



Calibrator PCE-RTD 20



PCE-RTD 20 RTD Calibrator

Simulation and Measurement of Resistance & Pt Sensors, Current and Voltage / Li-Ion Battery / Continuity Checker / Ramp Function

The RTD calibrator PCE-RTD 20 is used to simulate resistors and resistance temperature sensors. Thus, the RTD calibrator is able to be used as a calibrator for temperature measuring devices. In addition to the simulation of resistors, the RTD calibrator has a measuring function for voltage, current and resistance. Both functions work independently. Furthermore, both connections are galvanically separated from each other.

The RTD calibrator has many different characteristics for RTD sensors, so that a perfect calibration of thermometers of various kinds is possible. The RTD calibrator has an accuracy of 0.02% in all measurement ranges and measurement functions. In addition to the direct specification of temperatures or resistances, the RTD calibrator can be operated in ramp mode. Here, the user can decide whether the ramp should be run indefinitely or at defined intervals.

The PCE-RTD 20 RTD calibrator is equipped with a mini-USB interface. This jack can be used to load the RTD calibrator. Furthermore, recorded data can be transmitted via this interface.

- ▶ Simulation and measurement mode
- ▶ Battery operation
- ▶ Graphic LCD
- ▶ 24V supply for current loops
- ▶ HART compatible
- ▶ Manual mode & ramp function
- ▶ Continuity test
- ▶ Data logger function

Specifications

Measuring range	Resolution	Accuracy (of rdg.)
Measuring parameter voltage DC		
V		
0 ... 30V	0.001V	± 0.02% of rdg. + 2 Dgt
Measuring parameter current DC		
mA		
0 ... 24-mA	0.001-mA	± 0.02% of rdg. + 2 Dgt
Measurement parameter resistance		
0 ... 400 Ω	0.01 Ω	± 0.02% of rdg. + 0.01Ω
Pt10 ... Pt1000		
-200 ... 200°C / -328 ... 392°F	Pt10 ... Pt400: 0.01°C / 0.018°F	± 0.2°C / 0.36°F
200 ... 600°C / 392 ... 1112°F	Pt500 ... Pt100: 0.1°C / 0.18°F	± 0.3°C / 0.54°F
600 ... 850°C / 1112 ... 1562°F		± 0.1°C / 0.18°F
Ni100		
-60 ... 180°C / -76 ... 356°F	0.01°C / 0.018°F	± 0.1°C / 0.18°F
Ni120		
-80 ... 260°C / -112 ... 500°F		± 0.1°C / 0.18°F
Cu10		
-200 ... 260°C / -328 ... 500°F		± 0.2°C / 0.36°F

*In 4-wire measuring mode, a resolution of up to 0.01 Ω in the range 0 ... 1600 Ω is possible. The specified accuracy applies to the 4-wire measuring mode. With 3-wire measurement, measurement inaccuracy increases by 1°C / 1.8°F (Pt10 / Cu10), 0.6°C / 1.08°F (Pt50 / Cu50) and 0.4°C / 0.72°F (remaining types).

Simulation area	Resolution	Accuracy*
Simulation parameter resistance		
0 ... 400 Ω	0.01 Ω	± 0.02% of rdg. + 0.01Ω
400 ... 4000 Ω	0.1 Ω	± 0.02% of rdg. + 0.015Ω
Simulation parameters Pt10 ... Pt1000		
-200 ... 200°C / -328 ... 392°F	Pt10 ... Pt400: 0.01	± 0.15°C / 0.27°F
200 ... 600°C / 392 ... 1112°F	Pt500 ... Pt100: 0.1	± 0.25°C / 0.45°F
600 ... 850°C / 1112 ... 1562°F		± 0.15°C / 0.27°F
Simulation parameter Ni100		
-60 ... 180°C	0.01°C / 0.018°F	± 0.15°C / 0.27°F
Simulation parameter Ni120		
-80 ... 260°C	0.01°C / 0.018°F	± 0.15°C / 0.27°F
Simulation parameter Cu10		
-200 ... 260°C	0.01°C / 0.018°F	± 0.8°C / 1.4°F

*Accuracy is valid at a current of > 0.2-mA or > 0.4-mA.

Compatible RTD sensor	Pt10 (385), Pt50 (385), Pt100 (385), Pt200 (385), Pt400 (385), Pt500 (385), Pt1000 (385), Pt10 (3926)
-----------------------	---

Ni100 (672), Ni (618), Ni120 (672), Cu10 (427),
Cu50 (427), Cu100 (427)

General Specifications PCE-RTD

20

Display modes	Measurement: mA / V / Ω / RTD Simulation: Ω / RTD
Temperature units	$^{\circ}$ C / $^{\circ}$ F / K
Current of RTD measurement	About 300 μ A
Maximum current simulation	3-mA (0 ... 650 Ω) $I < 2V / R_{sim}$ (650 ... 4000 Ω)
Maximum input voltage	30V DC
Temperature coefficient	<30 ppm
Input impedance	Voltage measurement: > 1 M Ω Current measurement: 10 Ω
Response time	<100 ms
Refresh rate display	10 Hz
Data storage	Internal memory 150000 readings
Interface	USB 2.0
Display	2.4" TFT LCD 240 x 320 pixels LED illuminated
Output voltage current loop	24V DC / 24-mA
HART mA loop resistance	250 $\Omega \pm 20\%$
Special features	Step and ramp function Automatic and manual mode \sqrt{x} , x^2 : For the measuring function
Continuity test	Adjustable threshold up to 100 Ω
Power supply	3.7V / 2300-mAh Li-ion battery
Charging time	About 5 h
Power adapter	Input: 100 ... 240V AC / 50/60 Hz Output: 5V / 1 A DC
Battery life	Approx. 15 h: Simulation and measurement with low LCD illumination Approx. 8 h: Measurement with low LCD illumination
Dimensions	162 x 82 x 40 mm / 6.4 x 3.2 x 1.6 in
Weight	About 300 g / < 1 lb
Degree of protection	IP20
Operating conditions	Battery operation: 0 ... 55 $^{\circ}$ C / 32 ... 131 $^{\circ}$ F, 30 ... 90% RH Mains operation: 0 ... 45 $^{\circ}$ C / 32 ... 113 $^{\circ}$ F, 30 ... 90% RH
Storage conditions	-20 .. 60 $^{\circ}$ C / -4 ... 140 $^{\circ}$ F, 30 ... 90% rh non- condensing
Heating time	About 15 minutes