# Kelvin-Varley Voltage Divider

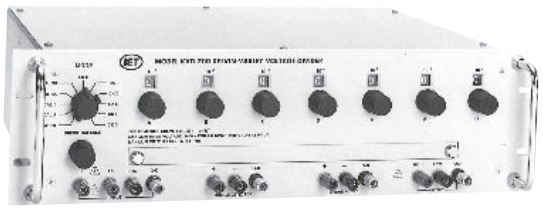
## KVD-600 • KVD-700 • Series

These standards grade Kelvin-Varley voltage dividers They are highly accurate, stable, and linear instruments for use in many applications requiring accurately known voltage or current ratios. In particular, the KVD series is especially appropriate for use in bridge circuits, providing two arms of a bridge with a very well known ratio. Applications include linearity determination, the measurement of voltage and resistance, and the calibration of voltage, current, and resistance.

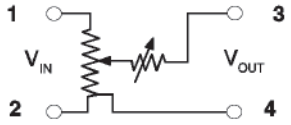
## SPECIFICATIONS

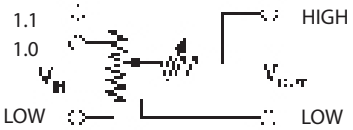
KVD-600


KVD-700



Equivalent circuit: A Kelvin-Varley voltage divider may be thought of as being equivalent to a digital potentiometer. However, it has an additional, but variable, resistance in series with the wiper arm, which goes to zero at the full scale and zero settings. This series resistance has no effect in balanced bridge type applications, where these dividers are often used.




| Series | KVD-600 | KVD-700 |
|---|---|---|
| Calibration: | Requires external calibration. | Self calibrating; has internal oil bath. |
| Ratio Range: | 0 to 1.0 of input. | 0 to 1.0 input for 1.0 terminal;<br>0 to 1.1 of input for 1.1 terminal. |
| Resolution: | 0.1 ppm with 7 decades. | 0.1 ppm with 7 decades. |
| Absolute Linearity:<br>$[V_{out}/V_{in}]$-S where S is the dial setting. | ±0.5 ppm | ±0.1 ppm for S = 0.1 to 1.1;<br>$\pm 0.1(10S)^{1/3}$ ppm for S = 0 to 0.1. |
| Short-Term Linearity Stability: | 0.2 ppm/30 days under standard laboratory conditions and $V_{IN}$ <100 V. | 0.1 ppm/30 days under standard laboratory conditions and $V_{IN}$ <100 V. |
| Long-Term Linearity Stability: | ±2.0 ppm of input/year. | ±1.0 ppm of input/year for S=0.1 to 1.1;<br>$\pm(10S)^{2/3}$ ppm of input/year for S=0 to 0.1;<br>Self calibration restores linearity to 0.1 ppm. |
| Temperature Coefficient of Linearity: | <±0.2 ppm/°C. | <±0.1 ppm °C for S=0.1 to 1.1;<br><±0.1 $(10S)^{2/3}$ ppm/°C for S=0 to 0.1. |
| Power Coefficient of Linearity: | ±1 ppm/watt. | <±0.2 ppm of input/W for S=1.1 to 0.1;<br><±0.2 $(10S)^2$ ppm of input/W for S=0.1 to 0. |
| Maximum Input Power: | 2.5 watts; 5 watts intermittent. | 10 W at 1.0 INPUT; 11 W at 1.1 INPUT. |
| Maximum Input Voltage: | 1000 V | 1000 V at 1.0 input terminal;<br>1100 V at 1.1 input terminal; |
| Input Resistance: | 100 kΩ ±50 ppm. | 100 kΩ ±50 ppm at 1.0 INPUT;<br>110 kΩ ±50 ppm at 1.1 INPUT. |
| Maximum Output Resistance: | 66 kΩ, determined by shorting across the input and measuring the resistance across the output terminals. | |
| Terminals: | High quality low thermal emf gold plated tellurium copper binding posts. | |
| Dimensions: | 48.3 cm W x 13.3 cm H x 18.5 cm D (19.0" x 5.25" x 7.3"). | 5.25" high rack panel; 13.3 H x 48.2 W x 33.0 D (5.25" x 19.0" x 13.0"). |
| Weight: | 4.1 kg (9 lb). | 8.2 kg (18 lb). |