Decade Pt100 Simulator

Model 4501

4501 EN

- **Simulation range -100 °C ... +500 °C**
- **Resolution 0.1 K**
- **Calibration in accordance to DIN EN 60751**
- **Simulation of line resistance 10 Ω, 20 Ω or 30 Ω**
- **Sturdy aluminium-housing**

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 divided in 0.1 °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. In the past several simulators had often to be used alongside to achieve either resolution or the range of the relevant application. As an extra advantage to the user temperatures can be entered in degrees of celsius. Additional extensive conversions and readings in tabulation sheets are no longer necessary.

Description

There are five precision decade switches in a sturdy metal housing. The desired temperature value is selected in four steps with a 0.1 °C resolution in ranges from - 100 °C to max. 500 °C. According to DIN EN 60751 the precision resistors simulate the temperature values for the Pt100 resistor. The simulated temperature value is called on the output plugs "R_{sim}". If required, the line resistance of 10, 20 and 30 Ω can also be simulated. The celsius scale, displaced by 273.15 K against the absolute temperature requires that an additional switch-over of polarity is performed at negative celsius temperature values. The simulator is high ohmic at wrongly entered + or - signs. An unintentional misuse is practically impossible. The switches are implemented in a short-circuit control manner. The precision resistors in the 100 °C decade will therefore be switched parallely at the moment of switch-over, in all other decade steps there is no 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.

Technical Data

Simulation range:	- 100 °C ... + 500 °C
Resolution:	0.1 K
Calibration:	according DIN EN 60751
Error limit:	± 0.5 K
Switches:	5 precision switches in very low-ohmic design, shorting switch mode
Temperature coefficient:	$\pm(8 \cdot 10^{-3} + 3 \cdot 10^{-5} \cdot t) \cdot \Delta\vartheta$ [t = simulated temperature in °C, $\Delta\vartheta$ = difference of surrounding temperature to 23 °C]
Measuring current:	max. 50 mA
Operating temperature range:	+ 5 °C ... +23 ... +50 °C, ... 80 % relative humidity, non condensing
Storage temperature:	0 ... 60 °C
Insulation resistance:	> 100 MΩ
Connection technology:	2 wire, with simulation possibility of line resistances (10 Ω + 20 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
Connections:	counter-sunk safety connectors, ø 4 mm
Dimensions (W x H x D):	150 x 70 x 105 [mm]
Weight:	500 g

Order Information

Decade Pt100 simulator **Model 4501**
a test certificate with traceability confirmation part of delivery.

Accessories

Functional bag with carrying straps
for protection and transport **Model 4592**

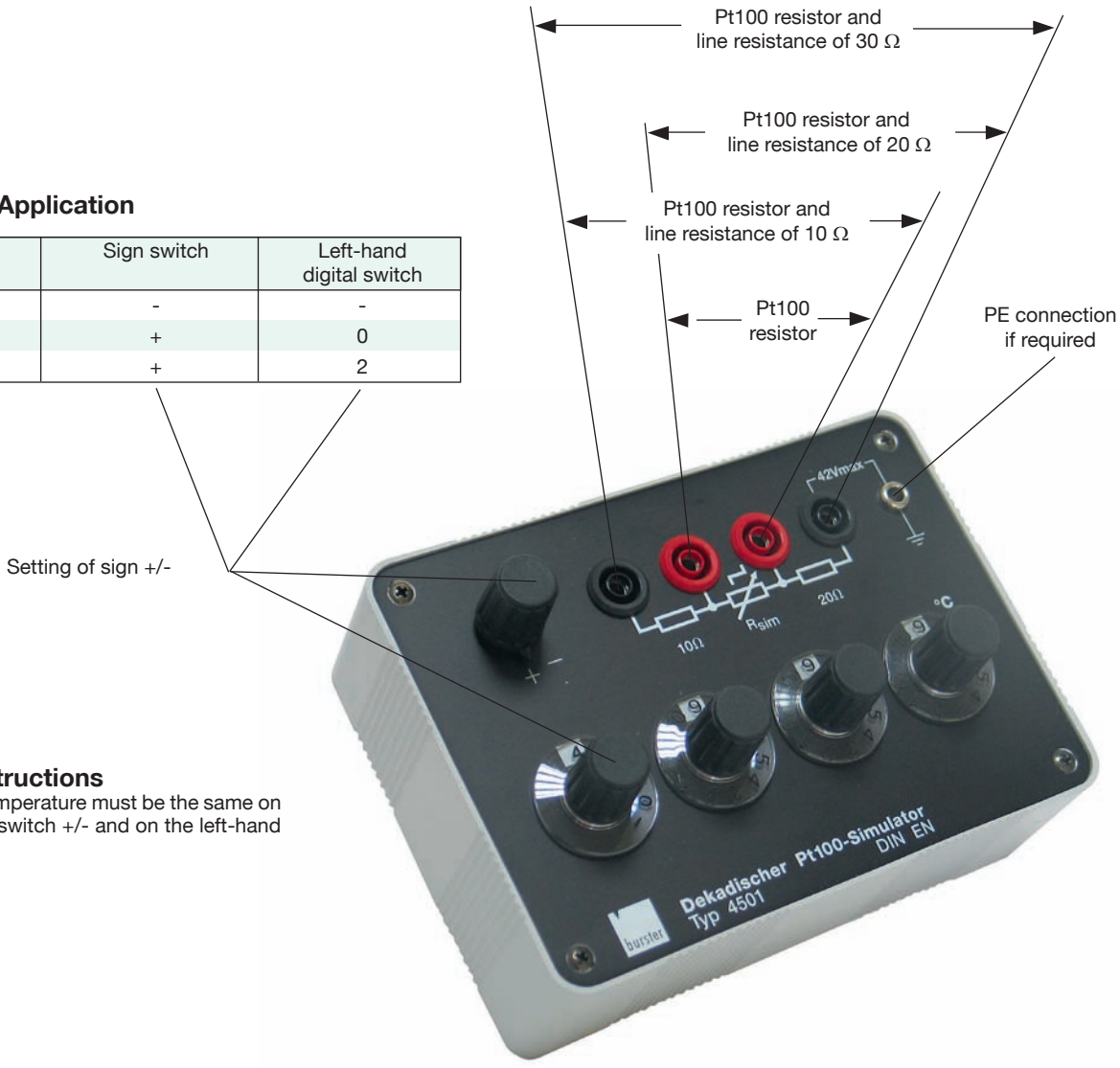
DKD/WKS Manufacturer Calibration Certificate

On the Calibration Certificate the desired values for the resistance are indicated and the calculated temperature values indicated too

DKD Calibration **Model 45DKD-4501**
WKS Calibration **Model 45WKS-4501**

Examples for Application

Temperature to simulate	Sign switch	Left-hand digital switch
- 89.5 °C	-	-
+ 89.5 °C	+	0
+ 200 °C	+	2



Operating instructions

The sign for the temperature must be the same on the sign selection switch +/- and on the left-hand decade switch.