



Certificate of Calibration

Certificate no.: 64745



Unit Under Test (UUT)

Description: Temperature Calibrator

Serial number: **671581-01127**

Manufacturer: Ametek Denmark A/S

Date of calibration: **12-04-2019**
(dd-mm-yyyy)

System calibrated with:

Description: Temperature Reference Sensor

Serial number: **668633-14**

Manufacturer: AMETEK Denmark A/S

Service Article no: **82782**

Model: RTC-158 C

Service Article no: **81308**

Model: STS-102 A 030

Customer information

Client: AMETEK Denmark A/S

Address: Gydevang 32-34
3450 Allerød
Denmark

Number: 48168000

Phone: +45 48168000

Remarks

Calibrated "As Left".

Calibration was carried out with silicone oil cst. 10, and with lid.
Stirrer speed was set to 40.

The calibration was carried out with both the laboratory reference sensor and the external reference sensor immersed approximately 140 mm below the liquid surface for each temperature point. Contribution to reported combined uncertainties arises from unit stability and reference equipment including possible correction from immersion depth.

Calibrated by:

Stefan Nagyosi

Calibration technician

Approved by:

Digitally signed by:

Stefan M. Nagyosi

Date: 12-04-2019 11:25:03



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Calibration conditions

Calibration procedure: 126553
Ambient temperature: 23°C ±2°
Relative Humidity: 30 ... 85 %

Reference id.: Y007
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Reference equipment applied

Description:	Manufacturer:	Model:	Id. number
Reference Sensor	Rosemount	SPRT	T009
Resistance Bridge	AMETEK Denmark A/S	DTI1000	E118
Calibration Insert	AMETEK Denmark A/S	N/A	N/A
Gradient Sensors	AMETEK Denmark A/S	127356	T167
	AMETEK Denmark A/S	127356	T168
Resistance Bridge	AMETEK Denmark A/S	DTI1000	E134

Temperature (Internal reference)

Set	Reference	UUT Reading	Deviation	Uncertainty	Specification
°C	°C	°C	°C	°C	°C
-22,000	-21,995	-22,000	-0,005	±0,020	±0,180
-15,000	-15,001	-15,000	0,001	±0,020	±0,180
0,000	0,000	0,000	0,000	±0,020	±0,180
25,000	25,005	25,000	-0,005	±0,020	±0,180
50,000	49,997	50,000	0,003	±0,020	±0,180
75,000	74,994	75,000	0,006	±0,020	±0,180
100,000	100,001	100,000	-0,001	±0,020	±0,180
125,000	125,000	125,000	0,000	±0,020	±0,180
155,000	154,999	155,000	0,001	±0,020	±0,180



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Temperature (External reference)

Set °C	Reference °C	UUT Reading °C	Deviation °C	Uncertainty °C	Specification °C
-22,000	-21,995	-22,007	-0,012	±0,020	±0,040
-15,000	-15,001	-14,999	0,002	±0,020	±0,040
0,000	0,000	-0,008	-0,008	±0,020	±0,040
25,000	25,004	25,009	0,005	±0,020	±0,040
50,000	49,998	49,998	0,000	±0,020	±0,040
75,000	74,994	74,992	-0,002	±0,020	±0,040
100,000	99,999	99,991	-0,008	±0,020	±0,040
125,000	124,990	124,981	-0,009	±0,020	±0,040
155,000	154,995	154,996	0,001	±0,020	±0,040





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Calibration coefficients STS-102 A 030 serial number 668633-14

The calibration coefficients as defined in ITS-90, are as follows:

For the range: -22,000 to 155,000°C

	R0.01	99,933266 Ω
Values below 0°C	aLR:	-1,784026E-002
	bLR:	6,864076E-003
Values above 0°C	aHR:	-1,903750E-002
	bHR:	-1,340147E-003
	cHR:	0,000000E+000

The calibration coefficients stated in this certificate is valid when the device under test is used as part of the system described in this certificate.

These may be different from the calibration coefficients stated on the certificate for the device under test as an individual device.

If the device under test is used as an individual or in combination with other instruments than described in this certificate, the calibration coefficients from the certificate for the device under test as an individual must be used.

The stated uncertainty is based on the entire set-up including object under test.

The reported uncertainty is based upon a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximate 95%. The uncertainty evaluation has been carried out in accordance with DANAK requirements. The uncertainty is calculated following EA-4/02.

DANAK

DANAK is the national accreditation body in Denmark in compliance with EU regulation No. 765/2008.

Danak participates in the multilateral agreements for testing and calibration Under European co-operation for Accreditation (EA) and under International Laboratorie Accreditation Cooperation (ILAC) based on peerevaluation. Accredited test reports and calibration certificates issued by laboratories accredited by DANAK are recognized cross border by members of EA and ILAC equal to test reports and calibration certificates issued by these member's accredited laboratories.

The use of the accreditation mark on test reports and calibration certificates or reference to accreditation, documents that the service under the the company's DANAK accreditation.

The calibration certificate is covered by DANAK accreditation and the multilateral agreements from EA and ILAC for calibration which ensures that measurements are traceable to the international system of units, SI.