M641

Programmable RTD Simulator

HIGHLIGHTS

- **Real resistors switched by relays**
- **Resistance range 10.0000 Ω – 300 kΩ**
- **5W load capacity**
- **Custom units and time sequences**
- **No residual resistance**
- **Six language packs**

DESCRIPTION

M641 is real-resistance decade box designed specifically for RTD sensors' simulation in industrial applications. The core function is still resistance so you can as well calibrate ohmmeters and other resistance based meters easily. Built from stable high power resistors, the M641 can continuously dissipate up to 5 W under load while keeping solid 0.02% basic and can be used for AC applications as well, typical frequency responses are listed below.

M6xx series was made to make resistance calibration as easy as it gets. Large LCD shows all related parameters including total accuracy. And there is no residual resistance or hidden absolute error so you don't have to calculate it by yourself, accuracy you see is what you get. And that's not the only thing that firmware sorts out for you. Would you like the resistance shown in temperature units? Distance? Force? RTD and user function will do this for you. Complete recalibration? Ten minutes and off you go.

All decades' functions can be remotely controlled via RS232, USB, LAN or GPIB interface. This way you can introduce calibration/test stage directly into production line of any resistance based sensor and reduce time required for final quality tests dramatically.

SPECIFICATION

Specifications below describe 1-year absolute accuracy of this product including long-term stability, linearity, load and line regulation and reference standard measurement uncertainty as well as ambient conditions within specified limits.

Resistance

Range summary	10 Ω – 300 kΩ
Maximum load ratings	200 Vpk, 0.5 A, 5 W (whichever is lower)
Reaction time	< 6 ms

Ranges, resolution, 1 year accuracy

Range	Accuracy
10.000 0 Ω – 20.000 0 Ω	0.05 % + 15 mΩ
20.001 Ω – 200.000 Ω	0.05 % + 15 mΩ
200.01 Ω – 1000.00 Ω	0.02 %
1.000 1 kΩ – 3.000 0 kΩ	0.02 %
3.001 kΩ – 10.000 kΩ	0.02 %
10.01 kΩ – 30.00 kΩ	0.05 %
30.1 kΩ – 100.0 kΩ	0.1 %
101 kΩ – 300 kΩ	0.5 %

AC-DC difference (typical, absolute value)

Resistance	100 Hz	1 kHz	10 kHz
10 Ω	0.01 %	0.01 %	0.05 %
100 Ω	0.01 %	0.05 %	0.50 %
1 kΩ	0.04 %	0.40 %	4.00 %
10 kΩ	0.40 %	4.00 %	
100 kΩ	4.00 %		

RTD Simulation

Platinum scales	IPTS68 (1.3850)
	ITS90 (1.3851)
	1.3916
	1.3926
Other scales	Nickel (6180)
	custom

Pt simulation accuracy

Range	Pt100 –Pt1000
-200.000 – 0.000 °C	0.15 °C
000.001 – 850.000 °C	0.2 °C

Ni simulation accuracy

Range	Ni100 – Ni1000
-60.000 – 300.000 °C	0.1 °C

GENERAL DATA

Reference temperature	+20 °C – +26 °C
Operating temperature	+5 °C – +40 °C
Storage temperature	-10 °C – +50 °C
Temperature coefficient	10 % of accuracy / °C outside Tref
Terminals	4mm gold plated
Power supply	115/230 Vac, 50/60 Hz, 15 VA max
Dimensions (W x H x D)	390 x 128 x 310 mm
Weight	4 kg
Interfaces	RS232, IEEE488 + USB + Ethernet (optional)
Languages	English, German, French, Spanish, Russian, Czech