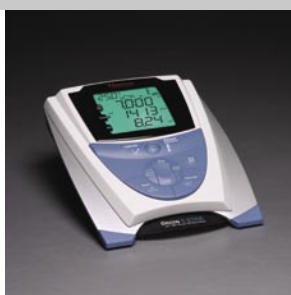


Water Conductivity USP <645>

Orion 5-Star pH/ISE/DO/Cond
Benchtop Meter



For instructions on USP 645 conductivity measurements using Orion products, download our Star Series meter information at www.thermo.com/water.

Pharmaceutical

Pharmaceutical manufacturers, using USP purified water and water for injection, require stable and accurate conductivity measurements to maintain quality standards for use in final products. The new Orion 5 Star multi-parameter and 2-cell conductivity probe (Cat No. 013016MD) assures you of accurate measurements under a wide range of conditions.



Conductivity in Water USP <645>

Pharmaceutical water measurement requirements have been drastically revised in the last decade. To improve global manufacturing efficiencies, the United States Pharmacopoeia developed new requirements for Water for Injection and for Purified Water, mandating (initially in USP 23, November 1996) that conductivity 645 measurements replace antiquated wet chemical methods. In this method, the measured values are compared to values given by USP. There is no temperature correction; the conductivity is read at the temperature of the sample. If the conductivity of the water is below 1.1 $\mu\text{S}/\text{cm}$, the quality of the pure water is acceptable and the water is suitable for use in pharmaceutical products. If the conductivity is greater than 1.1 $\mu\text{S}/\text{cm}$, additional tests have to be performed. These requirements

have remained relatively unchanged in subsequent USP revisions, making a distinct impact on instrumentation supplied for this purpose. USP initiated global harmonization efforts help bring consistency to worldwide pharmaceutical water requirements.

Orion 5-Star multi-parameter meter has several features not available in competitive models improve the quality of your conductivity measurements. Features such as a convenient, built in Quick-Start Guide, advanced self test and diagnostics, GLP electrode verification, storage of up to 10 password-protected setup parameters and calibrations and optional 21 CFR Part 11 Software. This software includes: systems validation, security and audit trails, documentation control or archiving, and record retention and recovery.

Orion 5-Star pH/ISE/DO/Cond

Orion 5-Star pH/ISE/DO/Conductivity Specifications:

Specifications		Benefit
pH		
Readout Range / Resolution	-2.000 to 19.999 or 0 to 14 in aqueous solutions / 0.1,0.01,0.001	Calibration point flexibility
Relative Accuracy	± 0.002	For exceptional accuracy
Conductivity		
Range	0.000 to 3000 mS/cm, auto resolution with cell constant dependence	Measures extended range
Resolution	4 significant digits down to 0.001 µS/cm, cell constant dependent	
Relative Accuracy	0.5% ± 1 digit or 0.01 µS/cm, whichever is greater	For exceptional accuracy
Cell Constant/Cell Compatibility	0.001 to 199.9 / 2 Cell, 4 Cell, Planar Cell	Broaden application range
DirectCal™ / AUTO-CAL™	1 to 5 points / 1 to 3 points	
Resistivity		
Range / Resolution	0.0001 to 100 Megohm auto resolution	Ideal for pure water samples
Relative Accuracy	0.5 % ± 1 digit	
Salinity		
Range / Resolution	0.01 to 80.0 ppt NaCl equivalent, 0.01 to 42ppt practical salinity / 0.01	
Relative Accuracy	± 0.1 ± 1 digit	
TDS		
Range / Resolution	0 to 19999 / 1 mg/L	
Relative Accuracy	± 0.5 % ± 1 digit	
Temperature		
Range / Resolution	-5 to 105 °C / 0.1 up to 99.9 °C, 1.0 over 99.9 °C	Allows for temperature variations
Relative Accuracy	± 0.1 °C	
Temperature Compensation	DO (auto); Cond (nLF, linear 0.0 to 10.0% / °C); pH (auto/manual)	
Display		
	Custom backlit LCD, for easy viewing	Easy to read screen
# Of Data Logging Points	200 points by time, stability or manual read with time/date stamp	Expanded data storage available
Calibration Log / User Method Storage	Last 10 Calibrations / 10 Saved Methods	Establish audit trail / For easy retrieval of routine tests
Power		
	Universal power adapter and battery power 4 x AA batteries	Data is secure
Regulatory and Safety		
	CE, CSA, UL, TÜV, FCC Class A limits	Meets all necessary regulations
Ambient Operating Temperature	5 to 45 °C	
Relative Humidity	5 to 85% Non-Condensing	
Warranty		
	36 months (from date of purchase)	Reduces service cost

Equipment needed for conductivity measurements using the Orion 5-Star meter

Above data generated under optimal/controlled circumstances.

Description	Orion Cat. No.
Orion pH USP <791> Application Package (includes items listed below)	1010152
Orion Star Series Method Note: Water Conductivity USP <645>	M-1700-E
Orion 5-Star Benchtop Multimeter	1119000
Orion 2-Cell Conductivity Probe	013016MD
Orion ROSS Ultra® pH Electrode	8102BNU
Orion Stirrer	096019
Electrode Stand	1110001
Conductivity Standard 100 µS/cm	011008
pH Buffers 4.01, 7.00, and 10.01, 475 mL bottles	910104, 910107, 910110
21 CFR Part 11 Software	1010007

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T-1700-E 02/05 RevB

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