High-Precision Resistance Decade and Calibrator

Model 1405
Model 1406
Model 1407

Code:	1400 EN
Delivery:	ex stock
Warranty:	24 months

- **Range 1405 10 mΩ to > 3 kΩ**
- **Range 1406 10 mΩ to 100 kΩ**
- **Range 1407 100 mΩ to 1 MΩ**
- **Accuracy 1405/06/07 0.01 %**
- **Temperature coefficient 1405/06/07 ≤ 2 ppm/K**
- **Stability < 0.01 % resp.**

Application

The model 1405 tests and calibrates quickly and easily displays, in control and process technology which is working on a resistance thermometer basis.

The field of application of the precision decade model 1406/07 reaches from general precision measuring to simulation of a variety of measuring transducers, such as for example strain gage transducers, resistance thermometers, hygrometers and others.

Description

The decade resistors are wire-wound resistors and consist of low-capacity and low-conductivity wire coiling made of ZERANIN® resp. MANGANIN®.
An especially developed precision stepping switch with high-quality contact materials and optimal brush construction guarantees very good reproducibility.

The design of the decade model 1405 enables its use not only as precision decade resistor but also precision calibrator for all standard commercial thermometers. Two fixed series resistors of 1 kΩ serve the simulation of Pt 1000 and Pt 2000 resistance thermometers. The four connection sockets provide the possibility of simple simulation of resistance thermometers operated in four-wire technology.

As regards accuracy, stability and reliability, the decades model 1406/07 are designed to meet high-standard requirements.

Technical Data

Resistance ranges:	model 1405	10 mΩ ... > 3 kΩ	
	model 1406	10 mΩ ... 100 kΩ	
	model 1407	100 mΩ ... 1 MΩ	
Zero resistance of the complete resistance box:		< 10 mΩ	
Resistance tolerance:		± 0.01 % in the main steps (see table below)	
Calibration:		in Ohm absolute at 23 °C	
Resistance material:		ZERNANIN®, MANGANIN® or ISAOHM®	
Temperature coefficient:			
	in the range	10 x 100 kΩ	< 5 ppm/K
	in the ranges	10 x 1 Ω to 10 x 10 kΩ	≤ 2 ppm/K
	in the ranges	10 x 10 mΩ to 10 x 100 mΩ	<10 ppm/K
Long-term stability:			< 0.01 %
Power dissipation:			0.4 W per step = 4 W/decade
Operating voltage:			500 V max.
Test voltage:			2800 VDC
Design and construction:			according to DIN EN 60477
Switching arrangement:			short-circuiting between two neighbouring
Switch positions:			12, limited to 11 steps
Contact material:			Ag plated on E-Cu, slider pack, solid silver
Operating moment:			approx. 0.1 Nm
Dimensions (length by height by depth):			433 x 95 x 120 [mm]
Weight:			approx. 2.8 kg

Accessories

Assembly set for 19" rack mounting	**Model 1491**

Order Information

Precision resistance decade	**Model 1405**
Precision resistance decade	**Model 1406**
Precision resistance decade	**Model 1407**
Assembly set for 19" rack mounting	**Model 1491**
Leather case	**Model 1495**

DKD Calibration Certificate

(DKD stands for DEUTSCHER KALIBRIERDIENST = German Calibration Service).

burster präzisionsmesstechnik maintains a calibration station which is affiliated to the Deutscher Kalibrierdienst (DKD). Supervised by the Physikalisch-Technische Bundesanstalt (PTB) of Braunschweig, the calibration station at burster's is authorized to issue Calibration Certificates.

The Calibration Certificate shows the values for the resistance in 10 switch positions of each decade and the inherent relative uncertainty. As experience has shown, the relative uncertainty in the upper decades amounts to only 1/5 to 1/20 of the respective error tolerance. More precise knowledge of resistance values thus means a veritable increase in value of the instrument.

Order Code	**14 DKD-1405**
	14 DKD-1406
	14 DKD-1407

Manufacturer Calibration Certificate

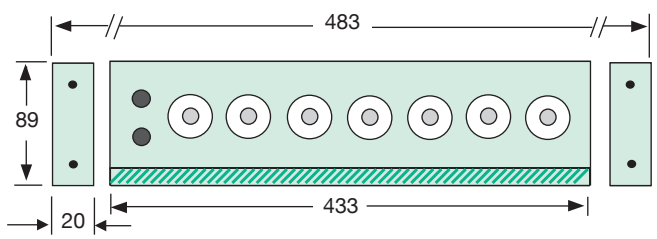
Please refer to DKD Calibration, but with a higher uncertainty.

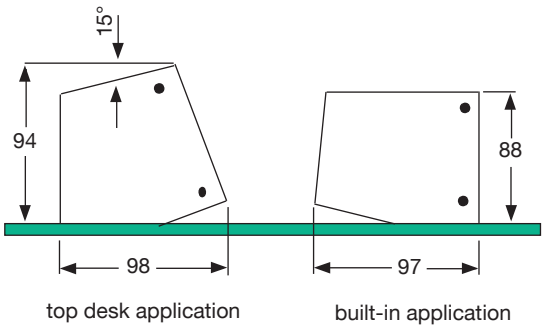
Order Code	**14 WKS-1405**
	14 WKS-1406
	14 WKS-1407

Error tolerance, load

1405	1406	1407	Value	Tolerance 1405/06/07	Max. Load Current [mA]
X	X		10 x 0.01 Ω	± 2 %	2000
X	X	X	10 x 0.1 Ω	± 0.5 %	2000
X	X	X	10 x 1.0 Ω	± 0.05 %	600
X	X	X	10 x 10 Ω	± 0.02 %	200
X	X	X	10 x 100 Ω	± 0.01 %	60
	X	X	10 x 1 kΩ	± 0.01 %	20
	X	X	10 x 10 kΩ	± 0.01 %	6
		X	10 x 100 kΩ	± 0.02 %	2

Housing





Dimensions given in mm.

487-001400EN-5070-101519