

Designed for the highest accuracy and performance — our systems have flexible measurement parameters for single, dual or combined pH/ORP and conductivity inputs, also offered with optional digital communications. Have your mission critical process in complete control with ease!

## Thermo Scientific Orion 2100 Series pH/ORP and Conductivity Monitors



### Fast Response, Flexibility, Reliability and Ease-of-Use

The 2100 series monitors for pH/ORP, conductivity/resistivity or a combination of both provide accurate and reliable measurements in the harshest industrial environments. Offered in single channel or dual channel configurations, all with optional digital communication boards, set a new standard for ease-of-operation and measurement reliability. Combined with decades of superior Thermo Scientific Orion sensor technology, our systems provide rapid results with complete stability. The large bright backlit LCD provides a 3 line parameter display that includes scrolling text for menu driven measurement and calibration prompts. The rugged ¼ DIN chemically resistant enclosure offers NEMA 4X IP 65 protection while maintaining a small footprint for ease of installation in a panel (standard mounting)

or for pipe mounting. Multi-level password protection offers the necessary security for data integrity. Supervisor to operator level access protects customized setup parameters and allows for read only access for measurement, calibration and diagnostic logs, thus preventing accidental changes or unintended modifications from occurring. Security in your measurement results has never been easier. Developed over decades of expertise in ultra pure water analysis, our measurement and temperature compensation algorithms provide the highest level of accuracy across the most difficult high purity measurements. Understanding the challenges of cycle chemistry, our system provides cation and ammonia/ETA compensation for customizing to your plant's requirements.

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### Markets

- Power Generation
- Pulp and Paper
- Bottled/Municipal Water
- Wastewater
- Process Water
- Industrial Water

### Applications

- High Purity Applications to Wastewater Effluent
- Rugged Industrial Environments
- Process Optimization and Control Applications

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Additionally, when deionized water production requires compensation for HCl, NaOH, and H<sub>2</sub>SO<sub>4</sub> the 2100 series monitors perform without exception every time. Measurement output can be configured across four galvanically isolated 0-20 or 4-20 mA outputs or, when using the optional digital communication board, across Hart or Modbus protocol. Access to data and system performance is fast and easily understood across a wide variety of skill levels. The 2100 series monitors' step-by-step scrolling text leads you through the quick calibration and setup submenus, ensuring success with each key press. Maximizing your process control potential with the highest quality measurements is now simpler than ever before using the 2100 series pH/ORP and conductivity monitors. Take a look why we continue to set the pace.

### Benefits

Single and dual channel configurations available for pH/ORP and conductivity — or a combination of both offers flexibility for loop requirements

- Easy to operate and calibrate — the system walks you through the step-by-step calibration process, ensuring a successful calibration the first time and every time
- Fastest most stable measurements, limiting unnecessary calibration cycles due to drift with superior Orion sensor technology
- Measurements at a glance from any distance for even the lowest light conditions using the large operator friendly backlit display
- Advanced user interface with detailed calibration, measurement and diagnostic menus
- Ultra pure water compensation algorithms for low ionic strength waters
- Cation and ammonia/ETA compensation to customize for various cycle chemistries
- Password protection with supervisor to operator multi-level access — protects setup parameters and calibration data with simple view access
- Expandable platform — single channel add on boards for second channel monitoring for pH/ORP or conductivity add measurement loops with plug in ease
- Optional digital communication boards available for integration into your facility's digital plant architecture
- Analog outputs (4 standard) are isolated and include both 0-20 or 4-20 mA ranges, with option for linear or logarithmic scaling
- Rugged NEMA 4X ¼ DIN custom enclosure suitable for panel mounting (standard) or pipe mounting
- Easy installation has your plant up and running in minutes

## Thermo Scientific Orion 2102PH pH/ORP Monitor Thermo Scientific Orion 2104CD Conductivity Monitor

### Specific Measurements

#### pH Measurement (for 2102PH monitors only)

Range	0 to 14
Resolution	0.1, 0.01
Relative Accuracy	± 0.01
Hold Function	YES
Auto-Buffer Recognition	YES
Solution Compensation	YES

#### Conductivity Measurement (for 2104CD monitors only)

Range	0.001 µS/cm to 1000 mS/cm, cell constant dependent
Resolution	3 significant digits
Relative Accuracy	0.5% ± 1 digit
Auto-Ranging	YES
Range locking	YES
Cell Constant	0.001 to 199.9 cm <sup>-1</sup>
Cell Types	Cell with temperature sensor
Reference Temperature	25 °C
Temperature Compensation	Linear (0.0 to 10.0 %/C), nLFn, nLFu
Solution Compensation	YES
2-Electrode Sensors	YES
4-Electrode Sensors	YES
TDS Range	0 to 19999 mg/L
Salinity Range	0.1 to 80.0 ppt NaCl equivalent

#### mV/ORP Measurement

Range	±1999 mV
Resolution	1 mV
Relative Accuracy	± 1 mV
E <sub>H</sub> ORP Mode	YES

#### Temperature Measurement

Range	-10 to 110 °C
Resolution	0.1 °C
Relative Accuracy	± 0.5 °C
Temperature Display	YES
Temperature Compensation	Auto and manual
Continuous Temperature Readings	YES
ATC Probe Connection Detection	YES

#### Resistivity Measurement

Range	2 Ohm to 100 Meg-Ohm
Resolution	2 ohms-cm
Relative Accuracy	0.5 % ±1 digit

**Note:** Specifications listed for single channel measurement specific monitors, dual channel configurations — digital communications options available, see ordering information



