Making it easy to do two things at once - the Orion DUAL STAR combines the best of the Orion 720A+/920A+ and the Orion Star plus meters.

Thermo Scientific Orion DUAL STAR™ Meter

Markets
- Wastewater
- Drinking Water
- Life Science Research
- Food and Beverage

Applications
- Discharge Permits
- Chemical or Reagent Manufacturing
- Process and Quality Checks
- Product Development
- Final Product Review

The Thermo Scientific Orion DUAL STAR meter shows the results of both input channels simultaneously. Screen prompts guide you through measurement and setup menus. The Thermo Scientific Orion EZ Startup™ option and shortcut keys quickly move the meter to key programs for fast startup and measuring.

The Thermo Scientific Orion SMART STABILITY™ and SMART AVERAGING™ functions automatically compensate for measurement conditions, so the meter displays more accurate results faster. Additional meter programs include single and double known addition and subtraction methods and autosampler compatibility.

A variety of features make the DUAL STAR meter feel like it was built for you. Choose from the five available languages to customize the user interface – English, Spanish, French, German or Italian. The 10 methods stored per channel incorporate calibration data and password protection. GLP-compliant benefits include a 1000 point datalogging with time and date stamping, calibration alarm and calibration information with point-by-point and average electrode slope data. When transferring data through the RS232 or USB ports, the meter is able to send a defined data range or all the data.
Advantages

- Dual channel with simultaneous displayed measurements
- Low concentration range reading stability
- Known addition and subtraction incremental methods
- 5 language choices: English, Spanish, French, German and Italian
- Thermo Scientific Orion EZ Startup™ for quick and easy meter set up
- Thermo Scientific Orion SMART STABILITY™ and SMART AVERAGING™ for accurate and fast results
- Meter prompts and shortcut keys

- $E_h$ ORP calibration capability
- 10 methods stored per channel – retains calibrations among multiple electrodes
- 1000 point datalogging with time and date stamping
- Calibration graph with slope data for viewing or printing
- Star stirrer probe controlled directly from the meter
- Autosampler compatibility*
- Meter software can be updated through the USB port

Description

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

Toggles display to show both channels simultaneously or just one.

Single channel display also shows electrode serial number, sample ID, date and time.

Turns on/off the meter and the backlighting

Function keys update according to the menu for easy selection

Shortcut keys for direct access to commonly used functions

Numeric keypad for select data entry in submenus
# Product Specifications and Features

## Specifications

### pH

- **Range**: -2.000 to 19.999
- **Resolution**: 0.1, 0.01, 0.001
- **Relative Accuracy**: ± 0.002
- **Calibration Points**: 1 to 6
- **Buffer Recognition**: USA, NIST, Euro, DIN, Custom

### ISE

- **Range**: 0 to 19999
- **Resolution**: 1, 2 or 3 significant digits
- **Relative Accuracy**: ± 0.2 mV or 0.05 %, whichever is greater
- **Units**: ppm, ppb, M, % or unitless
- **Technique Options**: Single known addition and subtraction
  - Double known addition and subtraction
- **Calibration Points**: 2 to 6
- **Calibration Options**: Linear, point to point, non-linear selectable auto-blank

### mV • Rel mV • ORP

- **Range**: ± 1999.9
- **Resolution**: 0.1
- **Relative Accuracy**: ± 0.2 mV or 0.05 %, whichever is greater
- **E<sub>e</sub> Calibration Capability**: Yes

### Temperature

- **Range**: -5 to 105 °C
- **Resolution**: 0.1 °C
- **Relative Accuracy**: ± 0.1 °C

## Features

### LCD Display Type

- Simultaneous dual channel or individual channel

### Backlight (on/off)

- 5 adjustable levels

### Sensor Inputs

- Two BNC, two pin tip (reference), two 8 pin MiniDIN (ATC), stirrer jack

### Method Storage

- 20
  - (10 per channel with calibration data)

### Password Protection

- Yes

### Datalog Points

- 1000 with time/date stamp

### GLP

- Yes

### Data Transfer

- RS232, USB*

### Regulatory and Safety

- CE, CSA, TUV, FCC Class A, RoHS, China RoHS

### Ambient Operating Temperature

- 5 to 45 °C

### Relative Humidity

- 5 to 85 %, non-condensing

### Power

- Universal AC adapter (110 V / 220 V / 240 V) included with meter

### Warranty

- 36 months replacement

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* USB connectivity for data downloading and autosampler compatibility will be available for complimentary download at [www.thermo.com/water](http://www.thermo.com/water) by December 2009.

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Get the most out of your Orion DUAL STAR meter and ion selective electrode.

