



ENGLISH

Datasheet

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RS 135

4-20 mA Loop Calibrator + Thermometer



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FEATURES :

1. **Source 4~20 mA, 0~24 mA** with 1 μ A resolution (1 K Ω load, 24 V loop supply), basic accuracy 0.025%.
2. **Source 0~24.000 V** with 1 mV resolution.
3. **Source frequency 1~20000 Hz** square wave with programmable duty cycle (1~99%).
4. **Auto step** and **auto ramp** for sourcing mA, V.
5. Easy fixed 25% up and down, or programmable percentage (1~99%) increase and decrease (mA, V).
6. **Measure DC mA** with loop power (24 V output).
7. **Measure DC V**.
8. **Measure Temperature** ($^{\circ}$ C, $^{\circ}$ F) of 11 types of thermocouples (K, J, E, T, R, S, N, L, U, B and C).
9. Calibrator grade precision temperature measurement with 0.1 $^{\circ}$ C & 0.1 $^{\circ}$ F resolution.
10. Detection of thermocouples disconnection.
11. Source and Measure at the same time.
12. Warning for overload, output open (mA) or short (V).
13. Short circuit protection for output.
14. Battery power indication (%) when turn on the calibrator.

APPLICATIONS:

1. **Calibration of 4~20 mA** panel meters.
2. **LED brightness testing (0~24 mA)**.
3. **Temperature calibration** of panel meters or instruments for 11 types of thermocouples.

ELECTRICAL SPECIFICATIONS:

(23+/- 5°C, 10 minutes after turning on the power)

DC mA SOURCE (Max. load 1 K Ω , Max. voltage supply 24 V)

Range	Resolution	Accuracy
0~4 mA	1 μ A	$\pm 0.025\% \pm 10 \mu$ A
4~20 mA	1 μ A	$\pm 0.025\% \pm 5 \mu$ A
20~24 mA	1 μ A	$\pm 0.025\% \pm 5 \mu$ A

When output Open, the LCD displays "OL".

DC V SOURCE (Max. load 24 mA, Short circuit protection < 25 mA)

Range	Resolution	Accuracy
0~4 V	1 mV	$\pm 0.05\% \pm 10$ mV
4~20 V	1 mV	$\pm 0.05\% \pm 5$ mV
20~24 V	1 mV	$\pm 0.05\% \pm 5$ mV

When output Short circuit, the LCD displays "OL".

Frequency SOURCE (TTL, Square wave, Duty cycle = 1~99%)

Range (Hz)	Resolution	Accuracy
1.0~1000.0 Hz	0.1 Hz	0.1 Hz
1000~10000 Hz	1 Hz	1 Hz
10000~20000 Hz	1 Hz	10 Hz

DC mA MEASURE

Range	Resolution	Accuracy
0.005~4 mA	1 μ A	$\pm 0.025\% \pm 5$ dgts
4~20 mA	1 μ A	$\pm 0.025\% \pm 5$ dgts
20~24 mA	1 μ A	$\pm 0.025\% \pm 5$ dgts

If reading of mA (measure) is less than 5 digits, it is displayed as 0.

DC V MEASURE

Range	Resolution	Accuracy
0~24 V	0.001 V	$\pm 0.025\% \pm 5$ dgts

If reading of V (measure) is less than 5 digits, it is displayed as 0.

Temperature of Thermocouples (MEASURE)

(Resolution 0.1°C & 0.1°F, Internal cold junction compensation, Thermocouples accuracy not included, 3 minutes after plugging in thermocouples.)

	°C		°F	
	Range	Accuracy	Range	Accuracy
K	-200 to -150	2.0	-382 to -238	3.6
	-150 to 0	1.2	-238 to 32	2.1
	0 to 1000	0.8	32 to 1832	1.4
	1000 to 1370	1.2	1832 to 2498	2.1
J	-200 to -150	2.0	-382 to -238	3.6
	-150 to 0	1.0	-238 to 32	1.8
	0 to 1050	0.7	32 to 1922	1.2
E	-200 to -150	1.5	-382 to -238	2.7
	-150 to 0	0.9	-238 to 32	1.6
	0 to 850	0.7	32 to 1562	1.2
T	-200 to -150	1.5	-382 to -238	2.7
	-150 to 0	1.2	-238 to 32	2.1
	0 to 400	0.8	32 to 752	1.4
R	0 to 500	1.8	32 to 932	3.2
	500 to 1760	1.5	932 to 3200	2.7
S	0 to 500	1.8	32 to 932	3.2
	500 to 1760	1.5	932 to 3200	2.7
N	-200 to 0	1.5	-328 to 32	2.7
	0 to 1300	0.9	32 to 2372	1.6
L	-200 to 0	0.9	-328 to 32	1.6
	0 to 900	0.7	32 to 1652	1.2
U	-200 to 0	1.1	-328 to 32	1.9
	0 to 600	0.7	32 to 1112	1.2
B	600 to 800	2.2	1112 to 1472	3.9
	800 to 1000	1.8	1472 to 1832	3.2
	1000 to 1820	1.4	1832 to 3308	2.5
C	0 to 1800	1.0	32 to 3272	1.8
	1800 to 2310	1.5	3272 to 4190	2.7

GENERAL SPECIFICATIONS:

Dimension	214.0 (L) x 98.7(W) x 56.0(H) mm 8.4" (L) x 3.9" (W) x 2.2" (H)
Weight	650 g / 22.9 oz. (batteries included)
Operation Environment	0°C ~ 50°C, < 85% RH
Storage Environment	-20°C ~ 60°C, < 75% RH
Accessories	Carrying case x 1 User manual x 1 1.5 V SUM-3 Battery x 5 K-type thermocouples (1m, single plug) x 1 Alligator clips x 2 (Black and Red) Test leads x 2 (Black and Red)