

## Versatile, high-performance lab measurement systems

Thermo Scientific™ Orion™ Versa Star Pro™ premium electrochemistry meter is your meter as you need it – now and in the future.



### Applications

- Pharmaceutical
- Biotechnology
- Food and beverage
- Industrial
- Environmental
- Drinking water
- Wastewater



Thermo Scientific Orion Versa Star Pro benchtop meters are designed to meet your most challenging applications with ease. Delivering rich features and functionality, you can optimally configure your meter system to meet your changing needs using interchangeable measurement modules to customize four channels.

Easily view your measurements on a large color display with adjustable text sizes. Take the guesswork out of meter calibration and setup with onscreen instructions available in a variety of languages. Enjoy quick and simple data entry using the numeric keypad.

### Features and Benefits

- Select modules to measure pH, ion concentration (ISE), conductivity, dissolved oxygen and LogR temperature
- Onscreen measurement stability indicator shows when readings are ready
- View active calibration log while taking measurements to ensure data integrity
- Audible alarms notify offset value, high/low limit, and calibration time limit
- Mix samples using meter-controlled stirrer probes that can be easily rinsed
- Collect up to 2000 data sets with time/date stamp and optional electrode, sample and account identification
- Calibration log stores 30 calibrations per parameter
- Non-volatile memory preserves data and settings, even in event of power loss
- Transfer data to computer or printer via USB or RS232

## System Access Feature

Orion Versa Star Pro meters offer a system access feature for administrative and custom user access levels to various meter functions including data/time settings, meter setup, data log and calibration log. The system access feature can easily be turned on or off as the needs of your lab change for flexibility in operation and ease-of-use. Use the new system access feature offered with Orion Versa Star Pro meters to assign administrative and custom user access levels to the following meter functions:

- Cal Log View & Print
- Calibration Log Delete
- Calibration Mode
- Channel Display
- Diagnostics Menu
- Data Log Delete
- Data Log Print
- Data Log View
- Incremental Techniques
- Instrument Settings
- Log/Print (Manual)
- Measure Mode & Settings
- Methods
- Sample ID
- Temperature Settings

Use password protection to secure selected meter functions while leaving others accessible for the customized security needed for your laboratory and data reporting needs. The system access feature can easily be turned on or off as the needs of your lab change for the ultimate flexibility in operation and ease-of-use.



Create name, password and access level for up to ten users



Secure your preferred meter functions using the custom access level

## Versa Star Measurement Modules

Select the measurement modules you need to best fit your application requirements.

Orion Versa Star Pro meters are available without modules for maximum flexibility in your preferred meter configuration or with modules in preconfigured systems that can be updated at any time by adding or removing modules. Modules are automatically recognized by the meter and the channel measurement capabilities are updated according to the type of module that is installed.



| Cat. No.  | Description                                                                                                      |
|-----------|------------------------------------------------------------------------------------------------------------------|
| VSTAR-PH  | Versa Star pH Module to measure pH, mV, relative mV, ORP and temperature                                         |
| VSTAR-LR  | Versa Star pH/LogR Module to measure pH, mV, relative mV, ORP and LogR temperature                               |
| VSTAR-ISE | Versa Star pH/ISE Module to measure pH, ion concentration (ISE), mV, relative mV, ORP and temperature            |
| VSTAR-CND | Versa Star Conductivity Module to measure conductivity, TDS, salinity, resistivity and temperature               |
| VSTAR-RD  | Versa Star RDO/DO Module to measure dissolved oxygen and temperature using RDO optical or polarographic DO probe |
| VSTAR00   | Versa Star Pro Meter Without Modules includes electrode stand, universal power adapter and USB cable             |



# pH Measurement

## Versa Star Pro 10 pH Meter

- Measure pH, mV, relative mV or ORP with temperature
- Perform up to a six point pH calibration with automatic buffer recognition of NIST, DIN or user-defined buffer groups
- Use calibration editing function to fix individual points without a full recalibration
- Onscreen calibration graph for multipoint pH calibrations
- Customize readings to show calibration history and pH electrode status or simplify to show extra-large pH reading

