

The 1433 Decade Resistors are convenient resistance standards for checking the accuracy of resistance-measuring devices. They are primarily intended for precision-measurement applications where accuracy, stability, and low-zero-resistance are important. They are used as components in dc and audio frequency impedance bridges.



Model 1433 Precision Decade Resistor

- Resistance range from 1 mΩ to 111 MΩ
- High accuracy: 0.01% up to 10 MΩ
- Low temperature coefficient
- Good frequency characteristics
- Excellent stability
- Low zero resistance
- Rack-mount option available

### See also:

- Higher accuracy: [HARS-LX Series](#)
- Higher power: [HPRS Series](#)
- Higher resistance: [HRRS Series](#)
- Higher voltage: [HRRS-5kV](#) and [HRRS-10kV Series](#)
- RTD simulators: [RTD Series](#)
- Programmable models: [PRS Series](#)

## SPECIFICATIONS

Resistance per step	Total decade resistance	Max current (per decade)	Max voltage (per step)	Max power (W/step)	Stability (±ppm/yr)	Long-term stability (±ppm/3 yrs)	Temperature coefficient (±ppm/°C)	Resistor type
1 mΩ	10 mΩ	8 A	5 mV	0.04	50	75	50	Resistance wire
10 mΩ	100 mΩ	4 A	40 mV	0.16	50	75	20	
100 mΩ	1 Ω	1.6 A	0.16 V	0.25	50	75	20	
1 Ω	10 Ω	0.8 A	0.8 V	0.6	20	25	20	Wirewound, non-inductive
10 Ω	100 Ω	0.25 A	2.5 V	0.6	20	25	15	
100 Ω	1 kΩ	80 mA	8 V	0.6	20	25	5	
1 kΩ	10 kΩ	23 mA	23 V	0.5	20	25	5	
10 kΩ	100 kΩ	7 mA	70 V	0.5	20	25	5	
100 kΩ	1 MΩ	2.3 mA*	230 V*	0.5*	20	25	5	
1 MΩ	10 MΩ	0.7 mA*	700 V*	0.5*	20	25	10	Metal oxide film
10 MΩ	100 MΩ	0.1 mA*	1000 V*	0.1*	50	100	10	

\*Subject to maximum of 2000 V to case.

**Accuracy** (the difference between resistance setting and the value at "zero setting"):

- ≤1 MΩ steps: ±(0.01% + 2 mΩ)
- 10 MΩ steps: ±0.03% at 23°C; traceable to SI

**Zero Resistance:**

- ≤1 MΩ decades: <1 mΩ per decade at dc
- 10 MΩ decade: ≈3 mΩ at dc

**Maximum voltage to case:**

2000 V peak

**Terminals:**

Gold-plated, tellurium-copper, low-thermal-emf binding posts on standard 3/4 inch spacing; shield terminal provided.

**Environment:**

- Operating:** +10 to +40°C, <80% RH
- Storage:** -20 to +65°C

**Typical Value of Zero Impedance:**

**Zero Resistance (R<sub>0</sub>):**

- <0.001 Ω/decade at dc
- 0.04 Ω/decade at 1 MHz
- Proportional to square root of frequency above 100 kHz

**Switch Capacitance:**

<1 pF between contacts

**Zero Inductance (L<sub>0</sub>):**

0.1 μH/decade + 0.2 μH

**Switches:**

- Continuous rotation
- 11 positions marked "0"- "10"
- Multiple solid silver-alloy contacts

**Supplied with unit:**

- Instruction manual
- Calibration Certificate



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### MECHANICAL SPECIFICATIONS

Model	Dimensions	Weight
3-5 decade	37.5 cm W x 8.9 cm H x 10.2 cm D (14.75" x 3.5" x 4")	2.0 kg (4.3 lb)
6 decades	43.9 cm W x 8.9 cm H x 10.2 cm D (17.3" x 3.5" x 4")	2.2 kg (4.8 lb)
7 decades		2.4 kg (5.3 lb)
8 decades	48.3 cm W x 17.8 cm H x 17.8 cm D (19" x 7" x 7")	3.4 kg (7.5 lb)
9 decades		3.5 kg (7.7 lb)
10 decades		3.6 kg (7.9 lb)
11 decades		3.7 kg (8.1 lb)

### ORDERING INFORMATION

Catalog no:	Total resistance (Ω)	No. of dials	Resolution (Ω)
1433-01	1.11	3	0.001
1433-00	111.1	4	0.01
1433-02	1,111	4	0.1
1433-04	11,110	4	1
1433-06	111,100	4	10
1433-08	1,111,000	4	100
1433-09	11,110,000	4	1,000
1433-9A	111,100,000	4	10,000
1433-10	1,111.1	5	0.01
1433-12	11,111	5	0.1
1433-14	111,110	5	1
1433-16	1,111,100	5	10
1433-18	11,111,000	5	100
1433-18A	111,110,000	5	1,000
1433-19	1,111.11	6	0.001
1433-20	11,111.1	6	0.01
1433-22	111,111	6	0.1
1433-24	1,111,110	6	1
1433-26	11,111,100	6	10
1433-27	111,111,000	6	100

Catalog no:	Total resistance (Ω)	No. of dials	Resolution (Ω)
1433-28	11,111.11	7	0.001
1433-29	111,111.1	7	0.01
1433-31	1,111,111	7	0.1
1433-33	11,111,110	7	1
1433-34	111,111,100	7	10
1433-35	111,111.110	8	0.001
1433-36	1,111,111.10	8	0.01
1433-37	11,111,111.0	8	0.1
1433-38	111,111,110	8	1
1433-39	1,111,111.11	9	0.001
1433-39A	11,111,111.1	9	0.01
1433-39B	111,111,111	9	0.1
1433-40A	11,111,111.110	10	0.001
1433-40	111,111,111.1	10	0.01
1433-41	111,111,111.11	11	0.001

#### Options:

1433-50	Rack Mount Kit (4 dial)
1433-51	Rack Mount Kit (5 dial)
1433-52	Rack Mount Kit (6 and 7 dial)
1433-XX-RO	Rear output binding posts
1433-XX-K	Kelvin type 4-terminal binding posts

