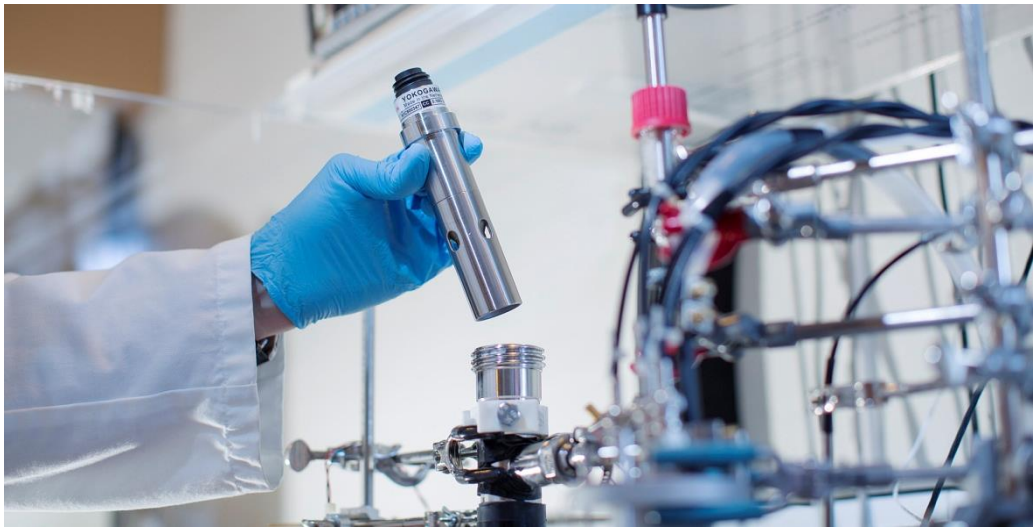
DFM
Danish National Metrology Institute

Calibration of conductivity sensors and measurement systems



ACCREDITED CALIBRATION

DFM is among the leading National Metrology Institutes (NMI) in electrochemistry. DFM develops and supplies measurement services and reference materials. Our globally recognised services are accredited by DANAK, the Danish accreditation organization.

CONTACT DFM

In addition to the establishment of primary measurement standards, DFM collaborates with leading NMI's around the world. DFM is a signatory to the CIPM-MRA arrangement that ensures mutual recognition of measurements, worldwide. See www.bipm.org/en/cipm-mra/

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Advantages

A DANAK accredited and direct calibration of conductivity sensors and measurement systems, traceable to SI, covering the full conductivity range from "Ultra-Pure Water" to medium conductivity levels.

Applications

Electrolytic conductivity is an easy, quick, cheap and reliable parameter for process monitoring and regulation and is therefore used widely in industry. Conductivity is especially suited for the detection of non-specific ionic contamination in water, dilution of concentrates and controls of mixtures.

Reliability of measurements is increased significantly by establishment of metrological traceability to SI and DFM can offer traceability to the highest international level for measurements of conductivity.

DFM now introduces fully traceable, direct calibration of conductivity sensors in aqueous solution at low-to-medium conductivity levels ($\kappa < 1000$ µS/cm).

Consequently, it becomes simpler to document requirements from FDA, Pharmacopoeias and other authorities.

Specification

Measurement by comparison in flow system (flow rate typically 0.1 – 1 L/min) against a calibrated reference. A gas tight cell enclosure is necessary (i.e. a flow cell).

Reference temperature: 25 °C

Nominal measurement points:

0.05 µS/cm, 0.6 µS/cm, 1.3 µS/cm,
5 µS/cm, 15 µS/cm, 100 µS/cm 1000 µS/cm

Minimum 3 measurement points per calibration.

Other values can be requested.

True 3/4-electrode cells are only calibrated in connection with measurement systems.

Higher value conductivity (k > 15µS/cm) is only available together with low values.

Measurement capability

Determination of cell constant for conductivity sensor*:	
Cell constant, K, 0.01 – 1 cm^{-1},	
conductivity, κ, 0.05 – 15 µS/cm:	0.5 %
conductivity, κ, 15 – 1000 µS/cm:	0.3 %

Conductivity measurement systems**:	
Conductivity, κ, 0.05 – 15 µS/cm:	0.5 %
Conductivity, κ, 15 – 1000 µS/cm:	0.3 %

Relative uncertainty (95% confidence, $k = 2$)

** Combinations of cell and conductivity with R > 5 Ω*

*** The measurement uncertainty achieved will often depend on the stability and display resolution of the measurement system.*

DS CERTIFICERET KVALITETSSTYRINGSSYSTEM DS/EN ISO 9001 DANAK CAL Reg. nr. 255