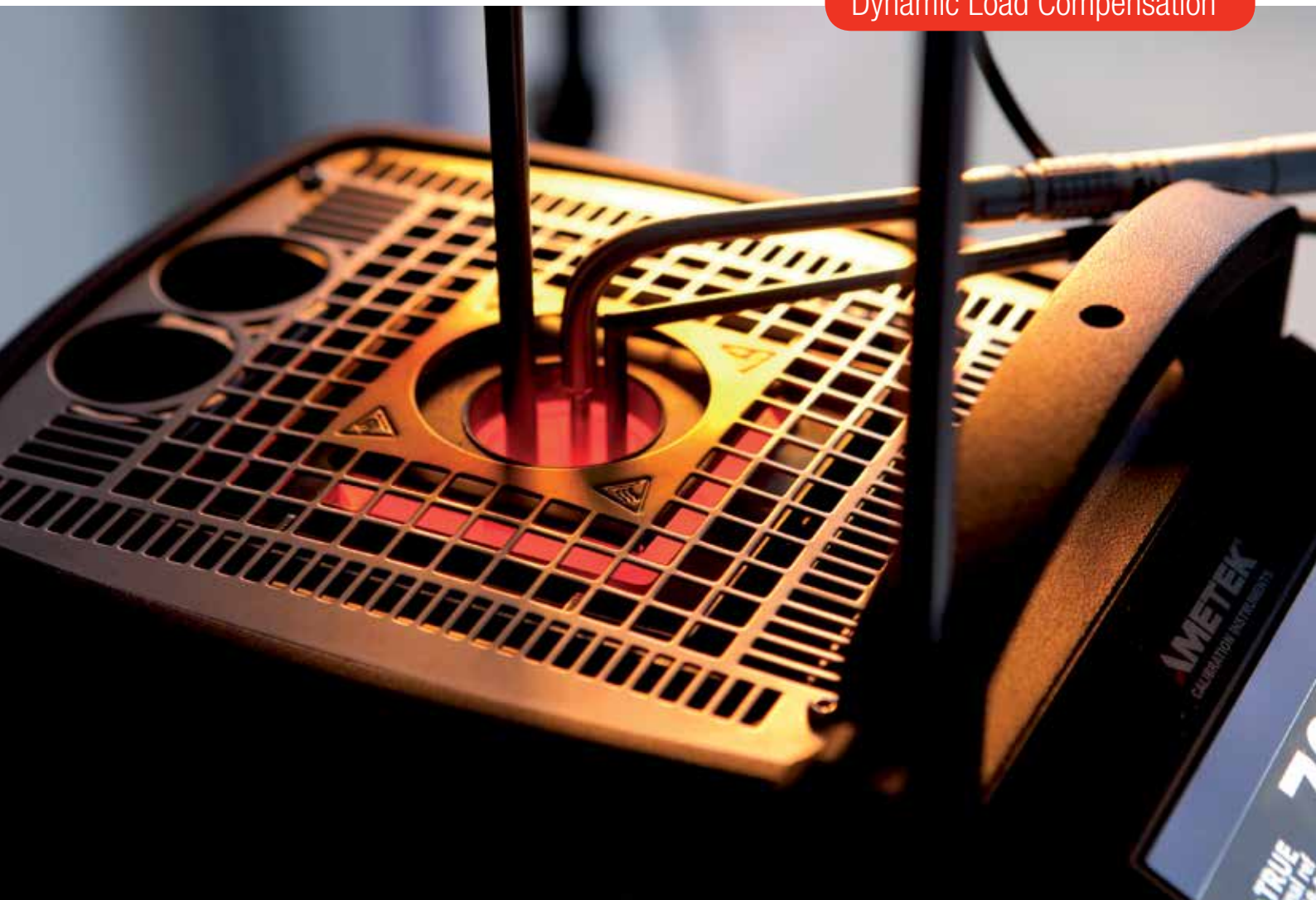


DLC

Dynamic Load Compensation



Temperature Calibration Excellence

- Calibrate multiple, odd sized or large sensors without compromising the accuracy
- Improved and documented uncertainty budget calculations
- Accuracy improved by a factor of 3 compared to normal dry-block calibration