**Thermo Scientific Orion 2102PH pH/ORP Monitor**  
**Thermo Scientific Orion 2104CD Conductivity Monitor**

<b>Specific Measurements</b>	
<b>pH Calibration</b>	
pH Auto-Calibration	YES
pH Manual Calibration	YES
Number pH Calibration Points	1 to 3
Buffers Recognized	US, EURO
Calibration Type	Point to point
<b>mV/ORP Calibration</b>	
Relative mV	YES
E <sub>H</sub> ORP	YES
<b>Conductivity Calibration</b>	
Conductivity Cell Constant Adjust Method	YES
Conductivity Direct-Cal	1 to 3 points
Conductivity Auto-Cal	1 to 3 points
<b>Display</b>	
Type	Custom LCD, backlit with scrolling text
<b>Inputs</b>	
Conductivity Probe	Tinned leads
ATC	30 K ohm, PT100, PT1000
pH Electrode	Tinned leads
<b>Outputs</b>	
Analog Output	YES, galvanically isolated
Number of Analog Outputs	2
Output Selections	0-20 mA or 4-20 mA
Programmable Range	YES
Selectable Channel	None
Conductivity Log and Linear Output Options	YES, user selectable
<b>Alarm Outputs</b>	
Number of Relay Outputs	3
Max Relay Load	250 VAC/5 A, 30 VDC/5 A
Minimum Value Alarm	YES
Maximum Value Alarm	YES
Error Alarm	YES
Offline/Calibration Alarm	YES
Programmable Min & Max Values	YES
Beeper	None
Physical Size	144 mm x 144 mm x 186 mm

<b>Specific Measurements</b>	
<b>Power</b>	
Power Input	85 to 132 or 170 to 264 VAC
<b>Rolling Measurement Data Logging</b>	
Number of Data Logging Points	200 points
Log Function	Timed
Timed Log	Time (1 min to 99:59 hours)
<b>Rolling Event Data Logging</b>	
Number of Data Logging Points	100 points
Log Function	Error, calibration, conf, power, alarm, offset
Log View	YES
<b>Special Log/Storage Modes</b>	
Calibration Log	Last 12 calibrations
<b>Software Features</b>	
Meter Serial Number	YES
Password Protection	YES
Programmable Alarms	High, low, error, cal/offline
Reset Function	YES
Hart (with purchase of optional communications board)	YES
Modbus (with purchase of optional communications board)	YES
<b>Meter Feature</b>	
Startup Reset	YES
Hardware Calibration Function	YES
Non-Volatile Memory	YES
Battery Backup	YES
Regulatory and Safety	CE, CSA, FCC Class A limits
<b>Environmental Operating Conditions</b>	
Ambient Operating Temperature	5 to 45 °C
Relative Humidity	5 to 95% non-condensing
Storage Temperature	-20 to 60 °C
Storage Humidity	5% to 95%, non-condensing
Case Material	Valox 364
<b>Shock and Vibration</b>	
Vibration, Shipping/Handling	0 to 60 Hz @ 1 G load
Shock, Drop Test in Packaging	36° on all sides and corners

**Thermo Scientific Orion 2100 Series pH/ORP and Conductivity Monitors**

- **Global support** — with experience that comes from supporting our customers for over 35 years throughout the world, our water quality specialists and customer support teams offer a quick, thorough and professional response to any problem encountered.
- **Focus on user benefits** — we work closely with you to define your needs and ensure you are using the monitor in a way that improves your bottom line. For more information, contact your local water quality specialists, call 1-800-225-1480 or visit [www.thermo.com/water](http://www.thermo.com/water).

Cat. No.	Description
<b>2102PH</b>	2102PH single channel pH/ORP monitor only
<b>2102PH1SC</b>	2102PH single channel monitor and ultra pure water (UPW) pH kit, includes flow cell, 2001SC ROSS® pH electrode, electrode cable (2001EC), ATC probe and buffers (pH 4, 7 and 10)
<b>2102PHX</b>	2102PH single channel monitor and ORP kit, includes ORP electrode (110250) and ORP standard (967901)
<b>2102PH2</b>	2102PH dual channel pH/ORP monitor only
<b>2102PH2SC</b>	2102PH dual channel monitor and ultra pure water (UPW) pH kit, includes (2) flow cells, (2) x 2001SC ROSS pH electrodes, (2) electrode cables (2001EC), (2) ATC probes and buffers (pH 4, 7 and 10)
<b>2102PH2X</b>	2102PH dual channel monitor and ORP kit, includes (2) ORP electrodes (110250) and ORP standard (967901)
<b>2104CD</b>	2104CD single channel conductivity monitor only
<b>2104CD1SS</b>	2104CD single channel monitor and ultra pure water (UPW) conductivity kit, includes 2002SS conductivity cell, flow cell and 100 µS/cm conductivity standard (011008)
<b>2104CD2SS</b>	2104CD dual channel monitor and ultra pure water (UPW) conductivity kit, includes (2) x 2002SS conductivity cells, (2) flow cells and 100 µS/cm conductivity standard (011008)
<b>21PHCD2</b>	2100 series dual channel pH/ORP and conductivity monitor only
<b>2100PH2</b>	Second channel add on board for pH/ORP
<b>2100CD2</b>	Second channel add on board for conductivity
<b>2100DC</b>	RS232C/485 digital communications
<b>2100FC</b>	Flow cell for 2001SC ROSS pH electrode
<b>2100FCA1</b>	Flow cell adapter for 2100R series ROSS Ultra® industrial pH electrodes
<b>2100FCA2</b>	Flow cell adapter for 2002SS conductivity cell
<b>2100PA</b>	Pre-amp for 2100 series monitors
<b>2100SMK</b>	Sample mounting kit
<b>2100PMK</b>	Pipe mounting kit

For more information or to contact your local Thermo Scientific water quality specialist, call 1-800-225-1480 or visit our website at [www.thermo.com/process](http://www.thermo.com/process).