according to the probe user guide. Re-calibrate the DO probe.
	Memory is full	The meter will automatically change to the submenu to clear the datalog ("CLR" on the top line, "NO" on the second). If the existing memory's data is still needed: 1. Press measure (esc) to return to the measurement mode and recall. Record the memory's data. 2. In measurement mode, press setup and then store *4 times. ("5.0" appears on the top line.)* 3. Press mode (enter). Press store to delete the last reading or press store to delete all readings. 4. Press mode (enter) to save the change and delete the data accordingly. If the existing memory's data can be deleted: 1.Press mode (enter) change to "YES". 2.Press store to clear the datalog.

Troubleshooting Guide

Problem: The display freezes and the measurement values will not change.

Solution: The meter is in the AUTO-READ measurement mode (the AR icon appears solid on the left of the display). Press measure (esc) start a new reading or select continuous read.

Problem: How do I abort a calibration?

Solution: Press measure (esc) abort any meter operation and return to the measurement mode.

Assistance

After troubleshooting all components of your measurement system, contact Technical Support. Within the United States call 1.800.225.1480 and outside the United States call 978.232.6000 or fax 978.232.6031. In Europe, the Middle East and Africa, contact your local authorized dealer. For the most current contact information, or the latest application and technical resources for Thermo Scientific Orion products, visit www.thermoscientific.com/water.

Warranty and Registration

To register your new meter and for the most current warranty information, visit www.thermoscientific.com/water.

WEEE Compliance

This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2002/96/EC. It is marked with the symbol above.

Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State and this product should be disposed of or recycled through them. Further information on compliance with these directives, the recyclers in your country, and information on Thermo Scientific Orion products that may assist the detection of substances subject to the RoHS Directive are available at www.thermoscientific.com.

Declaration of Conformity

Manufacturer: **Thermo Fisher Scientific Inc.**

Address: Ayer Rajah Crescent
Blk 55 #04-16/24
Singapore 139949
Singapore

Hereby declares that the following products:

Benchtop meters are rated 100 to 240 VAC, 50/60 Hz, 0.5A.
Handheld meters use four non-rechargeable AA batteries.

Benchtop Meters	**Portable Meters**
Orion Star A111 pH	Orion Star A121 pH
Orion Star A112 Conductivity	Orion Star A122 Conductivity
Orion Star A113 DO	Orion Star A123 DO

Equipment Class:

Measurement, control and laboratory
Orion Star A-series meters are EMC Class A

Conforms with the following directives and standards:

EN61326-1:2006	**Electromagnetic Compatibility (EMC Directive)** Electrical equipment for measurement, control and laboratory use - EMC requirements
EN61010-1:2001 **UL61010-1:2004** **CAN/CSA C22.2 No. 61010-1-04**	**Safety Standards** Safety requirements for electrical equipment for measurement, control and laboratory use - general requirements

Cheow Kwang Chan
QA/Regulatory Manager

Place and Date of Issue:
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Singapore

Meter Specifications

Meter Operating Conditions	
Operating Ambient Temperature	5 to 45 °C
Operating Relative Humidity	5 to 85 %, non-condensing
Storage Temperature	-20 to +60 °C
Storage Relative Humidity	5 to 85 %, non-condensing
Pollution	Degree 2
Overvoltage	Category II
Weight	Portable: 450g Benchtop: 850g
Size	Portable: 5.9cm (H) x 10.5cm (W) x 23.1cm (D) Benchtop: 9.3cm (H) x 18.0cm (W) x 23.6cm (D)
Regulatory and Safety	CE, TUV 3-1, FCC Class A
Power Rating	DC Input: 9 VDC 1A Battery: 4 x AA
Shock and Vibration	Vibration: shipping/handling per ISTA #1A. Shock: drop test in packaging per ISTA #1A
Enclosure (designed to meet)	Portable: IP67 Benchtop: IP54

Universal Power Adapter Operating Conditions	
Operating Ambient Temperature	0 to 50 °C
Operating Relative Humidity	0 to 90 %, non-condensing
Storage Temperature	-20 to +75 °C
Storage Relative Humidity	0 to 90 %, non-condensing
Pollution	Degree 2
Overvoltage	Category II