The new RTC calibrators are the only dry-blocks that effectively compensate for the heat dissipation caused by sensor loading. This is achieved by applying the innovative and patent pending Dynamic Load Compensation. In short the DLC system provides you with the following benefits:

- Calibrate multiple or large sensors without worrying about heat loss errors
- Fast, simplified and documented uncertainty budget calculations
- Reduced uncertainty by up to a factor of 6
- Accuracy improved by a factor 3 compared to a normal dry-block calibration
- No need for detailed information on sensor (UUT) design



Significant improved accuracy

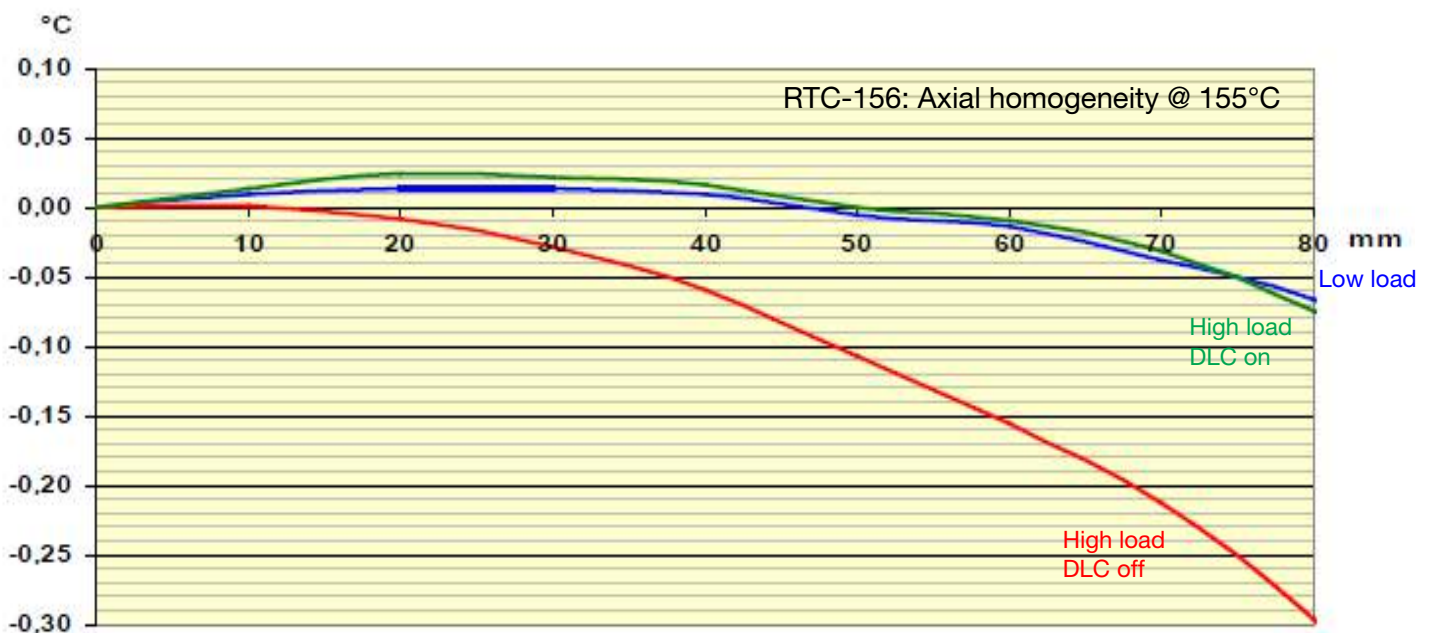
The DLC system gives significant improvement in the calibration accuracy. Axial homogeneity in the calibration well is important, as the typical thermo-sensitive element of a sensor can vary from 5mm to 60mm. The actual temperature in the well will inherently deviate from the ideal temperature as a function of the proximity to the bottom of the well.

How the DLC improves the axial homogeneity is illustrated by:

1. Reference case with the calibrator practically unloaded (*blue line*).

2. Calibrator loaded with a \varnothing 10mm sensor without DLC functionality (*red line*). In this case the heavy load causes a distinct non-linear axial gradient that increases with the proximity to the top of the well. The maximum deviation is 0,160°C.

3. Same sensor load, but with the DLC active (*green line*). The performance is practically identical to the reference case (1) and the maximum deviation from the ideal is 0,025°C.





