

# M-622 Precision Resistance Decade



- Resistance range 1.000 00  $\Omega$  – 1.200 000 M $\Omega$
- Accuracy 0.005 %
- Temperature coefficient < 1ppm/°C
- Operating voltage 120V
- Simulation of RTD (Pt, Ni) temperature sensors
- Simulation accuracy 0.02 °C
- 2, 3, 4 – wire connection
- Internal accumulator / power line adapter
- Interface RS 232 (IEEE488 optionally)

Model M-622 is high accuracy resistance decade box with range from 1  $\Omega$  to 1.2 M $\Omega$ . Basic accuracy is 0.005 %, best resolution on the lowest range is 10  $\mu\Omega$ . Decade is formed from high stable foil resistors switched with combination of relays. Build-in software contains function of RTD temperature sensor simulation with parameters according to IEC (DIN) or US standards, temperature setting in degree of Celsius or Fahrenheit. Decade is supplied from internal accumulator or from external power line adapter. Both models with RS-232 interface and GPIB bus is available.

Decade box is determined for calibration laboratories for ohmmeter and multimeter testing and for industry as device for quality testing as well.

## Technical data

<b>Resistance range</b>	:	1,000 00 – 1 200 000 $\Omega$
<b>Pt temperature range</b>	:	-200.000 $^{\circ}\text{C}$ ... 850.000 $^{\circ}\text{C}$ (-328 $^{\circ}\text{F}$ ... 1562 $^{\circ}\text{F}$ )
<b>Ni temperature range</b>	:	-60.000 $^{\circ}\text{C}$ ... 300.000 $^{\circ}\text{C}$ (-76 $^{\circ}\text{F}$ ... 572 $^{\circ}\text{F}$ )
<b>Simulated RTDs</b>	:	Pt10 ... Pt10000, Ni10 ... Ni10000
<b>Type of Pt sensors</b>	:	IEC 751 (1,3850 for IPTS68) IEC 751 (1,3851 for ITS90) US (US/JIS) (1,3916)
<b>Type of Ni sensors</b>	:	DIN 43760 (6180)
<b>Temperature coefficient</b>	:	< 1 ppm/ $^{\circ}\text{C}$ (1 $\Omega$ - 2000 $\Omega$ ) terminals R4W < 1 ppm/ $^{\circ}\text{C}$ (100 $\Omega$ - 1200 k $\Omega$ ) terminals R2W < 5 ppm/ $^{\circ}\text{C}$ (2 k $\Omega$ - 10 k $\Omega$ ) terminals R4W
<b>Total power dissipation</b>	:	0,3 W
<b>Operating voltage</b>	:	50 Vef AC
<b>Connection</b>	:	2, 3 or 4 wire
<b>Reaction time</b>	:	6 ms
<b>Terminals</b>	:	gold plated terminals 4mm
<b>Remote control</b>	:	RS232 interface (optionally IEEE488)
<b>Power supply</b>	:	internal battery 12 V – 2.6 Ah (WP2.6-12) external power line adapter 100–240 V
<b>Battery operating period</b>	:	typically 6 hours
<b>Range of reference temperatures</b>	:	+18 $^{\circ}\text{C}$ ... +28 $^{\circ}\text{C}$
<b>Range of working temperatures</b>	:	+5 $^{\circ}\text{C}$ ... +40 $^{\circ}\text{C}$
<b>Range of storage temperatures</b>	:	-10 $^{\circ}\text{C}$ ... +50 $^{\circ}\text{C}$
<b>Dimensions</b>	:	W 364 mm, H 111 mm, D 316 mm
<b>Weight</b>	:	4.5 kg

**Insulation resistance versus housing** : > 2 G $\Omega$  (for 500Vdc)

Accuracy of resistance (terminals R4W)

Range	Accuracy
1.00000 $\Omega$ - 400.000 $\Omega$	0.003 % + 3 m $\Omega$
400.01 $\Omega$ - 2000.0 $\Omega$	0.005 %
2000.1 $\Omega$ - 10000.0 $\Omega$	0.015 %

Maximal thermoelectric voltage on output terminals is less than 1  $\mu\text{V}$ .

Accuracy of resistance (terminals R2W)

Range	Accuracy
1.00000 $\Omega$ - 2000.0 $\Omega$	0.005 % + 10 m $\Omega$
2000.1 k $\Omega$ - 200.000 k $\Omega$	0.005 %
200.001 k $\Omega$ - 1200.000 k $\Omega$	0.01 %

Maximal thermoelectric voltage on output terminals is less than 5  $\mu\text{V}$  for resistances below 2 k $\Omega$  and less than 15  $\mu\text{V}$  for resistances to 1.2 M $\Omega$ .

Accuracy of Pt sensor simulation

Temperature	Pt100 (terminals R4W)	Pt200 (terminals R4W)	Pt500 (terminals R4W)	Pt1000 (terminals R4W)	Pt10000 (terminals R2W)
-200.000 ... 200.000 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
200.001 ... 500.000 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$
500.001 ... 850.000 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.15 $^{\circ}\text{C}$	0.2 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$

### Content of delivery

Precision Resistance Decade M622  
Power line adapter  
Cable RS 232 (for RS232 basic version only)  
Application software  
User's manual

### Ordering information – options

**Bus** M622-V1xxx - RS232  
M622-V2xxx – IEEE488

**Additional functions** M622-Vx0xx - none  
M622-Vx1xx – Short / Open

**Housing** M622-Vxx0x – table version  
M622-Vxx1x - module 19", 3HE