



- Calibration of temperature controllers
- Resistance range 16.0000  $\Omega$  – 400 k $\Omega$
- Resistance accuracy +/- 30 ppm
- Temperature coefficient < 1ppm/ $^{\circ}\text{C}$
- Operating voltage 200 V
- Simulation of RTD temperature sensors accuracy  $\pm 0.01$   $^{\circ}\text{C}$
- User defined curves (conversion tables)
- RS232 (optionally USB, IEEE488)

Model M631 is a precise RTD simulator with range from 16  $\Omega$  to 400 k $\Omega$ . Basic accuracy is 0.003 %. Best resolution at the lowest range is 100  $\mu\Omega$ . Decade contains stable foil resistors with low temperature coefficient switched by low thermal voltage relays. Built-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. Instrument can be controlled via RS232, USB, LAN or GPIB interface.

M631 is sophisticated instrument with its own recalibration procedure. The procedure enables to correct any deviation in resistance without any mechanical adjusting.

Decade box is designed for checking parameters of resistance meters, regulators and process meters that use external resistance sensors for non-electric quantity measuring.

#### M631 Resistance accuracy

Range / Resolution	Accuracy
16.000 0 $\Omega$ - 20.000 0 $\Omega$	0.002 % + 2 m $\Omega$
20.001 $\Omega$ - 200.000 $\Omega$	
200.01 $\Omega$ - 1000.00 $\Omega$	0.003 %
1000.1 $\Omega$ - 3000.0 $\Omega$	0.005 %
3001 $\Omega$ - 10000 $\Omega$	0.015 %
10.01 k $\Omega$ - 30.00 k $\Omega$	0.03 %
30.1 k $\Omega$ - 100.0 k $\Omega$	0.1 %
101 k $\Omega$ - 400 k $\Omega$	0.4 %

#### M631 Pt simulation accuracy

Temperature	Accuracy Pt100 ... Pt500	Accuracy Pt501 ... Pt1000
-200.000...0.000 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
0.001...200.000 $^{\circ}\text{C}$	0.015 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$
200.001...500.000 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
500.001...850.000 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$

#### M631 Ni simulation accuracy

Temperature	Accuracy Ni100 ... Ni500	Accuracy Ni501 ... Ni1000
-60.000...0.000 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$
0.001...300.000 $^{\circ}\text{C}$	0.01 $^{\circ}\text{C}$	0.02 $^{\circ}\text{C}$

#### M631 Frequency response

R	AC/DC difference		
	100 Hz	1 kHz	10 kHz
16 $\Omega$	0.01 %	0.01 %	0.03 %
100 $\Omega$	0.01 %	0.01 %	0.01 %
1 k $\Omega$	0.01 %	0.01 %	0.03 %
10 k $\Omega$	0.01 %	0.03 %	1 %
100 k $\Omega$	0.2 %	1 %	

## General specification

<b>Maximal voltage:</b>	200 V pk
<b>Maximal current:</b>	500 mA
<b>Total power dissipation:</b>	0.25 W
<b>TC of used resistors:</b>	< 1 ppm/ °C (16 Ω ... 2 kΩ) < 5 ppm/ °C (2 kΩ ... 10 kΩ) < 50 ppm/ °C (10 kΩ ... 400 kΩ)
<b>Reaction time:</b>	6 ms
<b>Switching method:</b>	Fast / Smooth / Via short / Via open
<b>Terminals:</b>	gold plated terminals 4mm
<b>Remote control:</b>	RS232 interface (optionally USB, LAN, IEEE488)
<b>Power supply:</b>	115/230 Vac, 50/60 Hz
<b>Reference temperatures:</b>	+20 °C ... +26 °C
<b>Working temperatures:</b>	+5 °C ... +40 °C
<b>Storage temperatures:</b>	-10 °C ... +50 °C
<b>Dimensions:</b>	W 390 mm, H 128 mm, D 310 mm
<b>Weight:</b>	5.2 kg

### Content of delivery

M631 Precision RTD Simulator  
Cable RS 232  
Application software  
User's manual

### Ordering information – options

<i>Bus</i>	M631-V1xxx - RS232 M631-V2xxx - RS232, USB, LAN, GPIB
<i>Housing</i>	M631-Vxx0x - table version M631-Vxx1x - module 19", 3HE

#### Resistance

RESISTANCE		14:33:45	Function
▼ FAST			
<b>100.000 Ω</b>			
Output	100.000 Ω		
Specification	0.0040 %		
Max. Voltage	5.00 V		
Max. Current	50.0 mA		Menu

#### Temperature

PLATINUM		10:18:59	Function
▼ PT385 (90)			
▼ FAST			
<b>100.000 °C</b>			
Output	138.505 Ω RO 100.000 Ω		
Specification	0.015 °C		
Max. Voltage	5.88 V		
Max. Current	42.5 mA		Menu

#### Recalibration

CALIBRATION		Previous
Resistance	1 / 37	
Nominal resistance	1.95 Ω	Next
Requested accuracy	1 mΩ	Save
Last calibrated	07/02/2012	Close
<b>↑ 1.9443810 Ω ↓</b>		