Reference bath calibration is generally regarded as having optimal accuracy. However comparative measurements on a Ø 10mm sensor have shown a maximum deviation of 0,008°C @ 155°C. Compared with a reference bath calibration the calibration result has improved with a factor 3 compared to conventional dry-blocks.

Dynamic Load Compensation is therefore a major step in providing dry-block performance similar to baths, while keeping the inherent advantages of dry-block technology such as;

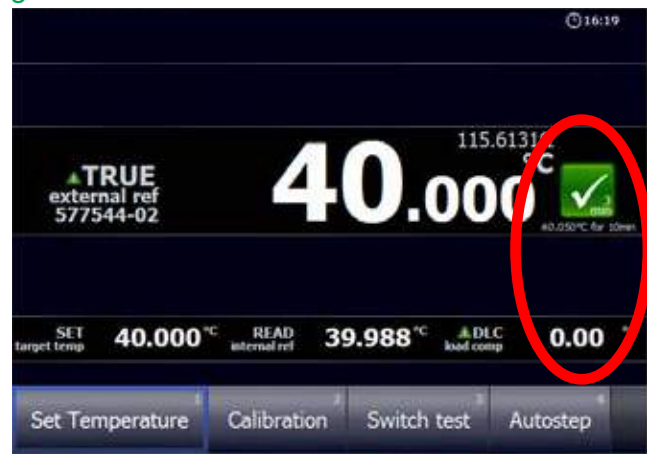
- ease of use
- portability and
- speed

Easy to use and document - by applying the green-zero rule

The DLC function in the RTC calibrators provides automatic documentation by indicating when the temperature has stabilized and can be read with optimal precision. The best calibration result is obtained by using the Green-Zero rule as shown on the picture.



Best dry-block calibration is obtained using the green-zero rule.



The green-zero rule as shown on the C type of the RTC calibrator series.



For more information please see our series of RTC calibrators or the DLC technical note at www.jofra.com

Calibrators with DLC

RTC-156

Temperature range from -30 to 155°C (-22 to 311°F)
General purpose light-weight and high performance dry-block.

RTC-157

Temperature range from -45 to 155°C (-49 to 311°F)
General purpose light-weight and high performance dry-block,
with superior low temperature performance.

RTC-158

Temperature range from -22 to 155°C (-8 to 311°F)
Combined liquid bath and large diameter insert, designed for
calibration of odd sizes and shapes of sensors or calibrating
multiple sensors at once.

RTC-250

Temperature range from 28 to 250°C (82 to 482°F)
Combined liquid bath and large diameter insert, designed for
calibration of odd sizes and shapes of sensors or calibrating
multiple sensors at once.

RTC-700

Temperature range from 33 to 700°C (91 to 1292°F)
A unique combination of speed and accuracy at very high tempera-
tures, based upon our new patent pending heating block.



AMETEK Test & Calibration Instruments
A business unit of AMETEK Measurement & Calibration
Technologies Division offering the following industry
leading brands for test and calibration instrumentation.

JOFRA Calibration Instruments

Temperature Calibrators

Portable dry-block calibrators, precision thermometers
and liquid baths. Temperature ranges from
-90°C(-130°F) to 1205°C(2200°F). Temperature sensors
for industrial and marine use.

Pressure Calibrators

Convenient electronic systems ranging from -25 mbar to
1000 bar - fully temperature-compensated for problem-
free and accurate field use.

Signal Instruments

Process signal measurement and simulation for easy
control loop calibration and measurement tasks.

M&G Pressure Testers & Pumps

Pneumatic floating-ball or hydraulic piston dead weight
testers with accuracies to 0.015% of reading. Pressure
generators delivering up to 1,000 bar.

Lloyd Instruments

Materials testing machines and software from Lloyd
Instruments guarantees expert materials testing
solutions. The comprehensive program also covers
Texture Analysers to perform rapid, general food testing
and detailed texture analysis on a diverse range of foods
and cosmetics.

Davenport Polymer Test Equipment

Allows measurement and characterization of moisture-
sensitive PET polymers and polymer density.

Chatillon Force Measurement

The hand held force gauges and motorized testers
have earned their reputation for quality, reliability and
accuracy and they represent the de facto standard for
force measurement.

Newage Testing Instruments

Hardness testers, durometers, optical systems and
software for data acquisition and analysis.

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