Product Specifications

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 Analyzers

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

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

The 2100 series analyzers 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 protocols, 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 ½ 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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Additionally, when deionized water production requires compensation for HCl, NaOH, and H2SO4 the 2100 series analyzers perform without exception every time. Measurement output can be configured across four galvanically isolated 0-20 or 4-20 mA outputs per dual channel configuration. Access to data and system performance is fast and easily understood across a wide variety of skill levels. The 2100 series analyzers' 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 analyzers. Take a look why we continue to set the pace.

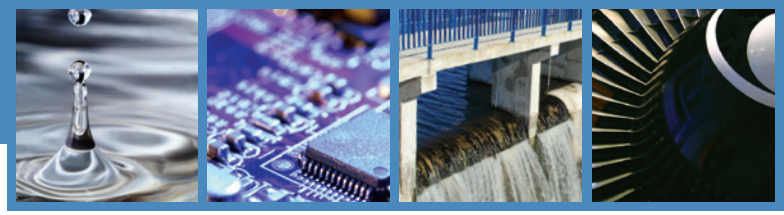
Benefits

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
- Flexible temperature compensation inputs suitable to be used with a wide variety of sensors using NTC30K, PT1000 or PT100
- Expandable platform — single channel add on boards for second channel analyzering 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
- 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
- Analog outputs (4 standard per dual channel system) are isolated and include both 0-20 or 4-20 mA ranges, with option for linear or logarithmic scaling
- Rugged NEMA 4X ½ 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 Analyzer
Thermo Scientific Orion 2104CD Conductivity Analyzer

Specific Measurements	
pH Measurement (for 2102PH analyzers 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 analyzers 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
Cell Constant	0.001 to 199.9 cm^{-1}
Cell Types	Cell with temperature sensor
Reference Temperature	25 °C
Temperature Compensation	Linear (0.0 to 10.0 %/°C), nLF
Solution Compensation	NaCl, NH3, HCL
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
Concentration	(0.0 - 10%), NaCl, HCL, NaOH, H2SO4, HNO3
mV/ORP Measurement	
Range	±1999 mV
Resolution	1 mV
Relative Accuracy	± (0.5 mV + 0.1 %)
E_H 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 (pH and ORP only)
Continuous Temperature Readings	YES
ATC Probe Connection Detection	YES
Resistivity Measurement	
Range	.0001 Meg-Ohm to 18 Meg-Ohm
Resolution	100 ohms-cm



Thermo Scientific Orion 2102PH pH/ORP Analyzer
Thermo Scientific Orion 2104CD Conductivity Analyzer

Specific Measurements	
Relative Accuracy	0.5 % ±1 digit
Note: Specifications listed for single channel measurement specific analyzers, dual channel configurations — digital communications options available, see ordering information	
pH Calibration	
pH Auto-Calibration	YES
pH Manual Calibration	YES
Number pH Calibration Points	1 to 3
Buffers Recognized	US, EURO
Calibration Type	Point to point
mV/ORP Calibration	
Relative mV	YES
E_H ORP	YES
Conductivity Calibration	
Conductivity Cell Constant Adjust Method	YES, 1 point
Conductivity Direct-Cal	1 to 3 points
Conductivity Auto-Cal	1 to 3 points
Display	
Type	Custom LCD, backlit with scrolling text
Inputs	
Conductivity Probe	Tinned leads to screw terminal
ATC	30 K ohm, PT100, PT1000
pH Electrode	Tinned leads to screw terminal
Outputs	
Analog Output	YES, galvanically isolated
Number of Analog Outputs	2 per single channel, 4 per dual channel
Output Selections	0-20 mA or 4-20 mA
Programmable Range	YES
Conductivity Log and Linear Output Options	YES, user selectable
Alarm Outputs	
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

Specific Measurements	
Programmable Alarms	High, low, error, cal/offline
Power	
Power Input	100-120 @ 200mA 50/60Hz 200-240 @ 100mA 50/60Hz
Rolling Measurement Data Logging	
Number of Data Logging Points	1000 points
Log Function	Timed
Timed Log	Time (1 min to 99:59 hours)
Rolling Event Data Logging	
Number of Data Logging Points	100 points
Log Function	Error, calibration, conf, power, alarm, offset
Log View	YES
Special Log/Storage Modes	
Calibration Log	Last 12 calibrations
Software Features	
Meter Serial Number	YES
Password Protection	YES
Reset Function	YES
Modbus (with purchase of optional communications board)	YES
Meter Feature	
Startup Reset	YES
Hardware Calibration Function	YES
Non-Volatile Memory	YES
Battery Backup	YES
Regulatory and Safety	CE,CSA, FCC Class A limits
Electronics Waterproof Enclosure	IP66, NEMA 4X
Environmental Operating Conditions	
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
Physical Size	144 mm x 144 mm x 186 mm
Shock and Vibration	
Vibration, Shipping/Handling	0 to 60 Hz @ 1 G load
Shock, Drop Test in Packaging	Conforms to ISTA 1A protocol

Thermo Scientific Orion 2100 Series pH/ORP and Conductivity Analyzers

- **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 analyzer 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**.

Cat. No.	Description
2102PH	2102PH single channel pH/ORP analyzer only
2102PH1SC	2102PH single channel analyzer and ultra pure water (UPW) pH kit, includes flow cell, 2001SC ROSS® pH electrode, 5 meter electrode cable (2001SM), ATC probe, PT1000 (2001TM), and buffers (pH 4, 7 and 10)
2102PH1X	2102PH single channel analyzer and ORP kit, includes ORP electrode (110250) and ORP standard (967901)
2102PH2	2102PH dual channel pH/ORP analyzer only
2102PH2SC	2102PH dual channel analyzer and ultra pure water (UPW) pH kit, includes (2) flow cells, (2) x 2001SC ROSS pH electrodes, (2) x 5 meter electrode cables (2001SM), (2) x PT1000 ATC probes (2001TM) and buffers (pH 4, 7 and 10)
2102PH2X	2102PH dual channel analyzer and ORP kit, includes (2) x ORP electrodes (110250) and ORP standard (967901)
2104CD	2104CD single channel conductivity analyzer only
2104CD1SS	2104CD single channel analyzer and ultra pure water (UPW) conductivity kit, includes 2002SS conductivity cell, flow cell (2002FC) and 100 µS/cm conductivity standard (011008)
2104CD2	2104CD2 dual channel conductivity analyzer only
2104CD2SS	2104CD dual channel analyzer and ultra pure water (UPW) conductivity kit, includes (2) x 2002SS conductivity cells, (2) flow cells (2002FC) and 100 µS/cm conductivity standard (011008)
21PHCD2	2100 series dual channel pH/ORP and conductivity analyzer only
2102PHEP	2100 pH/ORP electronic faceplate - main channel
2104CDEP	2100 conductivity electronic faceplate - main channel
2100PH2	Second channel module for pH/ORP
2100CD2	Second channel module for conductivity
2100DC	Digital communication module Modbus RTU protocol
2001FC	Flow cell for 2001SC ROSS pH electrode
2002FC	Flow cell for 2002SS/2002I0M and 2002CC/2002CCI0M conductivity probes
2100AMP	Pre-amp for 2100 series analyzers - with automatic temperature recognition
2100SMK	Sample panel mounting kit
2100PMK	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**.

S-2100PHCO-E 0609 RevC

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