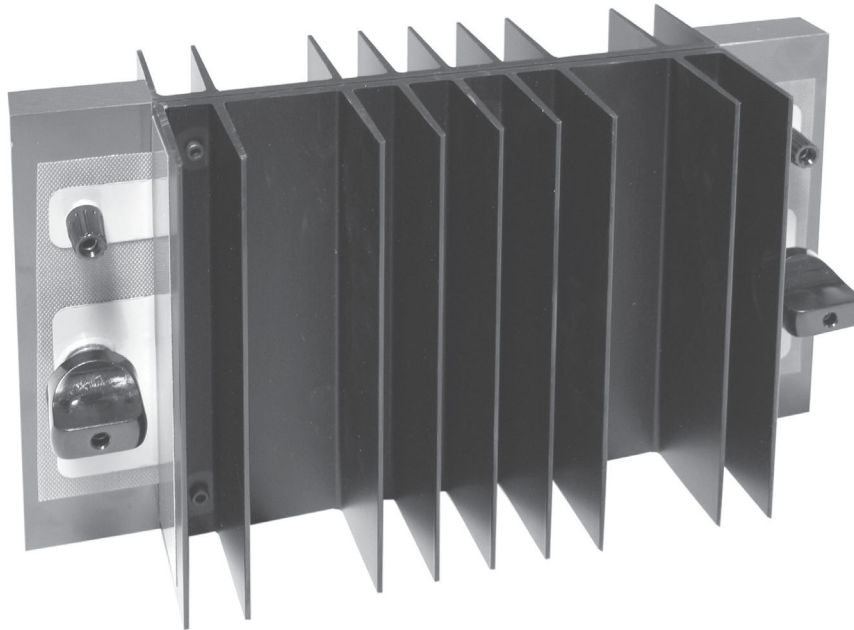


Precision High Capacity Resistors

Model 1282

Code:	1282 E
Manufacturer:	burster
Delivery:	ex stock/16 weeks
Warranty:	24 months



1282-E

- Temperature coefficient ≤ 10 ppm/K
- Nominal load 20 W
- Ranges 1 m Ω ... 100 m Ω
- Four-terminal measurement principle
- Accuracy 0.02 %
- For technical frequency 50 Hz

Application

High capacity resistors model 1282 are distinguished by high quality. In their specifications they nearly reach values which are reserved to resistance standards. Consequently they are used - e. g. in connection with very precise digital voltmeters - as measuring resistors for accurate registration of direct and alternating currents up to 200 A. The compact construction supports universal application. The exceptional low temperature coefficient extends the scope of application a second time: Currents are also exactly determined where the surrounding temperature strongly changes. Rational testings are possible by shortest warm-up period (resp. warm-up falsification).

Besides the broad spectrum of possible applications attention has to be paid especially to the scope of quality- and reliability testing. Measurements effected in regular and irregular intervals give reliable information on the quality level of structural parts, instruments and systems.

Description

Technologies already approved with our precision and calibration resistors - which especially guarantee a secure conduction of the dissipation heat - have been transferred to the precision high capacity resistors. Those are designed on four-terminal measurement principle. The voltage path is equalized to the accuracy of 0.02 %, (with reference temperature = 23 °C).

At maximum load a temperature increase within the resistor occurs. This temperature increase is compensated by a large surface area of the cooling body. The heat resistance of the resistors described is 1 K/W: The temperature of the resistor rises 1 K per Watt of supplied energy. Unfavourable installation with insufficient possibility of ventilation and cooling have to be taken into consideration accordingly.

All power and limiting values of the diagrams overleaf refer to the resistor material MANGANIN®. The potential tap is effected via copper terminals of low thermo-electric force. The screw-terminals for the current feed are dimensioned according to the maximum capacity.

Technical Data

Resistance ranges: 1 mΩ - 100 mΩ, any resistance value within this range is available.
 Resistance tolerance: 0.02 %
 Calibration temperature: 23 °C
 Resistance material: MANGANIN®
 Temperature coefficient: < 10 ppm/K
 Temperature dependence: $R_t = R_{20} (1 + a_{20} (t - 20) + b (t - 20)^2)$
 $a_{20} = 0 \dots 20 \cdot 10^{-6}$
 $b = -0.59 \cdot 10^{-6}$
 Long-term stability at 40 °C surface temperature: < 0.01 % over years
 Short-time load: approx. 90 W, < 1 min by $t_u = 40$ °C
 Ultimate load: 60 W by $t_u = 25$ °C
 Current limit (at 1 mΩ): 200 A max.
 Surface temperature: max. 85 °C, results from heat dissipation + surrounding temperature
 Thermal resistance: 1 K/W

Construction:
 Resistance element is made of a MANGANIN® sheet with four terminal connection. It is installed free of mechanical tension between two cooling bodies, current junction is realized via screw terminals, potential tap is made via copper-terminals.