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR10  | <b>Orion Versa Star Pro pH Benchtop Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH module (VSTAR-PH)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                         |
| VSTAR12  | <b>Orion Versa Star Pro pH Benchtop Meter Standard ROSS Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH module (VSTAR-PH)</li> <li>• 8302BNUMD ROSS Ultra Triode glass-body pH/ATC electrode</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and solution kit</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                 |
| VSTAR13  | <b>Orion Versa Star Pro pH Benchtop Meter ROSS Difficult Sample Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH module (VSTAR-PH)</li> <li>• 8172BNWP ROSS Sure-Flow glass-body pH electrode</li> <li>• 927007MD Orion stainless steel ATC temperature probe</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and solution kit</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |



## Versa Star Pro 80 pH/LogR Meter

- LogR technology uses the glass-bulb of most pH electrodes to measure both pH and temperature at the same location, ideal for small sample volumes and samples that are difficult to clean
- Measure pH, mV, relative mV or ORP with temperature
- Select automatic, manual or LogR temperature functions
- Perform up to a six point pH calibration with automatic buffer recognition of NIST, DIN or user-defined buffer groups

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR80  | <b>Orion Versa Star Pro pH/LogR Benchtop Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/LogR module (VSTAR-LR)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                                            |
| VSTAR82  | <b>Orion Versa Star Pro pH/LogR Benchtop Meter Standard ROSS Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/LogR module (VSTAR-LR)</li> <li>• 8172BNWP ROSS Sure-Flow glass-body pH electrode</li> <li>• 927007MD Orion stainless steel ATC temperature probe</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and solution kit, 810007 ROSS fill solution</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |
| VSTAR83  | <b>Orion Versa Star Pro pH/LogR Benchtop Meter ROSS Micro Sample Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/LogR module (VSTAR-LR)</li> <li>• 8220BNWP ROSS Micro glass-body pH electrode</li> <li>• 927007MD Orion stainless steel ATC temperature probe</li> <li>• 810199 ROSS pH buffer and solution kit</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                            |



# Ion Concentration (ISE) Measurement

## Versa Star Pro 40 pH/ISE Meters

- Measure pH, ion concentration (ISE), mV, relative mV or ORP with temperature
- Perform up to a six point pH calibration with automatic buffer recognition of NIST, DIN or user-defined buffer groups
- Perform up to a six point ISE calibration with easy entry of concentration values using the numeric keypad
- Incremental techniques for single and double known addition and subtraction and analate (sample) addition and subtraction

### Single Channel pH/ISE Meter Options

| Cat. No.  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR40A  | <b>Orion Versa Star Pro pH/ISE Benchtop Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/ISE module (VSTAR-ISE)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                      |
| VSTAR40A2 | <b>Orion Versa Star Pro pH/ISE Benchtop Meter Standard ROSS Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/ISE module (VSTAR-ISE)</li> <li>• 8102BNUWP ROSS Ultra glass-body pH electrode</li> <li>• 927007MD Orion stainless steel ATC temperature probe</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |



### Dual Channel pH/ISE Meter Options

| Cat. No.  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR40B  | <b>Orion Versa Star Pro Two Channel pH/ISE Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with two pH/ISE modules (2 x VSTAR-ISE)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                         |
| VSTAR40B2 | <b>Orion Versa Star Pro Two Channel pH/ISE Meter Standard ROSS Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with two pH/ISE modules (2 x VSTAR-ISE)</li> <li>• 8102BNUWP ROSS Ultra glass-body pH electrode</li> <li>• 927007MD Orion stainless steel ATC temperature probe</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• 2 electrode stands, universal power adapter, USB cable and literature</li> </ul> |



# Dissolved Oxygen Measurement

## Versa Star Pro 30 RDO/DO Meter

- Measure dissolved oxygen in % saturation or mg/L with temperature
- Use an Orion RDO optical or polarographic DO probe with automatic recognition
- Calibrate using water-saturated air, air-saturated water, custom value (Winkler) or zero point
- Built-in barometer automatically adjusts dissolved oxygen readings for barometric pressure
- Automatic salinity correction using manual entry or separate conductivity probe

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR30  | <b>Orion Versa Star Pro RDO/DO Benchtop Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with RDO/DO module (VSTAR-RD)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                   |
| VSTAR32  | <b>Orion Versa Star Pro RDO/DO Benchtop Meter Standard Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with RDO/DO module (VSTAR-RD)</li> <li>• 083005MD Polarographic DO probe with calibration sleeve</li> <li>• 080513 DO probe maintenance kit</li> <li>• BOD adapter/funnel/stirrer</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |



