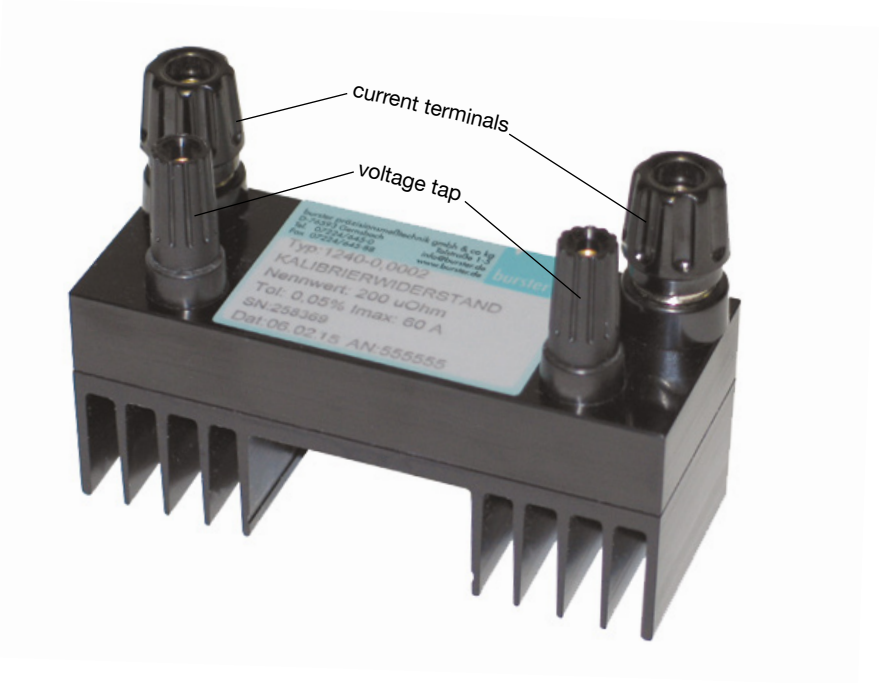
Calibration Resistor

Model 1240

Code:	1240 EN
Delivery:	ex stock
Warranty:	24 months

With Certificate according to ISO 9000



1240 EN

- **Range 10 µΩ ... 100 kΩ**
- **Low capacitance and low inductance design**
- **Suitable for direct current and technical frequencies**
- **High stability < ± 0.01 % over years**

Application

The 0.02 class calibration resistors excel in their modern design and small mechanical dimensions. Their ruggedness also ensures a long life.

Calibration resistors of the 1240 series are used wherever very constant operating standards are required. Typical main areas of application therefore include:

- ► When normal resistors prove to be too large scale
- ► For test and calibration of resistance measurement devices
- ► For tests on electrical temperature measuring equipment
- ► For laboratory setup of a Wheatstone bridge
- ► As shunt resistor for accurate current measurement
- ► As part of standard equipment in research laboratories
- ► For a large part of measurements in calibration laboratory

A test certificate according to ISO 9000 with detailed technical data is included in the scope of delivery of these high-quality calibration resistors.

Calibration certificate with accreditation symbol (DAkkS)

The calibration laboratory D-K-15141-01-00 at burster praezisionsmesstechnik is supervised by DAkkS (Deutsche Akkreditierungsstelle GmbH) according to ISO 17025.
It can prove its status by a certificate and is authorized to issue calibration certificates with the DAkkS logo and with the DKD logo (Deutscher Kalibrierdienst).
These calibration certificates are internationally approved by multilateral contracts.

Manufacturer Calibration Certificate

Please refer to DAkkS Calibration Certificate but with reduced accuracy. The calibration resistors can also be delivered with a manufacturer calibration certificate. It confirms the traceability of the used secondary voltage and resistance standards to the national standards according to DIN ISO 9000ff and is guaranteed by our certified calibration laboratory (D-K-15141-01-00).

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Technical Data

Resistance material: 10 µΩ ... 200 mΩ MANGANIN® sheet
500 mΩ ... 100 kΩ MANGANIN® wire

Temperature coefficient: TCR20/60 ±20 ppm/K

Temperature dependence: $R_t = R_{20} (1 + a_{20} (t - 20) + b (t - 20)^2)$
$a_{20} = 0 ... 20 \cdot 10^{-6}$
$b = - 0.59 \cdot 10^{-6}$

Calibration temperature: 23 °C ± 3 K (< 0.5 W load)

Surface temperature (To_{max}): max. 85 °C

Thermal resistance (R_{th}): 11 K/W

Operation temperature (Tu): 0 ... 23 ... 40 °C

Increase of temperature: $Tp = R_{th} \cdot I^2 \cdot (R + R_L)$

Surface temperature: $To = Tu + Tp$ (To_{max} = 85 °C)

Test voltage: 2900 VDC (resistance element housing)

Nominal insulation voltage: 650 VDC (insulated mounting requred)

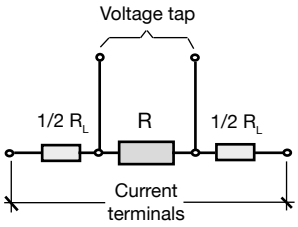
Connection socket: Ø 4 mm screw pole terminal
Ø 2,5 mm cross hole for quick clamping

Insulation resistance: > 100 MΩ

Specifications: according DIN EN 60477

Dimensions 10 µΩ, 25 µΩ: (H x W x D) 97 x 37,5 x 81 [mm]
At 50 µΩ: (H x W x D) 97 x 37,5 x 68 [mm]

