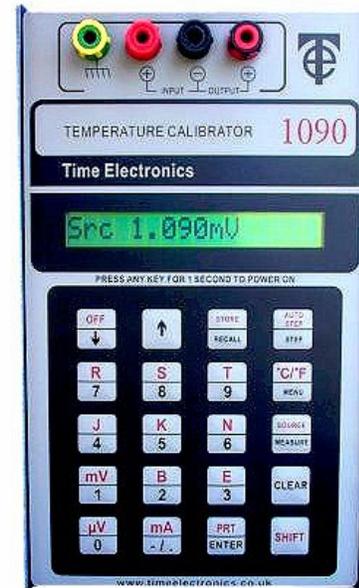




1090

Temperature and mV/mA Indicator / Calibrator

- Measure/Simulate 8 thermocouples
- Measure/Simulate PT100
- ITS 90 standard
- Measure/Source $\mu\text{V}/\text{mV}/\text{mA}$
- Display in degC and degF
- Automatic CJC - selectable
- 10 point memory recall
- Inching and Step functions
- Mains/Battery + auto power down
- Process loop 4-20mA and 0-50mA
- 24V/60mA process loop drive
- Robust carrying case/test leads



The 1090 is a portable high performance instrument that combines source and measurement functions for thermocouples, PT100s, μV , mV and mA.

Thermocouple measurement and simulation

The unit can measure and simulate the temperature and mV characteristics of J, K, T, R, S, B, N and E thermocouples.

Cold junction compensation

The unit can be operated with or without internal cold junction compensation.

PT100 measurement and simulation

Based on 0.3850 alpha probe standard.
Range is -100 degC to 800 degC

Measurement and Source (μV , mV, and mA)

Measurement ranges are 0 to 30mV and 0 to 60mA..
Resolution is 10 μV & 10 μA . Accuracy is 0.05% of span
Source ranges are 0 to 80mV and 0 to 80mA. Resolution is 5 $\mu\text{V}/0.5\mu\text{V}$ and 5 $\mu\text{A}/0.5\mu\text{A}$. Accuracy is 0.02% of span.

Temperature units selection

The display can be easily changed from degC to degF. The equivalent μV (thermocouples) and ohms (PT100) can also be shown.

24V Process Loop drive mode

A process loop can be driven at 24V and up to 60mA by selecting the 'Milliamp Source' mode and setting it at 60mA (or a lower level if required).

Inching (Incrementing/Decrementing)

The unit has a general purpose inching function. This adjusts the output in fixed increments of temperature (thermocouples only) or voltage or current. The set-up menu gives a the user a choice of three levels of increment i.e. 0.1, 1 or 10 for degC/degF, or 1, 10, or 100 $\mu\text{V}/\mu\text{A}$ for voltage/current. The lowest of these represents the highest setting resolution and provides the most precise control of the output. This is especially useful for calibrating thermostat controllers which have tight specification on hysteresis

Memory recall and step/auto-step functions

Up to 10 values can be stored in the unit's non-volatile memory and they can be recalled at any time. The user can also manually step through them in sequence using the step key. Continuous stepping (auto-step) is also available at any user selectable rate between 1 and 10 seconds/step.

Power is via an internal high capacity re-chargeable metal hydride battery which can be re-charged from an external mains charger (supplied as standard).

The unit is supplied in a robust case with a carrying strap. A pocket for the instruction manual is provided.

Calibration certificates can be supplied to either NPL or UKAS traceable standards.



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Specifications

MEASURE ACCURACY

THERMOCOUPLE TYPE	TEMPERATURE RANGE degC	ACCURACY degC
J	-200 to 580	0.7
K	-200 to -150 -150 to 750	2.5 0.5
T	-200 to 0 0 to 400	1.5 0.4
R	-50 to 400 400 to 1750	2.5 1.0
S	-50 to 100 100 to 1750	2.5 1.0
B	110 to 1000 1000 to 1800	2.5 1.0
N	-100 to 890	0.6
E	-50 to 400	0.4

Resolution: 0.1 degC or degF

An additional correction representing the equivalent 1µV should be allowed for stray thermal emf effects.

Millivolt Measure 0 to +/- 30mV

Resolution: 10µV
Accuracy: ± 0.05% of span +/- 1 digit
Input resistance: 100K Ohms

Milliamp Measure 0 to +/- 60mA

Resolution: 20µA
Accuracy: ± 0.03% of span
Input resistance: 0.5 ohms

PT100 Simulation

14 set temperature points
-100, -50, -20, 0, 20, 50, 100, 200,
300, 400, 500, 600, 700, 800 degC
Accuracy 0.1% of resistance value (typically 0.5 degC)

PT100 Measure (0.2 degC or degF resolution)

Range: -200 to 700 degC, 2 wire.
Accuracy 0.1% of resistance value (typically 0.5 degC)

Memory recall and step functions

10 memory locations for non-volatile storage of values.
Manual and Auto-Step, rate adjustable from 1 to 10 sec/step

Cold Junction Compensation: Resolution 0.1 degC. Accuracy 0.1 degC

Operating Temperature: -10 to 40 degC (15 to 105 degF)

Connections: Industry standard 4mm screw terminals.

Power: A metal hydride rechargeable battery pack gives approximately 60 hours continuous operation. The mains re-charger supplied allows full recharge in 20 hours, or alternatively the unit may be recharged from 12 volt car cigar lighter. To conserve battery life, a user inactivity power-down feature is included.

Dimensions: 235 x 150 x 75 mm 1.25 Kg (9.25 x 6 x 3 ins 2.8lb)

SIMULATE ACCURACY

THERMOCOUPLE TYPE	TEMPERATURE RANGE degC	ACCURACY degC
J	-210 to 150 150 to 1200	0.15 0.3
K	-270 to 190 190 to 1250	0.5 0.4
T	-200 to 150 150 to 400	0.4 0.5
R	-50 to 800 800 to 1750	0.5 2.0
S	-50 to 850 850 to 1750	0.4 2.0
B	100 to 1200 1200 to 1800	1.0 2.0
N	-270 to 260 260 to 1300	0.2 0.4
E	-50 to 1000	0.3

Resolution: 0.1 degC or degF

Millivolt Source 0 to +/- 80mV span

Accuracy: 0.02% of span (16µV)
Resolution: 5µV
Output resistance: 10 ohm

Note: For output settings below 8mV an increased resolution of 0.5µV is automatically switched in. The accuracy for this part of the span is increased to +/- 3µV

Milliamp Source 0 to 80mA span

Accuracy: 0.02% of span (16µA)
Resolution: 5µA
Max load (24V drive) 300R/80mA ,480R/50mA ,1.2K/20mA

Note: For output settings below 8mA an increased resolution of 0.5µA is automatically switched in. For this part of the span the accuracy is increased to +/- 8µA.

Inching

Three levels of increment, 0.1, 1 or 10 for degC/degF, and 1, 10, or 100 µV/ uA for voltage/current. The lowest of these represents the highest setting resolution and provides the most precise control of the output.

24V Process Loop drive mode

A process loop can be driven at 24V and up to 60mA by selecting the 'Milliamp Source' mode and setting it at 60mA (or a lower level if required).

Ordering Information

Description

Temperature and mV/mA Indicator/Calibrator (including batteries, charger and carrying case)
N.P.L. Traceable Calibration Certificate
UKAS Calibration Certificate

Order Code

1090
9177
9139