A Guide to
Dry Block Calibration

Isothermal Technology manufacture a full range of temperature calibration equipment from Primary Standards used in National and Primary Laboratories, for Secondary Laboratory Equipment used in accredited calibration laboratories and through to the Dry Blocks featured here.

Our customers include the worlds largest Primary Standards Laboratories, Accredited Laboratories (UKAS, DKD etc), large multinational companies, research organisations, manufacturing etc. Eighty percent of Nations rely on Isotech to supply their country's standards. This is not a responsibility taken lightly and Isotech constantly invests in its own full scale UKAS accredited laboratory. Isotech issues UKAS certificates for fixed point cells, thermometers, indicators and dry blocks. Isotech have issued several thousand calibration certificates and carried out several thousand measurements on Dry Blocks. We calibrate all types, not just our own.

The benefit of this experience, and the knowledge of years of manufacturing Dry Blocks is invested back into these products with the goal of constant improvement. In recent years the number of producers of Dry Blocks has increased dramatically, whilst many look similar (and some look surprisingly similar to our established models) they are often very different inside and can perform very badly.

The Dry Block Calibrators complement the ISOCAL-6 range. Above temperatures of approximately 250°C it is not practical to use stirred liquids due to fumes, risk of ignition and safety considerations.

Isotech's higher temperature calibration baths incorporate as many of the Isocal-6 options as is safe and practical to provide.

Dry Block pre-purchase check list

1. **Does the supplier have an accredited laboratory?**
   UKAS accreditation, "the means by which, in the public interest, the integrity and competence of independent evaluators is confirmed and declared". Isotech can issue a UKAS certificate with the performance expressed in the manner that you will need, not to some confusingly expressed specification that is made with no confirmation of integrity and competence.
2. **Experience**
   Does the producer have experience? Do they understand the difference between accuracy and uncertainty? Can they tell you how to calculate the uncertainty of a probe being calibrated in the block? Isotech can.
3. **Expandable**
   Can the Dry Block be used with other sensors? Are there accessories available for future expansion? With Isotech products they are.
4. **PC Support**
   Can it be connected to a computer? Is there software available, can it be automated? Isotech Dry Block Calibrators have a range of software options.
5. **Documented**
   Is the bath fully documented? Can you download a full evaluation report from the Web Site? Does it come with a comprehensive handbook and tutorial? Is training available? Isotech provide all of these free of charge.
6. **Practical**
   Isotech Dry Blocks are practically designed with a strong metal case, and are a compact portable size. If you are going to carry it around don't forget to check the size and weights. It is surprising how large some other blocks are, even though they take the same number of probes. Beware if the specification does not include the weight.
7. **Value**
   Check the prices, all the above come at an amazingly competitive price when you choose ***Isotech.***

Isotech Dry Block Features

- Unit Selection - choose from °C, °F or K.
- Thermostat Testing - The Site models can test thermostats with or without a PC - on contact close the indicator display is frozen.
- PC Interface and Software

■ Plug-in Controllers

Isotech worked with a world leader in temperature control technology to develop easy to use Dry Block controllers and Indicators. Isotech controllers are exceptionally easy to use with a clear user interface. Power feedback is used to stabilise against supply voltage changes, a digital filter circuit ensures high integrity of measurement without drift, rejecting 50/60Hz pick up and filtering out other sources of noise. Resolution is increased. The indicators have PRT input, universal thermocouple inputs, a PC interface and are supplied with software as standard. Check the individual models for full details. Windows software is now provided as standard, with expandable options to calibrate up to 32 sensors at a time.

■ Inbuilt Indicator

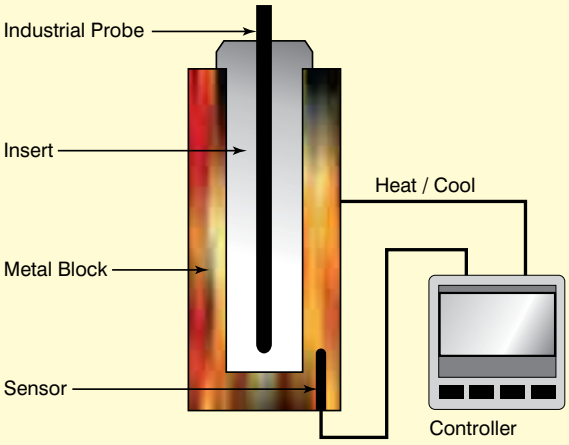
The SITE(S) models include an electronic temperature indicator that can be used with a 100Ω Resistance Thermometer, Thermocouples, (K, N, R, S, L, B, PL2, T, J and E) and DC process inputs including 4-20mA current transmitters. A reference thermometer can be connected or for complete flexibility the in-built indicator can be used to show the value from a sensor being calibrated.

■ Using Isotech's Dry Blocks Traceable Calibration

For best practice the recommendation is that a calibrated probe is placed into the Dry Block Insert and the thermometers under test "can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons". Thus meeting many quality systems including requirements of ISO 9000.

Using the Dry Bock itself as the Reference (or standard) raises a number of issues, such as how is the uncertainty of the Dry Block calculated. In practice, it can vary significantly, and there are some poor designs from many suppliers where it is not possible to achieve this in a satisfactory manner. Recently, International Guidelines have been published from EURAMET that give guidance, and requirements, for the calibration of Dry Blocks EURAMET/cg-13/v.01 (formerly EA10-13). For the most demanding applications we continue to recommend that a reference probe is used, the same method as used in secondary temperature laboratories, but for less demanding calibration, and the quick testing of sensors the Dry Block can be used without a reference probe, refer to the Dry Block's Evaluation Report for typical performance.

Dry Block Calibrator
of Poor Design



Dry Block Calibrator
Meeting ISO9000 Requirements