

NEW

HRU Series

Available from:
ES COMPONENTS
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<http://www.escomponents.com/resistors-metal-foil-standard-calibration/>



Alpha Electronics
 A VPG Brand

New Stress Free Ultra Stable Standard Resistor



Incorporated the technology of The National Institute of Advanced Industrial Science and Technology (the Japanese patent application number 2010-114994)

FEATURES

- Utilizing New Generation Stress Free Bulk Metal® Foil
- Excellent long term stability of resistance
less than **0.2 ppm/year (0.05 ppm/year actual)**
- Excellent temperature coefficient
less than **$\alpha \pm 0.05 \text{ ppm}/^\circ\text{C}$, $\beta \pm 0.005 \text{ ppm}/^\circ\text{C}^2$**
- Excellent humidity coefficient of resistance
less than 0.1 ppm/%RH
- Excellent pressure coefficient of resistance
less than 0.001 ppm/hPa
- Available range of resistance values at
10Ω and 100Ω (1Ω, 1KΩ and 10KΩ will be released in 2015)

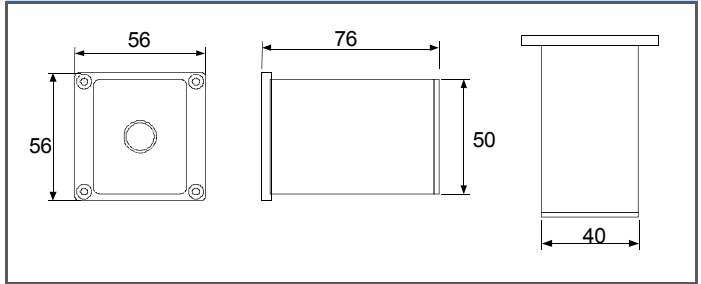
MASS

Approx. 240 g (0.52 lbs)

DESCRIPTION

The HRU series is an ultra stable standard resistor which is an enhanced USR/ASR series by new stress free Bulk Metal® Foil technology jointly developed with AIST (The National Institute of Advanced Industrial Science and Technology).
 The ultra stable resistive element utilizes new generation stress free Bulk Metal® Foil technology developed by Alpha Electronics with 37 years experience and is based on using proprietary Ni/Cr alloy. This results in extremely low temperature coefficient $\alpha \pm 0.05 \text{ ppm}/^\circ\text{C}$, $\beta \pm 0.005 \text{ ppm}/^\circ\text{C}^2$. This performance is unique to Alpha Electronics throughout the world.
 The stress free resistive element which is eliminated stress factors with special treatment process is encapsulated by special designed ceramic case to protect from humidity and oxidization so, that a stability is realized a typical stability is realized at less than 0.2ppm/year (0.05ppm/year actual).
 The HRU series, with its extreme long-term stability and low TCR, can be used in air without oil bath which reduce maintenance cost and operation.
 The light weight and compact resistive elements are held by special designed case so, it's suitable for environment with vibration during transportation.

CONFIGURATION in millimeters



OPTIONS



SPECIFICATIONS

Series	Nominal Value	Accuracy	Uncertainty of calibration	Temperature retrace	Temperature coefficient	Stability	Rated Power	Power coefficient	Operating temperature range	Storage temperature range	Terminals
		ppm	ppm	ppm	ppm/°C	ppm/year	W	ppm/power*	°C	°C	
HRU-100	10Ω	±1	±1@23 °C	±0.5	$\alpha 23 \pm 0.05 \text{ ppm}/^\circ\text{C}$	±0.2 (±0.05 actual)	1.0	±1	18 to 28 <60%RH	10 to 40 15 to 80%RH	LEMO 1B *binding is available
HRU-101	100Ω			@23±5 °C	$\beta \pm 5 \text{ ppb}/^\circ\text{C}^2$						

*Power=Rated Power

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PRELIMINAR

*Descriptions and specifications are subjected to change without notice.

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