

Portable Salinometer

Measure more, accelerated sampling

The MS-315e provides oceanographers with a reliable shipboard and laboratory method to verify the performance of sophisticated modern CTD instruments. This salinometer operation is based on the innovative dual cell concept in which the conductivity of the sample of water is simultaneously compared with the conductivity of standard seawater. The inductive measuring technique, and the wide range of conductivity ratios the MS-315e can measure, increase its versatility such that the conductivity ratio of other fluids (brine) can also be determined.

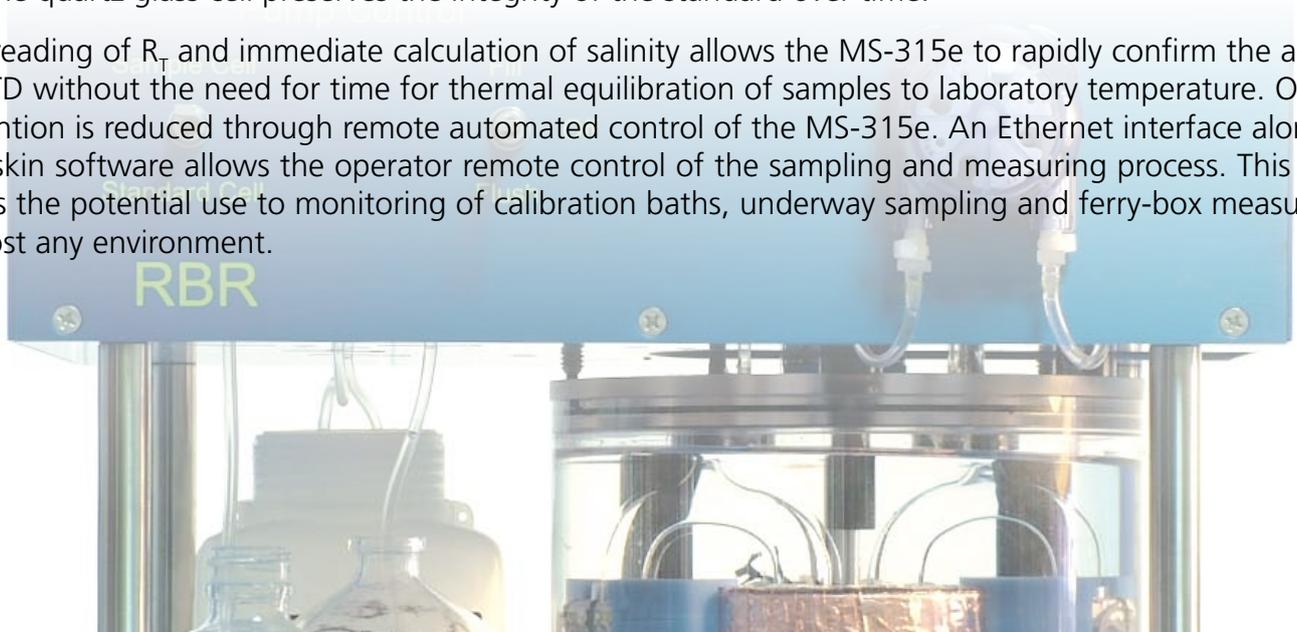
Features

- Ethernet control of sampling
- Thermal stabilisation not required
- Automatic real-time measurements
- Minimises use of Standard Seawater
- High accuracy, short measuring times
- No special environmental controls required
- Sample directly from Niskin bottles, pipelines, reservoirs, and calibration baths
- Small foot print and low weight; easily portable



The automated two step standardisation process used in the MS-315e can be performed easily on board ship or in the field using IAPSO standard seawater. The requirement for a highly stable bath temperature is removed by the dual cell configuration; the well-stirred oil bath ensures thermal uniformity. The consumption of standard seawater in the reference cell and sample is dramatically reduced by the small measuring volume, while the quartz glass cell preserves the integrity of the standard over time.

Direct reading of R_T and immediate calculation of salinity allows the MS-315e to rapidly confirm the accuracy of a CTD without the need for time for thermal equilibration of samples to laboratory temperature. Operator intervention is reduced through remote automated control of the MS-315e. An Ethernet interface along with the Ruskin software allows the operator remote control of the sampling and measuring process. This feature extends the potential use to monitoring of calibration baths, underway sampling and ferry-box measurement in almost any environment.



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Specifications

General

Power:	115/230 VAC; 12VDC, 20W
Communication:	Ethernet (10 or 100baseT), RS-232
Size:	L 307mm x H 280mm x D 245mm
Weight:	4.6kg (bath empty), 6.6kg (bath filled)
Consumption:	< 80 ml (3 flushes)
Bath Volume:	2.0 litres
Bath Oil:	Mobil White Oil 12
Operating Temp.:	0°C to +35°C
Reference:	IAPSO Standard Seawater
Calibration:	NIST traceable standards
Filling Time:	~30sec
Settling Time:	~2 minutes typical
Set Up Time:	~30 minutes typical

Temperature

Sensor:	Thermistor
Accuracy:	±0.01°C
Resolution:	<0.00005°C
Drift:	~0.002°C/year - typical

Conductivity Ratio R_T

Sensor:	Inductive Conductivity
Range:	0.05 to 4
Linearity:	±0.00005 (between 0.05 to 1.2 R_T)
Repeatability:	±0.00005
Stability:	±0.00005 / 24hrs

Practical Salinity (defined by PSS-78)

Range:	2 to 42
Resolution:	<0.001
Accuracy:	±0.003 within ±1°C of temp. at standardisation

Additional Derived Salinities

High Range:	42 to 50 (UNESCO-62)
Reference Salinity:	Defined by TEOS-10
Absolute Salinity:	Defined by TEOS-10 (with input of Absolute Salinity Anomaly)

Remote control and automation

The MS-315e when interfaced with Ruskin software through an Ethernet connection can be operated remotely to automate sampling and measurements.

Under software control the MS-315e can be commanded to fill or flush the sample or reference cell once or flush and fill the cells. The number of flush/fill cycles and the timing of sampling intervals are under user control. During the flush/fill procedure the software indicates the status of the process.

Once the sample is ready to be measured the software reports the temperature and salinity of the sample in graphical form and reports the average salinity and standard deviation, average temperature and the conductivity ratio in text file format.

TCP/IP sockets complement the graphical interface with both data output and a control channel using a simple command language, permitting complete integration into laboratory workflows.