

# 2793 Decade Resistance Boxes



**279301**

110 x 491 x 140 mm 4.8 kg  
(4-3/8 x 19-3/8 x 5-1/2" 10.6lbs)

Model 2793 is a high-accuracy, stable DC variable resistor with 6 dials and is available in two styles: 279301 for medium resistance from 0.1 to 1,111.210Ω in 1mΩ steps (best suited for calibration of resistance thermometers or bridges); 279303 for high resistance from 0 to 111.1110 MΩ in 100Ω steps (suitable for calibration of insulation resistance testers or bridges).

## 279301

- **High accuracy and stability**
- **High reproducibility**  
Excellent reproducibility is obtainable because dial switches with low contact resistance are used. For example, changes in contact resistance is within ±1.1mΩ at 0.1Ω setting.
- **1mΩ resolution**
- **Simple, quick dial operation**
- **In-line display for easy reading**
- **Ideal for calibration of resistance thermometers and bridges**  
Due to its high accuracy and a dial system, various types of resistance thermometers and bridges can be calibrated accurately and promptly.
- **Excellent anti-shock and -vibration properties**

## 279303

- **Up to 100MΩ in 100Ω step**
- **Low voltage coefficient**  
Variation of the resistance value is less than ±0.1% at 1MΩ and 10MΩ steps against 100V application, and less than ±0.04% at 100Ω, 1kΩ, 10kΩ, and 100kΩ steps against 10V application.
- **Shock- and vibration-proof construction**
- **Easy-to-read in-line indication**
- **Best suited for calibration of insulation resistance testers and bridges**

## SPECIFICATIONS

### 279301

- Resistance Range:** 0.100 to 1,111.210 Ω (Minimum resistance is 0.100Ω).
- Dial Composition:** 0.001Ω × 10 + 0.01Ω × 10 + 0.1Ω × 11 + 1Ω × 10 + 10Ω × 10 + 100Ω × 10
- Resolution:** 0.001 Ω
- Accuracy:** ±(0.01% + 2 mΩ) at temperature 23 ± 2°C, humidity 45 to 75%, and 0.1 W power application
- Max. Allowable Input Power:** 0.25 W/step. Within 1 W

for overall instrument.

### Max. Allowable Input Current:

50 mA (100 Ω steps), 150 mA (10 Ω steps), 500 mA (1 Ω steps), and 1.5 A (0.1 Ω steps).

**Insulation Resistance:** More than 500 MΩ at 500 V DC between panel and circuit.

**Dielectric Strength:** 1,000 V AC for one minute between panel and circuit.

### Temperature Coefficient:

Temperature coefficient	Dial	100 Ω step	10 Ω step	1 Ω step	0.1 Ω step
$\alpha_{20}$ ( $\times 10^{-6}/^{\circ}\text{C}$ )		-5 to +10	-5 to +20	Approx. 20 to 90	Approx. 90 to 900
$\beta$ ( $\times 10^{-6}/^{\circ}\text{C}^2$ )		-0.3 to -0.7	-	-	-

Variation of resistance with temperature change is given by the following equation:

$$R_t = R_{20} [ 1 + \alpha_{20}(t - 20) + \beta (t - 20)^2 ]$$

where,  $R_t$  : Resistance value at  $t^{\circ}\text{C}$

$R_{20}$  : Resistance value at  $20^{\circ}\text{C}$

## 279303

**Resistance Range:** 0 to 111.1110 MΩ.

**Dial Composition:** 100 Ω × 10 + 1 kΩ × 10 + 10 kΩ × 10 + 100 kΩ × 10 + 1 MΩ × 10 + 10 MΩ × 10.

**Accuracy:** 100 Ω, 1 kΩ, 10 kΩ and 100 kΩ steps ... ±(0.05% + 0.05 Ω)

1 MΩ and 10 MΩ steps ... ±0.2%

(At temperature 23 ± 2°C, humidity below 75%, including residual resistance of approx. 0.05Ω).

### Max. Allowable Input:

100 Ω step . . . . . 100 mA

1 kΩ step . . . . . 30 mA

10 kΩ step . . . . . 10 mA

100 kΩ step . . . . . 3 mA (100 to 600 kΩ)

2,000 V (700 kΩ to 1 MΩ)

1 MΩ step . . . . . 2,000 V

10 MΩ step . . . . . 2,000 V

### Temperature Coefficient:

100 Ω, 1 kΩ step . . . . .  $\alpha_{20} = (-2 \text{ to } +20) \times 10^{-6}/^{\circ}\text{C}$   
 $\beta = -(0.3 \text{ to } 0.7) \times 10^{-6}/^{\circ}\text{C}^2$

10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ step ±30 × 10<sup>-6</sup>/°C

Variation of resistance with temperature change is given by the following equation:

$$R_t = R_{20} [ 1 + \alpha_{20}(t - 20) + \beta (t - 20)^2 ]$$

where,  $R_t$  : Resistance value at  $t^{\circ}\text{C}$

$R_{20}$  : Resistance value at  $20^{\circ}\text{C}$

**Insulation Resistance:** More than 10<sup>11</sup> Ω at 1,000 V DC between panel and circuit.

**Dielectric Strength:** 2,500 V AC for one minute between panel and circuit.