# Conductivity Measurement

## Versa Star Pro 20 Conductivity Meter

- Measure conductivity, TDS, salinity or resistivity with temperature
- Perform up to a six point conductivity calibration
- Auto-ranging conductivity values eliminate the need to manually switch conductivity measurement ranges
- Temperature compensation settings include linear, non-linear, EP (USP) or off with 5, 10, 15, 20 or 25 °C reference

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR20  | <b>Orion Versa Star Pro Conductivity Benchtop Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with conductivity module (VSTAR-CND)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                  |
| VSTAR22  | <b>Orion Versa Star Pro Conductivity Benchtop Meter Standard Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with conductivity module (VSTAR-CND)</li> <li>• 013005MD Orion 4-cell (K=0.475) conductivity probe</li> <li>• 011007 Orion 1413 <math>\mu</math>S conductivity standard</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |
| VSTAR23  | <b>Orion Versa Star Pro Conductivity Benchtop Meter Pure Water Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with conductivity module (VSTAR-CND)</li> <li>• 013016MD Orion 2-cell (K=0.1) conductivity probe</li> <li>• 011008 Orion 100 <math>\mu</math>S conductivity standard</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>  |



# pH and Conductivity Measurement

## Versa Star Pro 50 pH and Conductivity Meter

- Includes all the benefits of a pH and conductivity meter in one convenient system
- Measure pH, mV, relative mV or ORP with temperature on one channel
- Measure conductivity, TDS, salinity or resistivity with temperature on a second channel
- View each measurement separately on a full screen display or toggle to a split screen display to view both measurement channels simultaneously

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR50  | <b>Orion Versa Star Pro pH/Conductivity Benchtop Meter &amp; Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH module and conductivity module</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                    |
| VSTAR52  | <b>Orion Versa Star Pro pH/Conductivity Benchtop Meter Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH module and conductivity module</li> <li>• 8157BNUMD ROSS Ultra Triode epoxy-body pH/ATC electrode</li> <li>• 013005MD Orion 4-cell (K=0.475) conductivity probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• 011007 Orion 1413 <math>\mu</math>S conductivity standard</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |



# Multiparameter Measurement

## Versa Star Pro 90 pH/ISE, Conductivity and RDO/DO Meter

- Includes all the benefits of a pH/ISE, conductivity and dissolved oxygen meter in one convenient system
- Measure pH, mV, relative mV or ORP with temperature on one channel
- Measure conductivity, TDS, salinity or resistivity with temperature on a second channel
- Measure dissolved oxygen in % saturation or mg/L with temperature on a third channel
- View each measurement separately on a full screen display or toggle to a split screen display to view any combination of measurement channels simultaneously

## Single Channel pH/ISE with Conductivity and RDO/DO Meter Options

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR90  | <b>Orion Versa Star Pro pH/ISE, Conductivity and RDO/DO Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/ISE module (VSTAR-ISE), conductivity module (VSTAR-CND) and RDO/DO module (VSTAR-RD)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| VSTAR92  | <b>Orion Versa Star Pro pH/ISE, Conductivity and RDO/DO Meter Standard Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/ISE module (VSTAR-ISE), conductivity module (VSTAR-CND) and RDO/DO module (VSTAR-RD)</li> <li>• 8157BNUMD ROSS Ultra Triode epoxy-body pH/ATC electrode</li> <li>• 013005MD Orion 4-cell (K=0.475) conductivity probe</li> <li>• 083005MD Polarographic DO probe with calibration sleeve</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• 011007 Orion 1413 <math>\mu</math>S conductivity standard</li> <li>• 080513 DO maintenance kit &amp; BOD adapter/funnel/stirrer</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |
| VSTAR94  | <b>Orion Versa Star Pro pH/ISE, Conductivity and RDO/DO Meter RDO Optical Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with pH/ISE module (VSTAR-ISE), conductivity module (VSTAR-CND) and RDO/DO module (VSTAR-RD)</li> <li>• 8157BNUMD ROSS Ultra Triode epoxy-body pH/ATC electrode</li> <li>• 013005MD Orion 4-cell (K=0.475) conductivity probe</li> <li>• 087010MD RDO Optical DO probe with calibration sleeve</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• 011007 Orion 1413 <math>\mu</math>S conductivity standard</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                      |