Weight 100 µΩ ... 100 KΩ: 250 g
10 µΩ, 25 µΩ, 50 µΩ: 400 g

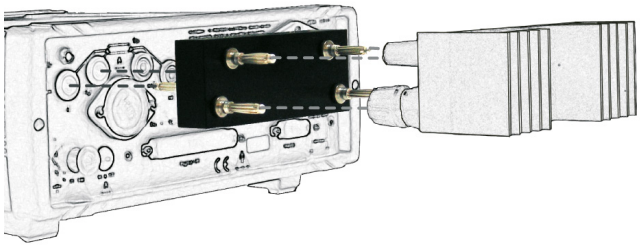


Model	Resistance value* (R)	Tolerance ± %	Feed line resistance R_L	Resistivity material	Max. current in air*	Nomial voltage at voltage taps	Storage stability typ./year	Typical measuring current for calibration
1240-0.000010	10 µΩ	1	≤ 0.6 mΩ		60 A	0.6 mV	< 4 x 10^{-4}	20 A
1240-0.000025	25 µΩ	1	≤ 0.6 mΩ		60 A	1.5 mV	< 4 x 10^{-4}	20 A
1240-0.000050	50 µΩ	1	≤ 0.8 mΩ		60 A	3 mV	< 4 x 10^{-4}	20 A
1240-0.0001	100 µΩ	0.1	≤ 1.5 mΩ		60 A	6 mV	< 4 x 10^{-4}	20 A
1240-0.0002	200 µΩ	0.05	≤ 1.5 mΩ		60 A	12 mV	< 4 x 10^{-4}	20 A
1240-0.0005	500 µΩ	0.05	≤ 1.5 mΩ		60 A	30 mV	< 4 x 10^{-4}	15 A
1240-0.001	1 mΩ	0.05	≤ 4 mΩ	MANGANIN® sheet	30 A	30 mV	< 5 x 10^{-5}	10 A
1240-0.002	2 mΩ	0.05	≤ 4 mΩ		30 A	60 mV	< 5 x 10^{-5}	7 A
1240-0.005	5 mΩ	0.05	≤ 4 mΩ		20 A	100 mV	< 5 x 10^{-5}	4 A
1240-0.01	10 mΩ	0.03	≤ 5 mΩ		14 A	140 mV	< 5 x 10^{-5}	4 A
1240-0.02	20 mΩ	0.03	≤ 5 mΩ		10 A	200 mV	< 5 x 10^{-5}	3 A
1240-0.05	50 mΩ	0.03	≤ 7 mΩ		6 A	300 mV	< 5 x 10^{-5}	1 A
1240-0.1	100 mΩ	0.02	≤ 8 mΩ		5 A	500 mV	< 3 x 10^{-5}	1 A
1240-0.2	200 mΩ	0.02	≤ 8 mΩ		3 A	600 mV	< 2 x 10^{-5}	900 mA
1240-0.5	500 mΩ	0.02	≤ 5 mΩ		2 A	1 V	< 2 x 10^{-5}	100 mA
1240-1	1 Ω	0.02	≤ 5 mΩ		1.5 A	1.5 V	< 1 x 10^{-5}	100 mA
1240-2	2 Ω	0.02			1 A	2 V	< 2 x 10^{-5}	50 mA
1240-5	5 Ω	0.02			0.7 A	3.5 V	< 2 x 10^{-5}	10 mA
1240-10	10 Ω	0.02			0.5 A	5 V	< 1 x 10^{-5}	10 mA
1240-20	20 Ω	0.02			0.35 A	7 V	< 2 x 10^{-5}	9 mA
1240-50	50 Ω	0.02			0.2 A	10 V	< 2 x 10^{-5}	10 mA
1240-100	100 Ω	0.02			0.15 A	15 V	< 1 x 10^{-5}	10 mA
1240-200	200 Ω	0.02		MANGANIN® wire	0.1 A	20 V	< 2 x 10^{-5}	1 mA
1240-500	500 Ω	0.02			70 mA	35 V	< 2 x 10^{-5}	1 mA
1240-1 k	1 kΩ	0.02			45 mA	45 V	< 1 x 10^{-5}	1 mA
1240-2 k	2 kΩ	0.02			20 mA	40 V	< 2 x 10^{-5}	100 µA
1240-5 k	5 kΩ	0.02			14 mA	70 V	< 2 x 10^{-5}	100 µA
1240-10 k	10 kΩ	0.02			10 mA	100 V	< 1 x 10^{-5}	100 µA
1240-20 k	20 kΩ	0.02			7 mA	140 V	< 2 x 10^{-5}	100 µA
1240-50 k	50 kΩ	0.02			4 mA	200 V	< 3 x 10^{-5}	100 µA
1240-100 k	100 kΩ	0.02			3 mA	300 V	< 3 x 10^{-5}	100 µA

* All resistors are including test certificate.
Intermediate values are possible at extra charge.

** Under load the resistance due to heating can be outside the specified tolerance.

Adapter model 2394
for the check-up and calibration of our resistance measurement devices model 2304 and model 2316-V000X



Order Information

Calibration Resistor 100 mΩ Order code 1240-0.1

Calibration certificate with accreditation symbol (DAkkS)
Range: 100 µΩ ... 100 kΩ Order code 12DKD-1240
Range: < 100 µΩ Order code 12DKD-1240-01

Manufacturer Calibration Certificate Order code 12WKS-1240

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