burster

OPERATION MANUAL

Pt100-Simulator
Model 4501

Valid from: 01.02.2001

Manufacturer:
burster präzisionsmesstechnik gmbh & co kg
Talstraße 1 - 5   P.O.Box 1432
DE-76593 Gernsbach   DE-76587 Gernsbach
Germany   Germany

Tel.:   (+49) 07224 / 6450
Fax.:   (+49) 07224 / 64588
E-Mail: info@burster.com
           www.burster.com

Exclusion of warranty liability for operating manuals

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1. General

1.1 Application

Wherever temperatures are measured, temperatures must also be simulated. The Pt-simulator is suitable for a wide area of applications. It has a wide range of simulation, which is resolved in 0.1 deg. C steps and makes many assignments in chemistry-, measuring-, controlling-, medicine and household applications, food industry, vehicle construction, air- and space travel and power plants easy to solve. Often in the past several simulators had to be used alongside to achieve either resolution or the range of the relevant application. As an extra advantage ot the user temperatures can be entered in degrees celsius. Additional extensive conversions and readings in tabulation sheets are no longer necessary.

1.2 Description

There are five precision decade switches in a strudy metal housing. The desired temperature value is selected in four steps with a 0.1 degree celsius resolution in ranges from - 100 degree celsius to max 500 degree celsius. According to DIN EN 60751 the precision resistors simulate the temperature value Pt 100 resistor. The simulated temperature value is called on the output plugs "R". If required, the line resistance can also be simulated in steps of 10, 20 and 30 Ω. The celsius scale, displaced by 273.15 K opposite the absolute temperature stipulates that an additional switch-over of polarity is performed at negative celsius temperature values. The simulator is of a high ohmic at wrongly entered + or - signes. An unintentional misuse is practically impossible. The switches are implemented in a short-circuit control manner. The precision resistors in the 100 deg. decade will therefore be switched parallelly at the moment of switch-over in all other decade steps there is not effect at switch-over. The used resistor material MANGANIN® has a temperature coefficient smaller 10 ppm/K. This makes a consideration of the environmental temperature normally superfluous.

1.3 Technical Data

Simulation range:	-100 °C ... +500 °C
Absolute accuracy:	± 0.5 °C
Resolution:	0.1 °C
Calibration:	according to DIN EN 60751
Switches:	5 precision switches in very low-ohmic design
Temperature coefficient:	$\pm(8 \cdot 10^{-3} + 3 \cdot 10^{-5} \cdot t) \cdot \Delta \vartheta$ [t = simulated temperature in degrees C, $\Delta \vartheta$ = difference of surrounding temperature to 23 degrees C]
Measuring current:	max. 50 mA
Operating temperature:	+ 5 °C ... +23 ... +50 °C, bis 80 % relative humidity, non-condensing
Storage temperature:	0 ... 60 °C
Insulation resistance:	> 100 MΩ
Connection:	4-wire
Connection plugs:	ø 4 mm, simulation of connecting cable resistances : 10 Ω, 20 Ω, 30 Ω ± 1 %)
Long-term stability:	< 0.1 K/year
Resistance material:	MANGANIN®, T_K < 10 ppm/K
Housing:	aluminium case; shields well against electric interferences
Dimensions (W x H x D):	150 x 70 x 105 [mm] 6 x 2 3/4 x 4 1/8 [inches]
Weight:	500 g

1.4 DKD-Certificate

DKD stands for "Deutscher Kalibrierdienst" = German Callibration Service.
burster präzisionsmeßtechnik maintains a calibration station for determining electric measuring factors, which is affiliated to Deutscher Kalibrierdienst (DKD). Supervised by the Physikalisch-Technische Bundesanstalt (PTB) of Braunschweig,

the calibration station at burster is authorized to issued calibration certificates. The measuring results and uncertainties in measurement as shown in the certification certificates are determined by standards an measuring instruments which in turn are subject to a periodical check and comparsion with the official Standard Specification of the Federal Republic of Germany. Proof of the official calibration is the calibration certificate itself and a calibration mark is applied to the test piece.

For the Pt 100 simulator gives it not a standard callibration certificate, there are 6000 possibilities.
Please call us the desired temperature points.

Order Code: 45 DKD-4501

2. Operators Manual

2.1 Operating, Plugs
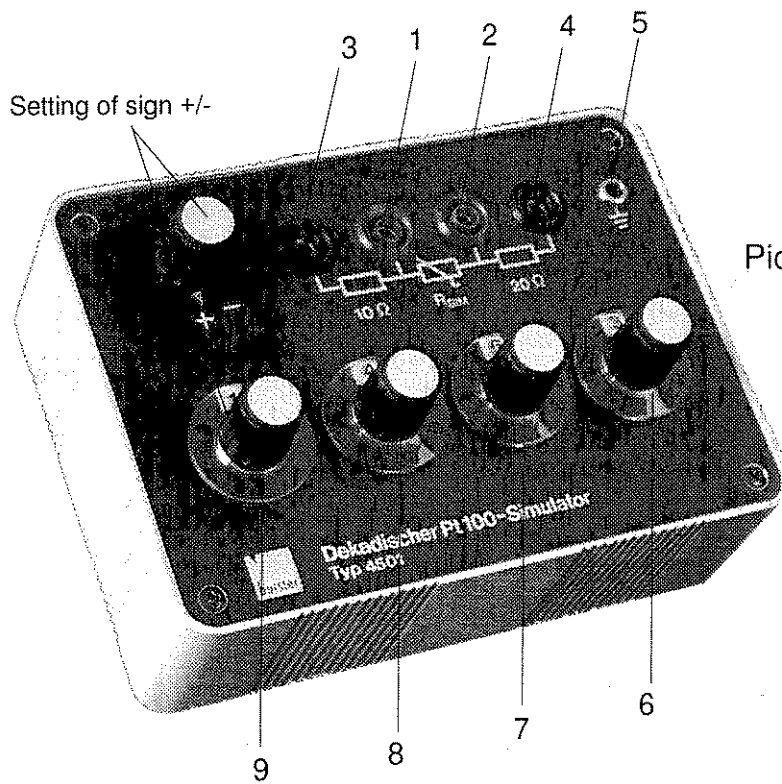
Setting of sign +/-

Picture 1

1,2	Pt 100 resistor
3,4	Pt 100 resistor and line resistance of 30 Ω
5	PE-connection if required
6,7,8,9	Settings

Operating Information
The sign of the temperature must agree with
setting of sign ± and the left rotary switch.

2.2 Instructions

Picture 2:
Connection
in 2-wire

Picture 3:
Connection
in 4-wire