## Dual Channel pH/ISE with Conductivity and RDO/DO Meter Options

| Cat. No. | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VSTAR91  | <b>Orion Versa Star Pro Two Channel pH/ISE, Conductivity and RDO/DO Meter and Stand Only</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with two pH/ISE modules (2 x VSTAR-ISE), conductivity module (VSTAR-CND) and RDO/DO module (VSTAR-RD)</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| VSTAR93  | <b>Orion Versa Star Pro Two Channel pH/ISE, Conductivity and RDO/DO Meter Standard Kit</b> <ul style="list-style-type: none"> <li>• Versa Star Pro meter with two pH/ISE modules (2 x VSTAR-ISE), conductivity module (VSTAR-CND) and RDO/DO module (VSTAR-RD)</li> <li>• 8157BNUMD ROSS Ultra Triode epoxy-body pH/ATC electrode</li> <li>• 013005MD Orion 4-cell (K=0.475) conductivity probe</li> <li>• 083005MD Polarographic DO probe with calibration sleeve</li> <li>• 096019 Orion Star series meter-powered stirrer probe</li> <li>• 810199 ROSS pH buffer and storage solution kit</li> <li>• 011007 Orion 1413 <math>\mu</math>S conductivity standard</li> <li>• 080513 DO maintenance kit &amp; BOD adapter/funnel/stirrer</li> <li>• Electrode stand, universal power adapter, USB cable and literature</li> </ul> |



## Orion Versa Star Pro Meter and Orion Versa Star Module Specifications

|                              |                                                                  |
|------------------------------|------------------------------------------------------------------|
| Measurement Channels         | 4 – customizable with measurement modules                        |
| Display                      | Color graphic LCD with adjustable measurement text size          |
| Onscreen Text Prompts        | Step-by-step calibration and guided setup instructions           |
| View Options                 | View 1 to 4 measurement channels simultaneously                  |
| Keypad                       | Numeric with menu-specific function keys                         |
| Measurement Modes            | Auto-Read, Timed, Single-Shot, Continuous                        |
| Data Log Memory              | 2000 data sets with time and date stamp                          |
| Data Log Functions           | Automatic (Auto-Read, timed, single-shot) or manual (continuous) |
| Data Log Transfer            | Transfer single, range or all data points to printer or computer |
| Identification Options       | Electrode ID, Sample ID, Account ID                              |
| Calibration Log              | 30 calibrations per measurement mode with time and date stamp    |
| Methods                      | 10 per channel                                                   |
| Alarms                       | Offset, High/Low Limit, Calibration Due                          |
| Communication Ports          | RS232, bidirectional USB type B, printer-dedicated USB type AB   |
| Stirrer Probe Ports          | 2                                                                |
| Power Source                 | Universal AC power adapter, 90-260 VAC, 50-60 Hz                 |
| Certifications               | CE, TUV 3-in-1, FCC Class A                                      |
| Enclosure (Designed to Meet) | IP-54                                                            |
| Meter Weight                 | 1.15 kg (2.5 lb), modules add 0.15 kg (0.3 lb) each              |
| Meter Dimensions (H x W x D) | 9.5 cm x 24.0 cm x 28.2 cm (3.75" x 9.45" x 11.1")               |
| Warranty                     | 3 years                                                          |

