



- Measure (3 ranges) up to 40V, 400mA, 40kΩ
- Output voltage (3 ranges) to 10V, 1μV resolution
- Output current (3 ranges) to 20mA, 1μA resolution
- Output resistance: 0 to 400Ω, 0.01Ω 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 °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.

### Specifications – Voltage / Current / Resistance Generation and Measure

#### INPUT

##### Voltage

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

##### Current

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

##### Resistance

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

#### OUTPUT

##### Voltage

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

##### Current

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

##### Resistance

Range	Resolution	Accuracy
0 to 400Ω	0.01Ω	± 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.

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