MODEL 6010T

Automated Thermometry Bridge

- DCC Technology
- Current Reversal
- Front and Rear Panel Inputs
- Accuracy: <0.05 PPM
- Noise: <2nV
- IEEE488 and Manual Operation

MODEL INFORMATION

The Model 6010T is designed for automated resistance thermometry applications and provides the best accuracy and convenience based on the most recent developments in current comparator technology. The Model 6010T is completely self-calibrated directly against two stable standard resistors of equal value for ratios of up to 1:1, and against national standards for ratios ≤ 13:1.

The Model 6010T is a fully automated resistance ratio bridge based on the Direct-Current-Comparator (DCC) principle, avoiding all polarization effects in PRT's caused by AC bridges (NOTE 1). Using innovative technology, the 6010T's speed and measurement accuracy accounts for increased interest and preferred status among many national laboratories. Self-calibration for verifying the linearity of the DC Comparator can be performed at any time.

The Model 6010T is ideal for temperature measurement. The maximum ratio of 13:1 provides the ability to measure PRT's throughout their range utilizing only one standard resistor. Current reversal insures that all dc offsets and thermal emf's are eliminated. Reversals are selectable from 2 seconds and the 6010T will track temperature changes up to 10% of full scale.

The Model 6010T measures both ratio and resistance via rear and front panel connections and the number of inputs can be expanded to 40 when used with a ten and/or twenty channel, low thermal matrix scanner (Models 4210A/4220A). Measurements are performed automatically with Measurements International's 6010T operating software.

The 6010T includes a wide range of features specifically tailored for temperature metrology. These include programmable currents with √2 or 1/√2 excitation, selectable filters and manual or IEEE488 modes of operation.

Specifications:

Accuracy:	<0.05 PPM
Resolution:	0.001 PPM of Full Scale
Measurement Time:	20 Seconds for Full Balance
Variable Incremental Balance:	2 to 1000 Seconds
Warm Up Time:	None
Differential and Absolute Measurement:	Ratio and Ohms
Thermometer Measurement Range:	0.1 to 1 kΩ (UUT and/or Standard)
Traceability to National Standards:	Completely Self Checking w/ 2 Std. Resistors
Maximum Ratio:	13 : 1
Linearity:	<0.01 PPM (Completely Self Checking)
Bandwidth:	0.5 to 0.001 Hz (2 to 1000 Seconds)
External Standards:	AC or DC Standard Resistors
Sensor Current:	10µA to 150mA - √2 or 1/√2 at any value
Bridge Balancing:	Front Panel or Software Controlled
Lead Connections:	True Four Wire *(No Series Lead Resistance)*
Analog Output:	Null Balance ±10V, Programmable 0-10V
Stability:	<0.01 PPM/Year
Filter Selection:	0.3s, 1.0s, 3s
Sensor Current Accuracy:	100 PPM
Noise:	<2nV
Temperature Coefficient:	0
Insulation Resistance:	$>10^{11}$ Typically 10^{12}
Output Impedance:	Infinite
Ambient Temperature:	10°C to 35°C

Dimensions (W x D x H):
266mm x 451mm x 306mm

Weight:
22.7 kg

Operating Power:
50/60 Hz 40 VA
110/120/220/240 Vac

How to Order:
Model: 6010T -Thermometry Bridge

Disributed By:

NOTE 1:TEMPMEKO 99: CALIBRATION OF SPRTs IN THE SUB RANGE BETWEEN THE TRIPLE POINT OF Hg AND THE MELTING POINT OF Ga, Piero Marcarino, Peter P.M. Steur, Roberto Dematteis CNR - Istituto di Metrologia "G.Colonnetti" (IMGC), Torino, Italy