

MicroDataLogger™ Technical Bulletin

DATE: December 1, 1999
SUBJECT: MicroDataLogger® Unit and Sensor Calibration

MicroDataLogger Unit and Sensor Calibration

The MicroDataLogger unit's analog measurement accuracy is based on a precision temperature compensated voltage reference made by Linear Technology Corp. The LT1021 provides ultra low drift and noise, extremely good long-term stability, and almost total immunity to input voltage variations.

MicroDataLogger Units. Each MicroDataLogger unit (MDL) is tested prior to delivery for accuracy and adjusted using software calibration factors stored in its micro-processor's non-volatile memory. Recalibration is generally never required unless the MDL is damaged in some way and, if re-calibration should ever be required, the logger must be returned to Architectural Energy Corporation (AEC). Contact AEC for additional information and current pricing.

It's a good practice to periodically check all equipment for proper operation and correct readings. The MDL should never need to be calibrated but its a good idea to check it once and a while. Apply a known DC voltage or current to the MDL via a module of the appropriate range. (Don't forget to configure the MDL for the module used). Press the display button twice; the reading should be within $\pm 0.1\%$ of the voltage standard.

Note: What you are doing is not so much a calibration test, but rather a functional test. This is because most common voltage sources and/or meters are not accurate enough to really test a precision instrument such as the MDL.

AEC-Supplied Sensors. All sensors are factory calibrated for the life of the sensor (with the exception of the humidity, Modus and Ashcroft sensors) and are fully interchangeable for use in any channel -- of any AEC logger -- without requiring recalibration. Sensor life depends on use, temperature and age. Thermistor temperature sensors used at room temperature should maintain accuracy for 10 years or more. If they are operated at high temperatures (250° F), you might get only a year or so.

Humidity Sensors. If a sensor does not meet specifications, the sensor's active element must be replaced either by AEC or by the user. Contact AEC for information on the availability of replacement elements.

Standard Output Sensors. AEC sells a number of standard output sensors (pressure transducers, potential transformers, current transducers, etc.) which are calibrated by

their respective manufacturers. Recalibration of these sensors may or may not be possible, but needs to be performed via the manufacturer.

User Configurable Modules. All AEC modules (333mV, 0-5 volt, 0-10 volt, 4-20 mA, voltage status, pulse count) are built for use with standard output sensors. These modules can not be recalibrated and need to be replaced if damaged.

Note: *The slope and offset scale factors (available only with User Configurable Modules) can be used to adjust the calibration of a sensor, but this practice is not recommended because the sensor will no longer be interchangeable with other similar sensors.*