

CERTIFICATE OF CALIBRATION

ISSUED BY The Roxspur Measurement & Control
Calibration Laboratory



0043

Page 1 of 2

Assessed Signatory

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Date of Issue: 25 May 2017

Certificate Number 111382

Customer: SIGNATROL LIMITED
UNIT E2
GREEN LANE BUSINESS PARK
GLOUCESTERSHIRE
GL20 8SJ

Date Received 22 May 2017
RM&C Order Ref. L505759
Customer Order No. 45366
Calibration Date 25 May 2017

Equipment Information

| | | | |
|--------------------|--|------------------------|-----------------------|
| Description | LEYRO LDT-2000 PRECISION THERMOMETER & PT100 PROBE | | |
| Manufacturer | LEYRO | Serial Number | 1031401205 & 351839-1 |
| Model Number | LDT-2000 & 935-14-116 | Customer Inventory No. | CE1113 & CE1115 |
| Calibrated Range | -70 °C to 300 °C | RM&C I.D. No. | RMC0044158 |
| Scale / Resolution | 0.001 °C | | |
| Calibration Points | -70 °C, 0 °C, 30 °C, 150 °C & 300 °C | | |

Conditions

| | | | |
|----------------------|----------------|-------------------------|-------------|
| Lab Temperature | 21.0 °C ± 2 °C | Department | TEMP - BATH |
| Probe Type | Pt100 | Engineer | SHAUN BOLDY |
| Probe Length | 350 mm | Last Certificate Number | 92198 |
| Probe Diameter | 6 mm | | |
| Min. Immersion Depth | 200 mm | | |

Procedure : RM&C 023 DTI & RTD

The thermometer under test was allowed to equilibrate within a controlled, stable environment, the temperature of which was measured using traceable reference Platinum Resistance Thermometers. The following results indicate the measured test thermometer temperature against the measured temperature at the time of calibration. The measurement uncertainty was calculated in accordance with M3003 (Edition 3 – November 2012) and as such takes into account such factors as the calibration & drift of the reference standards, stability, repeatability and resolution of reference instruments and that of the unit under test.

The results are valid at the time of calibration only. The temperature scale used was ITS-90. All measurements are traceable to National Standards. Calibration has been carried out using Laboratory procedures (LAB-PROC-023) in accordance with BS EN ISO 17025. The results are valid at the time of calibration only and are "As Found" (i.e. No Adjustments Made).

Notes :

No measured errors, in the parameters checked, exceeded the customer specified tolerance of ± 0.04 °C, not taking into account the uncertainty of measurement.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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UKAS Accredited Calibration Laboratory No. 0043

Certificate Number

111382

Page 2 of 2

Calibration Results

Serial No: 1031401205 & 351839-1 in Ch 1

| Reference Temperature °C | Thermometer Reading °C | Measured Error °C | Measurement Uncertainty ± °C |
|-----------------------------|---------------------------|----------------------|---------------------------------|
| -0.002 | 0.001 | 0.003 | 0.06 |
| -70.253 | -70.257 | -0.004 | 0.06 |
| -0.002 | -0.011 | -0.009 | 0.06 |
| 30.033 | 30.039 | 0.006 | 0.06 |
| 150.072 | 150.088 | 0.016 | 0.06 |
| 299.958 | 299.966 | 0.008 | 0.06 |
| 0.074 | 0.051 | -0.023 | 0.06 |

- End of Certificate -

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k = 2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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