



7050 Process and Thermocouple Calibrator

Time Electronics

Calibration, Test & Measurement

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 °C or °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.



Input

Voltage ranges

Range	40V	4V	400mV	40mV
Accuracy @ 23 °C	0.03%	0.03%	0.03%	0.03%
Resolution	1mV	100µV	10µV	1µV
Current ranges				
Range	400mA	40mA	4-20mA/0-100%	
Accuracy @ 23 °C	0.03%	0.03%	0.06%	
Resolution	10·µA	1µA	.01%	
Resistance ranges				
Range (ohms)	40000	4000	400	
Accuracy @ 23 °C	0.03%	0.03%	0.06%	
Resolution (ohms)	1	0.1	0.01	

Output

Voltage ranges

Range	-2..+10V	-100mV..+400mV	-10mV..+40mV
Accuracy @ 23 °C	0.06%	0.03%	0.03%
Resolution	1mV	10µV	1µV
Output Impedance:	< 10 Ω	< 10 Ω	< 10 Ω
Current ranges			
Range	0.20mA	4.20mA	TX Sim (4..20mA)
Accuracy @ 23 °C	0.03%	0.03%	0.03%
Resolution	1µA	1µA	1µA
Max Load Resistance	900Ω at 20mA, Open circuit voltage 18- 27V		
Resistance ranges			
Range (ohms)	0 400Ω		
Accuracy @ 23 °C	± 0.03%		
Resolution (ohms)	0.01		
Excitation Current	0.2 2mA		

Other

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

Technical Data - Process Signal & Temperature Measurement & Simulation

	Centigrade		Fahrenheit	
Thermocouple	Range	Accuracy	Range	Accuracy
J Iron/Copper-Nickel	-210 to 0	± 0.4	-410 to 32	± 0.7
	0 to 710	± 0.2	32 to 1310	± 0.4
	710 to 1200	± 0.9	1310 to 2192	± 1.0
K Nickel-Chrome/ Nickel-Aluminium	-270 to -240	± 3.0	-454 to -430	± 5.4
	-240 to -180	± 1.2	-430 to -292	± 2.0
	-180 to -50	± 0.5	-292 to -58	± 0.9
	-50 to 960	± 0.3	-58 to 1760	± 0.6
	960 to 1370	± 1.7	1760 to 2498	± 1.5
T Copper/Copper-Nickel	-270 to -250	± 3.0	-454 to -418	± 5.4
	-250 to -180	± 1.0	-418 to -292	± 1.8
	-180 to -100	± 0.5	-292 to -148	± 0.9
	-100 to 400	± 0.2	-148 to 752	± 0.4
E Nickel-Chrome Copper-Nickel	-230 to 0	± 0.5	-382 to 32	± 0.9
	0 to 540	± 0.2	32 to 1004	± 0.4
	540 to 1000	± 1.5	1004 to 1832	± 2.7
R Platinum 13% Rhodium/Platinum	-50 to 0	± 3.0	-58 to 32	± 5.4
	0 to 70	± 2.0	32 to 158	± 3.6
	70 to 400	± 1.5	158 to 752	± 2.7
	400 to 1000	± 1.0	752 to 1832	± 1.8
	1000 to 1760	± 0.8	1832 to 3200	± 1.4
S Platinum 10% Rhodium/Platinum	-50 to 0	± 2.5	-58 to 32	± 4.5
	0 to 100	± 1.8	32 to 212	± 3.2
	100 to 450	± 1.3	212 to 842	± 2.3
	450 to 1760	± 0.9	842 to 3200	± 1.6
B Platinum 30% - Rhodium/ Platinum 6% - Rhodium	200 to 400	± 5.0	392 to 752	± 9.0
	400 to 1000	± 2.0	752 to 1832	± 3.6
	1000 to 1820	± 1.0	1832 to 3308	± 1.8
N Nickel-Chrome-Silicon/ Nickel-Silicon	0 to 330	± 0.4	32 to 626	± 0.7
	330 to 1100	± 0.3	626 to 2012	± 0.5
	1100 to 1300	± 1.5	2012 to 2372	± 2.7
RTD	Range	Accuracy	Range	Accuracy
Pt100	-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 Accuracy 0.1% of reading for Class A, 38.5 Ω F.I				
Excitation current : 0.5mA(Input), 200uA 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: 273 x 248 x 178mm Weight: 4.5Kg			
Ordering Information				
Code	Description			
7050	Process & Thermocouple Calibrator			
9180	Factory (NPL Traceable) Calibration Certificate			
9192	UKAS Calibration Certificate (ISO 17025)			

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