Capacity C_R : < 4 nF, resistance element to cooling body
 Test voltages: 750 V_{eff}, 50 Hz
 Max. potential: 42 V against cooling body, insulated mounting required for higher voltages
 Insulation resistance R_{is} : > 1 · 10⁹ Ω, cooling body against resistance element
 Specifications: according DIN EN 60477 section 1
 Dimensions (length by height by depth): 265 x 100 x 150 [mm]
 Weight: approx. 2.3 kg

Order Information

Resistance value 1 mΩ **model 1282-0.001**
 Resistance value 10 mΩ **model 1282-0.01**
 Resistance value 100 mΩ **model 1282-0.1**

Precision resistor accuracy ≤ 0.02 % (any value in the range of 1 ... 100 mΩ can be delivered within 16 weeks) **model 1282S**

DKD Calibration (see below) **12DKD-1282**
 Order code: **12DKD-1282**
 Manufacturer Calibration Certificate (see below) **12WKS-1282**
 Order code: **12WKS-1282**

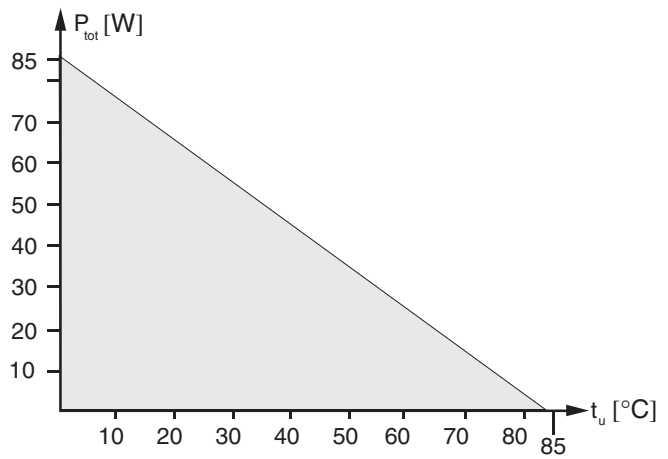
DKD Calibration Certificate

burster präzisionsmesstechnik maintains a calibration laboratory for the measurement of electrical quantities which is affiliated to the "Deutscher Kalibrierdienst" (DKD). Supervised by the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig the calibration laboratory at burster präzisionsmeßtechnik is authorized to issue calibration certificates. The measuring results and uncertainties stated in the calibration certificates are determined by standards and measuring instruments which, in turn, are subject to a periodical comparison with the official national and international standards. The Western European Calibration Cooperation (WECC) accepts the calibration certificate without any restrictions. Proof of the official calibration is the calibration certificate and a calibration mark which is applied to the test object. Precision high capacity resistors can be delivered with a DKD Calibration Certificate. The calibration is made with direct current to max. 30 A at 23 °C. The measuring uncertainty is at best ± 2 · 10⁻⁵ of the measured value.

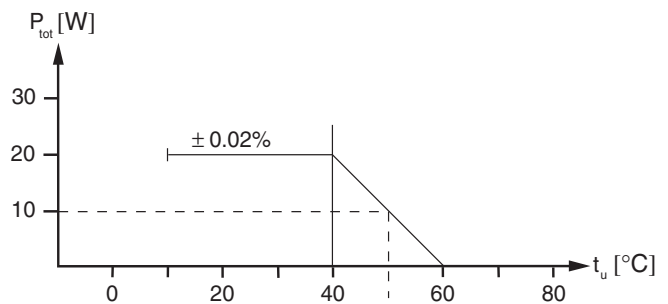
Manufacturer Calibration Certificate

Please refer to DKD Calibration Certificate but with increased uncertainty. The traceability of the used secondary voltage and resistance standards to the national standards according to DIN ISO 9000ff is guaranteed by our certified calibration laboratory (DKD-02101).

Load limit curve

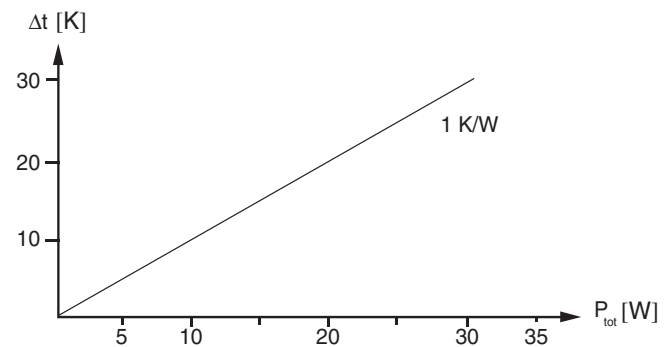


Load reduction curve



The max. load capacity with different ambient temperature as a function of the warm-up error be taken from the load reduction curve. Example: Ambient temperature: max. 50°C; accepted Δ R by temperature influence: max. 0.02 %; max. permissible load: 10 W.

Characteristic load as a function of excessive temperature



Cooling body temperature = ambient temperature + excessive temperature.

P_{tot} = dissipation power
 t_u = ambient temperature
 Δt = temperature elevation over ambient temperature