## Orion Versa Star pH, pH/ISE and pH/LogR Module Specifications: VSTAR-PH, VSTAR-ISE, VSTAR-LR

|                                            |                         |                                                                                                                                                                              |
|--------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| pH                                         | Range                   | - 2.000 to 20.000                                                                                                                                                            |
|                                            | Resolution              | 0.1, 0.01, 0.001                                                                                                                                                             |
|                                            | Relative Accuracy       | ±0.002                                                                                                                                                                       |
|                                            | Calibration Points      | Up to 6                                                                                                                                                                      |
|                                            | Calibration Editing     | Yes                                                                                                                                                                          |
|                                            | Adjustable ISO Point    | Yes                                                                                                                                                                          |
|                                            | Input Impedance         | > 10 <sup>12</sup> ohms                                                                                                                                                      |
| mV/RmV                                     | Range                   | ± 2000.0 mV                                                                                                                                                                  |
|                                            | Resolution              | 0.1 mV                                                                                                                                                                       |
|                                            | Relative Accuracy       | ± 0.2 mV or ± 0.05 % of reading, whichever is greater                                                                                                                        |
|                                            | Relative mV Mode        | Yes                                                                                                                                                                          |
|                                            | E <sub>H</sub> ORP Mode | Yes                                                                                                                                                                          |
| ISE<br>(VSTAR-ISE module only)             | Range                   | 0.0001 to 19990                                                                                                                                                              |
|                                            | Resolution              | 0.0001 minimum, 1 to 4 significant digits (user selectable)                                                                                                                  |
|                                            | Relative Accuracy       | ±0.2 mV or ±0.05 % of reading, whichever is greater                                                                                                                          |
|                                            | Units                   | ppm, Molar, mg/L, %, ppb, none                                                                                                                                               |
|                                            | Calibration Points      | Up to 6                                                                                                                                                                      |
|                                            | Calibration Editing     | Yes                                                                                                                                                                          |
|                                            | Adjustable ISO Point    | Yes                                                                                                                                                                          |
|                                            | Advanced Features       | Segmented (point-to-point) slope or linear regression, non-linear selectable auto-blank, low concentration range stability, electrode type display, temperature compensation |
| Temperature                                | Incremental Techniques  | Single known addition & subtraction, double known addition & subtraction, single analate (sample) addition & subtraction                                                     |
|                                            | Range                   | -5 to 105 °C, 22 to 221 °F                                                                                                                                                   |
|                                            | Resolution              | 0.1 °C, 0.1 °F                                                                                                                                                               |
|                                            | Relative Accuracy       | ±0.1 °C, ±0.1 °F                                                                                                                                                             |
|                                            | Offset Calibration      | 1 point                                                                                                                                                                      |
|                                            | Source Options          | Manual or automatic with ATC probe                                                                                                                                           |
| LogR Temperature<br>(VSTAR-LR module only) | Range                   | 0 to 100 °C, 32 to 212 °F                                                                                                                                                    |
|                                            | Resolution              | 0.1 °C, 0.1 °F                                                                                                                                                               |
|                                            | Relative Accuracy       | ±0.5 °C, ±0.5 °F                                                                                                                                                             |
|                                            | Resistance Range        | 0 to 6000 MΩ                                                                                                                                                                 |
|                                            | Resistance Resolution   | 0.1 MΩ up to 1999.9 MΩ, 1 MΩ above 1999.9 MΩ                                                                                                                                 |
|                                            | Offset Calibration      | 3 points                                                                                                                                                                     |
| Inputs                                     | Calibration Options     | ATC probe, NIST reference                                                                                                                                                    |
|                                            | BNC                     | pH, ORP or ion selective electrode (ISE)                                                                                                                                     |
|                                            | Pin Tip                 | Reference electrode                                                                                                                                                          |
|                                            | 8 pin MiniDIN           | ATC temperature probe                                                                                                                                                        |

