Certificate of Calibration
Apogee Instruments Infrared Radiometer
SI-100 Series

Calibration Overview

Model/Serial Number	:	**EXAMPLE**
Calibration Date	:	21-Jul-2017
Recommended Recalibration Date	:	21-Jul-2019
Mean of Differences from Target	:	0.001 ℃
Target Temperature Uncertainty (95% confidence) from -30 to 65℃	:	**0.133 ℃**
Maximum Difference from Target	:	0.148 ℃
Minimum Difference from Target	:	-0.119 ℃
Maximum Detector Response	:	1.379 mV
Minimum Detector Response	:	-0.804 mV
Average Output Sensitivity	:	66.794 µV / ℃

Custom Calibration Coefficients

CRBasic

	C2	C1	C0
m	81170.5	7187980	1334780000
b	2295.07	245405	-6557540

See the SI-100 series manual for how to apply these coefficients in determining target temperatures.

Edlog

	C2	C1	C0
m(SB)	0.81171	71.88052	13347.93348
b(SB)	0.02295	2.45407	-65.57606

Use these coefficients in Edlog programs for older Campbell Scientific dataloggers.

Coefficient Correction Errors
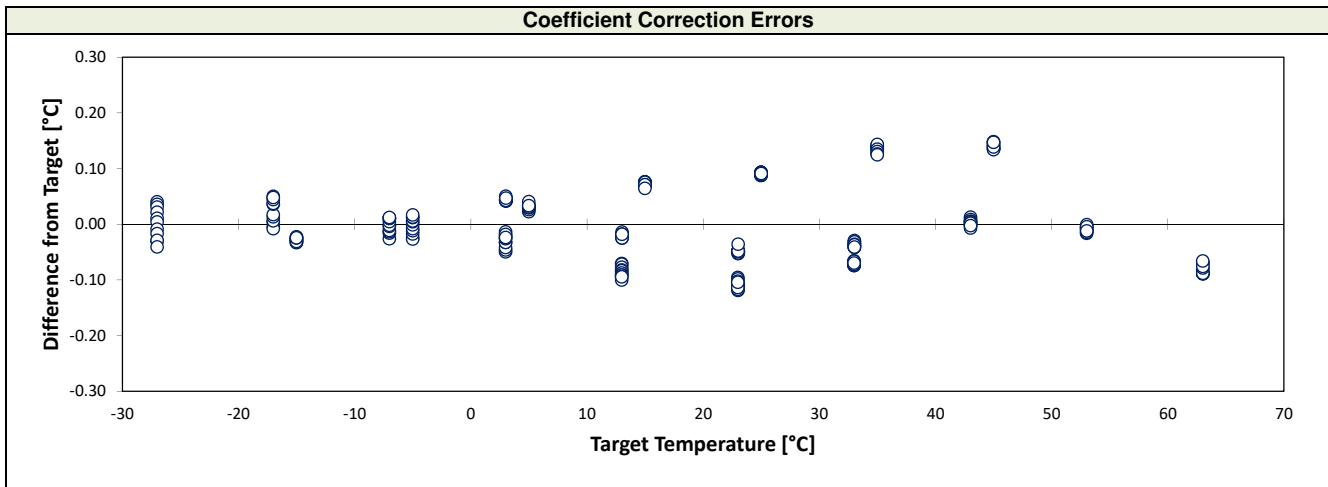
Calibration Procedure

An Infrared Radiometer (IRR) combines a thermopile detector and a National Institute of Standards and Technology (NIST) traceable thermistor to measure a mV response proportional to the thermal radiation balance between the target temperature and the thermopile temperature (sensor body temperature). IRRs are placed in a temperature controlled housing, which is thermally insulated from a blackbody cone. The housing, pointed at a blackbody cone, is temperature cycled through various sensor body set-points. The blackbody cone temperature (measured with NIST traceable thermistors) is likewise cycled through multiple temperature set-points relative to each sensor body temperature set-point. A linear fit is used to model each sensor body set-point with the respective blackbody cone set-points versus the thermopile signal at those set-points. The slopes and y-intercepts of all linear fits corresponding to each sensor body temperature are then fit to a second order polynomial in order to adequately interpolate between the calibrated set-points. These two sets of second order polynomial coefficients represent the custom calibration coefficients as given above.

Traceability

All thermistors are measured for accuracy in a constant temperature bath that is directly traceable to the NIST. The overall measurement system uncertainty for all the bath and measurement allowances combined for error is typically less than 0.1℃ and completely traceable to National Standards.

Technical Manager : *Jacob Bingham*   Date : 21-Jul-2017

Please keep this document for your records