Lab Calibrator

TRODEKS®

CL3001

CL3001

1 YEAR WARRANTY CE

- **0.0025% Calibration Accuracy**
- **Source/Read Thermocouple, RTD, Voltage, Current and Pressure**
- **Custom RTD and SPRT Profiles**
- **RS232, USB and IEEE-488 Remote Control**
- **Isolated Measurement Channel**
- **Includes Certificate with Calibration Data**

The TRODEKS ® CL3001 calibrator is an accurate full-featured temperature, DC and pressure calibrator intended for R&D, manufacturing and calibration lab applications. The units simple design and ease of operation allow users to quickly familiarize themselves with its operations and features. Time saving functions like the ability to save, recall and automatically cycle through setpoints for each output range, the ability to enter user definable RTD curves, and a complete remote interface are several key features offered by the CL3001.

The CL3001 includes an isolated measurement channel consisting of two voltage ranges: 10V and 100V DC, milliAmp range 0 to 52 mA, milliAmp range. The isolated measurement includes 24 Vdc power, and accuracy of 0.005% of reading on voltage ranges. Measuring pressure with a PCL-PMA pressure module adaptor, the CL3001 will work with all TRODEKS PCL-PM pressure modules. For information on these see specifications under PCL1200.

Specifications

Accuracy: Stated in terms of absolute uncertainty for 1 year term. Thermocouple values include cold junction compensation. Values are best in given range and function. For breakdown of each range please refer to the manual.

Display: Primary input/output display and the isolated measurement channel display each have 2 line, 16 character fields

Temperature Units: User selectable, °F/°C

Communication: RS232, IEEE-488 (31 available addresses)

Operating Ambient: Less than 80% RH, 0 to 50°C (32 to 122°F), temperature Cal 18 to 28°C (64 to 82°F)

Power: 100V/120V or 220V/240V, ±10%, line frequency 47 to 63 Hz

Dimensions: 13.3 cm H (5.25") plus 2.9 cm (1.15") for extended feet width standard rack width 48.3 cm (19") 30.0 cm D (11.81") overall

Weight: 4 kg (9 lb)

Input/Output Functions: Include save, recall and automatically cycle through setpoints for each output range, the ability to enter user definable RTD curves, and remote interface command set.

Thermocouple Specification, Output/Input

Type	Range °C		Range °F		Absolute Uncertainty† °C	Absolute Uncertainty† °F
K	-200	1372	-328	2502	0.16	0.29
J	-210	1200	-346	2192	0.16	0.29
T	-250	400	-418	752	0.14	0.25
E	-250	1000	1000	1832	0.15	0.27
N	-200	1300	-328	2372	0.18	0.32
L	-200	900	-328	1652	0.17	0.31
U	-200	600	-328	1112	0.56	1.01
XK	-200	800	-328	1472	0.13	0.23
R	0	1750	32	3182	0.33	0.59
S	0	1750	32	3182	0.36	0.65
B	600	1820	1112	3308	0.39	0.70
C	0	2316	324	201	0.26	0.47
BP	0	2500	324	532	0.32	0.58

† *Values are best in range*

DC Voltage Specifications, Output

Range	Absolute Uncertainty† ± (ppm of output µV)		
	Ppm output	µV	Resolution
0 to 100.000 mV	30	3	1 mV
0 to 1.00000V	30	10	10 µV
0 to 10.0000V	30	100	100 µV
0 to 100.000V	30	1 mV	1 mV

DC Voltage Specifications, Isolated Input

Range	Absolute Uncertainty† ± (ppm of reading mV)		
	Ppm rdg	mV	Resolution
0 to 10.0000V	50	0.2	100 uV
0 to 100.000V	50	2.0	1 mV

DC Current Specifications, Output

Range	Absolute Uncertainty† ± (ppm of output µA)		
	Ppm rdg	µA	Resolution
0 to 100.000 mA	50	1	1 uA

DC Current Specifications, Isolated Input

Range	Absolute Uncertainty† ± (ppm of reading µA)		
	Ppm rdg	µA	Resolution
0 to 50.000 mA	100	1	0.1 uA

1. Loop power: 24V ±10%
2. HART® resistor: 250 Ω ±3%
3. Maximum rated loop current: 24 mA

Resistance Specifications, Output

Range	Absolute Uncertainty† ±Ohms		
	Ω	Resolution	Nominal Current
5 to 400.000 Ω	0.015	0.001 Ω	1 to 3 mA
5 to 4.00000 kΩ	0.25	0.01 Ω	0.1 to 1 mA

1. Continuously variable from 0 to 4 kΩ.
2. For currents lower than shown, the specification becomes:

New Spec. = Stated Spec. x Imin/Iactual.

For example, a 500 µA stimulus measuring 100 Ω has a specification of:
0.015 Ω x 1 mA/500 µA = 0.03 Ω.

† *Values are best in range*

Resistance Specifications, Input

Range	Absolute Uncertainty† ± (ppm of reading Ω)		
	Ppm rdg	Ω	Resolution
5 to 400.000 Ω	20	0.035	0.001 Ω
5 to 4.00000 kΩ	20	0.35	0.01 Ω

1. Loop power: 24V ±10%
2. HART resistor: 250Ω ±3%
3. Maximum rated loop current: 24mA

RTD and Thermistor Specifications, Output

Type	Range				Absolute Uncertainty†	
	°C		°F		°C	°F
Pt 385, 100 Ω	-200	800	-328	1472	0.04	0.07
Pt 3926, 100 Ω	-200	630	-328	1166	0.04	0.07
Pt 3916, 100Ω	-200	630	-328	1166	0.03	0.05
Pt 385, 200 Ω	-200	630	-328	1166	0.38	0.68
Pt 385, 500 Ω	-200	630	-328	1166	0.15	0.27
Pt 385, 1000 Ω	-200	630	-328	1166	0.07	0.13
Ni120, 120 Ω	-80	260	-112	500	0.02	0.04
Cu 427, 10 Ω	-100	260	-148	500	0.38	0.68
YSI 400	15	50	59	122	0.007	0.013

RTD and Thermistor Specifications, Input

Type	Range				Absolute Uncertainty†	
	°C		°F		°C	°F
Pt 385, 100 Ω	-200	800	-328	1472	0.012	0.07
Pt 3926, 100 Ω	-200	630	-328	1166	0.011	0.022
Pt 3916, 100 Ω	-200	630	-328	1166	0.006	0.011
Pt 385, 200 Ω	-200	630	-328	1166	0.009	0.016
Pt 385, 500 Ω	-200	630	-328	1166	0.008	0.014
Pt 385, 1000 Ω	-200	630	-328	1166	0.012	0.022
Ni120, 120 Ω	-80	260	-112	500	0.010	0.018
Cu 427, 10 Ω	-100	260	-148	500	0.069	0.124
YSI 400	15	50	59	122	0.007	0.013
SPRT	-200	660	-328	1220	0.06	0.011

† *Values are best in range*

To Order

Model No.	Description
CL3001	Precision lab calibrator

Comes complete with calibration certificate, operator's manual, power cord 0.9 m (3'), and thermocouple shorting connector.

Accessories

Model No.	Description
PCL-PMA	Pressure module adaptor
CL-300-CABLE-(*)-2	Thermocouple extension cables
TAC-CAB	0.9 m (3') test leads
PCL422-TL	Stackable test leads

** Male mini-connector to spade lug, insert one thermocouple type **J, K, T, E, R, S, B, N.***