



- Measure (3 ranges) up to 40V, 400mA, 40k Ω
- Output voltage (3 ranges) to 10V, 1 μ V resolution
- Output current (3 ranges) to 20mA, 1 μ A resolution
- Output resistance: 0 to 400 Ω , 0.01 Ω resolution
- Thermocouple measure/simulate: J, K, T, E, R, S, B, N
- RTD measure and simulate: PT100
- Ramp function
- Battery or mains operation
- Housed in robust field case

DESCRIPTION

The 7050 Process Calibrator combines the essential functions of measurement and simulation of volts, millivolts, milliamps, and ohms with the direct readout simulation of thermocouples and RTD's in $^{\circ}$ C or $^{\circ}$ F units.

The instrument is microprocessor based and housed in a rugged case designed for use in the field. Input and Output functions are displayed simultaneously and the switch controls allow for easy and precise operation.

Five calibration points are instantaneously accessible through a preset percentage selector and all functions may be generated in a fully programmable ramp format.

In addition to the standard calibration facilities the instrument may be used as a signal converter. Any electronic input signal can be converted and output as a proportional signal of 4-20mA, 0-5V or sq. root 4-20mA.

The 7050 is highly adaptable, IPT 68 and ITS 90 curves are accommodated and non-standard thermocouples and RTD's may be programmed on request.

Specifications – Voltage / Current / Resistance Generation and Measure

INPUT

Voltage

Range	Resolution	Accuracy
40V	1mV	0.03%
4V	100 μ V	0.03%
400mV	10 μ V	0.03%
40mV	1 μ V	0.03%

Current

Range	Resolution	Accuracy
400mA	10 μ A	0.03%
40mA	1 μ A	0.03%
4-20mA/0-100%	0.01%	0.06%

Resistance

Range	Resolution	Accuracy
40000 Ω	1 Ω	0.03%
4000 Ω	0.1 Ω	0.03%
400 Ω	0.01 Ω	0.06%

OUTPUT

Voltage

Range	Resolution	Accuracy
-2 to +10V	1mV	0.06%
-100mV to +400mV	10 μ V	0.03%
-10mV to +40mV	1 μ V	0.03%
Output Impedance: < 10 Ω		

Current

Range	Resolution	Accuracy
0 to 20mA	10 μ A	0.03%
4 to 20mA	1 μ A	0.03%
TX Sim (4 to 20mA)	0.01%	0.03%
Max Load Resistance: 900 Ω at 20mA, Open circuit voltage 18- 27V		

Resistance

Range	Resolution	Accuracy
0 to 400 Ω	0.01 Ω	\pm 0.03%
Excitation Current 0.2 to 2mA		

Other

Loop drive supply: Nominal 24V, current limit set to 30mA

7050 Specifications

TECHNICAL SPECIFICATIONS – PROCESS SIGNAL & TEMPERATURE MEASUREMENT & SIMULATION

TEMPERATURE

°C			°F		
Thermocouple Type	Temp Range °C	Accuracy °C	Thermocouple Type	Temp Range °F	Accuracy °F
J	-210 to 0 0 to 710 710 to 1200	± 0.4 ± 0.2 ± 0.9	J	-410 to 32 32 to 1310 1310 to 2192	± 0.7 ± 0.4 ± 1.0
K	-270 to -240 -240 to -180 -180 to -50 -50 to 960 960 to 1370	± 3.0 ± 1.2 ± 0.5 ± 0.3 ± 1.7	K	-454 to -430 -430 to -292 -292 to -58 -58 to 1760 1760 to 2498	± 5.4 ± 2.0 ± 0.9 ± 0.6 ± 1.5
T	-270 to -250 -250 to -180 -180 to -100 -100 to 400	± 3.0 ± 1.0 ± 0.5 ± 0.2	T	-454 to -418 -418 to -292 -292 to -148 -148 to 752	± 5.4 ± 1.8 ± 0.9 ± 0.4
R	-50 to 0 0 to 70 70 to 400 400 to 1000 1000 to 1760	± 3.0 ± 2.0 ± 1.5 ± 1.0 ± 0.8	R	-58 to 32 32 to 158 158 to 752 752 to 1832 1832 to 3200	± 5.4 ± 3.6 ± 2.7 ± 1.8 ± 1.4
S	-50 to 0 0 to 100 100 to 450 450 to 1760	± 2.5 ± 1.8 ± 1.3 ± 0.9	S	-58 to 32 32 to 212 212 to 842 842 to 3200	± 4.5 ± 3.2 ± 2.3 ± 1.6
B	200 to 400 400 to 1000 1000 to 1820	± 5.0 ± 2.0 ± 1.0	B	392 to 752 752 to 1832 1832 to 3308	± 9.0 ± 3.6 ± 1.8
N	0 to 330 330 to 1100 1100 to 1300	± 0.4 ± 0.3 ± 1.5	N	32 to 626 626 to 2012 2012 to 2372	± 0.7 ± 0.5 ± 2.7
E	-230 to 0 0 to 540 540 to 1000	± 0.5 ± 0.2 ± 1.5	E	-382 to 32 32 to 1004 1004 to 1832	± 0.9 ± 0.4 ± 2.7

RTD

PT100 (°C)		PT100 (°F)	
Range	Accuracy	Range	Accuracy
-200 to 850	± 0.3	-392 to 1562	± 1.0

Thermocouple Linearisation to BS 4937. ITS 90 or IPTS68 selectable.
 Pt100 Linearisation to BS1904 (1984).DIN43760 (1980). Linearisation Acc: 0.1% of reading for Class A, 38.5Ω FI
 Excitation current 0.5mA (Input), 200µA to 2mA (Output).
 Cold Junction Compensation External (Pt100), Internal, Ice point. Accuracy +/-0.2°C at 23°C
 Ramp Fully programmable continuous and stepped
 Steps 5 Steps with fully adjustable zero
 Transmitter Tx function 4-20mA
 Signal Converter Any input to any output
 Dual Readout Measure and source simultaneously displayed

GENERAL SPECIFICATION

Mains Power 220/230V or 115/110V AC 50 or 60Hz
 Stability 100ppm per °C range 0 to 40°C
 Battery Rechargeable NiMHd - Internal Charger
 Displays LCD Dot Matrix, 1 line by 20 charx12mm, alphanumeric.
 Case Impact resistant structural resin.
 Dimensions / Weight W270 x H175 x D250mm, weight 4.5kg
 Optional Extras Calibration Certificates – traceable to NPL and UKAS

ORDERING INFORMATION

7050 **Process and Thermocouple Calibrator**
 C180 Factory (NPL Traceable) Calibration Certificate
 C192 UKAS Calibration Certificate (ISO 17025)

Due to continuous development Time Electronics reserves the right to change specifications without prior notice.

Time Electronics Ltd, Unit 11 Sovereign Way, Botany Industrial Estate, Tonbridge, Kent, TN9 1RH. United Kingdom.

T: +44 (0) 1732 355993 F: +44 (0) 1732 770312 E: mail@timeelectronics.co.uk

www.timeelectronics.com