Meter Parameter Specifications	
Dissolved Oxygen Measurement	
Concentration	
Range	0 to 20 mg/L
Resolution	0.01, 0.1
Relative Accuracy	± 0.2
% Saturation	
Range	0 to 200
Resolution	0.1, 1
Relative Accuracy	±2%
Manual Barometric Pressure Correction	450.0 to 850.0 mm Hg
Manual Salinity Factor Correction	0 to 45 ppt
Compatible Probe Type	Polarographic
Temperature Measurement	
Range	0 to 50°C
Resolution	0.1
Relative Accuracy	±0.1
Offset Calibration	1 point

Note: *Specifications subject to change without notice.*

Ordering Information

Benchtop meters include electrode arm.
Kits contain meter, probe and appropriate calibration and fill solutions.

CML #	Description
STARA1110	Orion STAR A111 Benchtop pH Meter
STARA1115	Orion STAR A111 Benchtop pH Meter Kit
STARA1120	Orion STAR A112 Benchtop Conductivity Meter
STARA1125	Orion STAR A112 Benchtop Conductivity Meter Kit
STARA1130	Orion STAR A113 Benchtop Dissolved Oxygen Meter
STARA1135	Orion STAR A113 Benchtop Dissolved Oxygen Meter Kit
STARA1210	Orion STAR A121 Portable pH Meter
STARA1215	Orion STAR A121 Portable pH Meter Kit
STARA1220	Orion STAR A122 Portable Conductivity Meter
STARA1225	Orion STAR A122 Portable Conductivity Meter Kit
STARA1230	Orion STAR A123 Portable Dissolved Oxygen Meter
STARA1235	Orion STAR A123 Portable Dissolved Oxygen Meter Kit
STARA-BEA	Benchtop electrode arm for Orion Star A-series meters
STARA-HB	Freestanding Base for use with Orion Star A-series benchtop electrode arm
STARA-CS	Hard Carrying Case for Orion Star A-series Portable Meters
STARA-AR	Armor for Orion Star A-series Portable Meters, includes electrode holders for pH, conductivity and DO probes
STARA-ESPH	pH Electrode Holder for Orion Star A-series Armor
STARA-ESCD	Conductivity and DO Probe Holder for Orion Star A-series Armor
9157BNMD	Orion Triode 3-in-1 pH/ATC Probe, Refillable, epoxy body
9107BNMD	Orion Triode 3-in-1 pH/ATC Probe, Gel-filled, epoxy body
011050MD	Orion 2-Electrode Conductivity Cell, K=1.0
083005MD	Orion Polarographic DO probe , 1.5m cable

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Chapter 7 Appendix

Salinity Correction

Since the presence of dissolved salts limits the amount of oxygen that can dissolve in water, the relationship between oxygen concentration and partial pressure varies with sample salinity. The meter default has a salinity correction factor of 0. To compensate for variations in ionic concentration, use the sample's conductivity measurement to determine the salinity of the sample. Enter this value in parts per thousand (ppt) to ensure standardized DO measurements.

Conductivity at 20 °C (mS/cm)	Salinity Correction Value (ppt)	Conductivity at 20 °C (mS/cm)	Salinity Correction Value (ppt)	Conductivity at 20 °C (mS/cm)	Salinity Correction Value (ppt)
5	3	20	13	35	25
6	4	21	14	36	25
7	4	22	15	37	26
8	5	23	15	38	27
9	6	24	16	39	28
10	6	25	17	40	29
11	7	26	18	42	30
12	8	27	18	44	32
13	8	28	19	46	33
14	9	29	20	48	35
15	10	30	21	50	37
16	10	31	22	52	38
17	11	32	22	54	40
18	12	33	23	56	42
19	13	34	24		

This table was calculated from the International Oceanographic Tables, Vol. 1, National Institute of Oceanography of Great Britain, Womley, Godaming, Surrey, England and Unesco, Paris 1971.

Notes

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Water Analysis Instruments

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267277-001 Rev. B 07-11

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