

Calibration

720A Kelvin–Varley Divider A primary standard for ratio measurements



The 72OA Kelvin-Varley Divider is a high-resolution primary ratio standard with absolute linearity of 0.1 ppm, temperature coefficient of linearity of 0.1 ppm/°C, and self-calibration capability.

Key features

- 0.1 ppm resolution, seven decades
- Seven resistor decades with 0.1 ppm resolution allow users to divide stable source voltages into highly accurate output voltages
- 0.1 ppm of input absolute linearity
 - 0.1 ppm of input absolute linearity gives users a high level of confidence that the division of output voltages will remain linear across all resistor decades
- Built-in self-calibration bridge
 - The built-in self-calibration bridge aids users in compensating for errors caused by temperature changes and aging
- Front panel self-calibration
 - Front panel access to the first two resistor decades enables users to easily adjust the 720A resistors to minimize errors caused by temperature changes and aging

General specifications	
Ratio range	0 to 1.0 (1.0 input tap) and 0 to 1.1 (1.1 input tap)
Resolution	0.1 ppm of input with seven decades
Absolute linearity	(At calibration temperature and without the use of a correct chart) ± 1.0 ppm of input at dial settings of 1.1 to 0.1, ± 0.1 (10S) ^{1/3} of input at dial settings (S) of 0.1 to 0
Absolute linearity stability	(Without self-calibration) ± 1.0 ppm of input/yr at dial settings of 1.1 to 0.1, ± 1.0 (10S) ^(2/3) ppm of input/yr at dial setting (S) of 0.1 to 0 Note: Absolute linearity is defined as the linearity between max and min output voltages. The self-calibration procedure may be used at any time to reset absolute linearity to ± 0.1 ppm of input.

Specifications

Temperature coefficient of linearity	± 0.05 ppm of input °C maximum at dial settings of 1.1 to 0.1
Short-term linearity stability	Under typical standards laboratory conditions (temperature maintained within \pm 1 °C) and with an applied voltage of up to 100V, stability of linearity is \pm 0.01 ppm/24 hours and \pm 0.1 ppm/30 days
Power coefficient of linearity	± 0.2 ppm of input/W max at dial settings of 1.1 to 0.1; $\pm 0.2~(10S)^2$ ppm of input/W max at dial settings (S) of 0.1 to 0
Maximum end errors	Zero error at output low: 0.004 ppm of input Zero error at input low: 0.05 ppm of input Full-scale error: 0.05 ppm of input
Maximum input voltage	1000 V on 1.0 input terminal, 1100 V on 1.1 input terminal
Thermal voltages	±0.5 μV max
Input resistance	100 k Ω ±0.005% at 1.0 input terminal at 25 °C, 110 k Ω ±0.005% at 1.1 input terminal at 25 °C
Temperature coefficient of input resistance	±1 ppm per °C max
Size	14 cm H x 48.2 cm W x 33 cm D, rack mounted (5.5 in H x 19 in W x 13 in D)
Weight	8.15 kg (18 lb)

Ordering information

Model	Description
720	Kelvin-Varley Voltage Divider
	Includes instruction manual, one-year product warranty