## Orion Versa Star Conductivity Module Specifications: VSTAR-CND

|              |                           |                                                                                                  |
|--------------|---------------------------|--------------------------------------------------------------------------------------------------|
| Conductivity | Range                     | 0.001 $\mu$ S to 3000 mS                                                                         |
|              | Resolution                | 0.001 $\mu$ S minimum, auto ranging, up to 4 significant digits                                  |
|              | Relative Accuracy         | 0.5 % of reading $\pm 1$ digit > 3 $\mu$ S, 0.5 % of reading $\pm 0.01$ $\mu$ S $\leq$ 3 $\mu$ S |
|              | Reference Temperature     | 5 °C, 10 °C, 15 °C, 20 °C, 25 °C                                                                 |
|              | Temperature Compensation  | Linear (0 to 10.0 %/°C), nonlinear nLFn, nonlinear nLFu, EP (USP), off                           |
|              | Compatible Cell Constants | 0.001 to 199.9 cm <sup>-1</sup>                                                                  |
|              | Calibration Points        | Up to 6                                                                                          |
|              | Calibration Editing       | Yes                                                                                              |
| TDS          | Range                     | 0.001 ppm to 200.0 ppt                                                                           |
|              | Resolution                | 0.001 ppm minimum, auto ranging, up to 4 significant digits                                      |
|              | Relative Accuracy         | 0.5 % of reading $\pm 1$ digit                                                                   |
|              | TDS Factor                | Linear (0.02 to 9.99) or ISO/EN 27888                                                            |
| Salinity     | Range                     | 0.06 to 80.00 psu, 0.05 to 42.00 ppt                                                             |
|              | Resolution                | 0.01 psu or ppt minimum, auto ranging                                                            |
|              | Relative Accuracy         | 0.5 % of reading $\pm 1$ digit                                                                   |
|              | Type                      | Practical salinity (psu) or natural sea water (ppt)                                              |
| Resistivity  | Range                     | 2 $\Omega$ to 100 M $\Omega$                                                                     |
|              | Resolution                | 1 $\Omega$ or 0.1 M $\Omega$ , auto ranging                                                      |
|              | Relative Accuracy         | 0.5 % of reading $\pm 1$ digit                                                                   |
| Temperature  | Range                     | -5 to 105 °C, 22 to 221 °F                                                                       |
|              | Resolution                | 0.1 °C, 0.1 °F                                                                                   |
|              | Relative Accuracy         | $\pm 0.1$ °C, $\pm 0.1$ °F                                                                       |
|              | Offset Calibration        | 1 point                                                                                          |
|              | Source Options            | Manual or automatic with built-in temperature sensor                                             |
| Input        | 8 pin MiniDIN             | Conductivity probe with optional built-in temperature sensor                                     |

## Orion Versa Star RDO/Dissolved Oxygen Module Specifications: VSTAR-RD

|                     |                                |                                                                                                           |              |
|---------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------|--------------|
| Dissolved Oxygen    | Polarographic DO               | Concentration                                                                                             | % Saturation |
|                     | Range                          | 0 to 90 mg/L                                                                                              | 0 to 600 %   |
|                     | Resolution                     | 0.01, 0.1 mg/L                                                                                            | 0.1, 1 %     |
|                     | Relative Accuracy              | $\pm 0.2$ mg/L                                                                                            | $\pm 2$ %    |
|                     | RDO Optical DO                 | Concentration                                                                                             | % Saturation |
|                     | Range                          | 0 to 50 mg/L                                                                                              | 0 to 500 %   |
|                     | Resolution                     | 0.01, 0.1 mg/L                                                                                            | 0.1, 1 %     |
|                     | Relative Accuracy              | $\pm 0.1$ mg /L up to 8 mg/L, $\pm 0.2$ mg /L from 8 to 20 mg/L, $\pm 10$ % of reading from 20 to 50 mg/L | $\pm 2$ %    |
|                     | Barometric Pressure Correction | 450 to 850 mmHg, automatic using built-in barometer or manual entry                                       |              |
|                     | Salinity Factor Correction     | 0 to 45 ppt, automatic using conductivity module and probe or manual entry                                |              |
|                     | Calibration Types              | Water saturated air, air saturated water, manual (Winkler), zero point                                    |              |
|                     | Compatible Sensors             | Polarographic, RDO optical                                                                                |              |
| Barometric Pressure | Range                          | 450.0 to 850.0 mmHg                                                                                       |              |
|                     | Resolution                     | 0.1 mmHg                                                                                                  |              |
|                     | Relative Accuracy              | $\pm 6$ mmHg                                                                                              |              |
| Temperature         | Range                          | 0 to 50 °C, 32 to 122 °F                                                                                  |              |
|                     | Resolution                     | 0.1 °C, 0.1 °F                                                                                            |              |
|                     | Relative Accuracy              | $\pm 0.1$ °C, $\pm 0.1$ °F                                                                                |              |
|                     | Offset Calibration             | 1 point                                                                                                   |              |
|                     | Source Option                  | Automatic with built-in temperature sensor                                                                |              |
| Input               | 9 pin MiniDIN                  | Dissolved oxygen probe with built-in temperature sensor                                                   |              |

Find out more at [thermofisher.com/water](http://thermofisher.com/water)

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