Visit [www.thermo.com/waterapps](http://www.thermo.com/waterapps) for Quick Start Notes - start-up and procedural information all in one.
### Thermo Scientific Orion DUAL STAR™ Meter and Accessories

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2115000</td>
<td>Orion DUAL STAR pH/ISE meter, stainless steel ATC probe (927007MD), swing arm electrode stand (909043), RS232 cable (1010053), mini-USB to USB cable, universal power adapter and user guide</td>
</tr>
<tr>
<td>2115001</td>
<td>Orion DUAL STAR pH/ISE meter, 8102BNUWP ROSS Ultra pH electrode, stainless steel ATC probe (927007MD), RS232 cable (1010053), mini-USB to USB cable, swing arm electrode stand (909043), pint of pH 4 buffer (910104), pint of pH 7 buffer (910107), pint of pH 10 buffer (910110), pint of ROSS® electrode storage solution (810001), universal power adapter and user guide</td>
</tr>
<tr>
<td>2115101</td>
<td>Orion DUAL STAR pH/ISE meter, 8102BNUWP ROSS Ultra pH/ATC Triode™ refillable electrode, RS232 cable (1010053), universal power adapter, swing arm electrode stand (909043) and user guide</td>
</tr>
<tr>
<td>2115102</td>
<td>Orion DUAL STAR pH/ISE meter, 8157BNUMD ROSS Ultra pH/ATC Triode refillable electrode, RS232 cable (1010053), RS232 cable (1010053), mini-USB to USB cable, swing arm electrode stand (909043) and universal power adapter and user guide</td>
</tr>
</tbody>
</table>

### Thermo Scientific Orion Ion Selective Electrodes

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Species</th>
<th>Measurement Range</th>
<th>Calibration Standards</th>
<th>Required ISA</th>
</tr>
</thead>
<tbody>
<tr>
<td>9512HPBNWP</td>
<td>Ammonia (NH₃) High-Performance</td>
<td>5 x 10⁻⁷ to 1.0 M 0.01 to 17,000 ppm</td>
<td>0.1 M NH₄Cl / 951006</td>
<td>Low-level ISA / 951011 or ISA / 951211</td>
</tr>
<tr>
<td>9512BNWP</td>
<td>Standard Ammonia</td>
<td>5 x 10⁻⁷ to 1.0 M 0.01 to 17,000 ppm</td>
<td>0.1 M NH₄Cl / 951006</td>
<td>ISA / 951211</td>
</tr>
<tr>
<td>9617BNWP</td>
<td>Chloride (Cl⁻) ionplus® Design</td>
<td>5 x 10⁻⁴ to 1.0 M 1.8 to 35,500 ppm</td>
<td>0.1 M NaCl / 941707 100 ppm Cl⁻ / 941707 1000 ppm Cl⁻ / 941708</td>
<td>ISA / 940011 or CISA / 941709</td>
</tr>
<tr>
<td>9609BNWP</td>
<td>Fluoride (F⁻) ionplus Design</td>
<td>10⁻⁶ M to saturated 0.02 ppm to saturated</td>
<td>0.1 M NaF / 940906 100 ppm F⁻ / 940907 1 ppm F⁻ w/TISAB II / 040906 2 ppm F⁻ w/TISAB II / 040907 10 ppm F⁻ w/TISAB II / 040908</td>
<td>TISAB II / 940909 or TISAB III / 940911</td>
</tr>
<tr>
<td>9707BNWP</td>
<td>Nitrate (NO₃⁻) ionplus Design</td>
<td>7 x 10⁻⁶ to 1.0 M, 0.1 to 14,000 ppm as N</td>
<td>0.1 M NaNO₃ / 920706 1000 ppm as N / 920707 100 ppm N / 930707</td>
<td>ISA / 930711 or Nitrate ISS / 930710</td>
</tr>
<tr>
<td>9616BNWP</td>
<td>Silver/Sulfide (Ag⁺/ S²⁻) ionplus Design</td>
<td>10⁻⁷ to 1.0 M 0.01 to 107,900 ppm as Ag⁺ 0.003 to 32,100 ppm as S²⁻</td>
<td>Consult instruction manual</td>
<td>940011 for Ag⁺ 941609 for S²⁻</td>
</tr>
<tr>
<td>8611BNWP</td>
<td>Sodium (Na⁺) ROSS Sure-Flow Design</td>
<td>10⁻⁴ M to saturated, 0.02 ppm to saturated</td>
<td>10 ppm Na⁺ / 941105 100 ppm Na⁺ / 941107 1000 ppm Na⁺ / 841108 KA kit, 1 M NaCl w/ ISA / 650700, 0.1 M NaCl / 941706</td>
<td>ISA / 841111 Reconditioning solution / 941113</td>
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