

GenRad 1433 Series

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

Features:

- 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	Max voltage (per step)	Max power (per step)	Stability (±ppm/yr)	Long-term stability (±ppm/3 yrs)	Temperature coefficient (±ppm/°C)	Resistor type
1 mΩ	10 mΩ	8.0 A	5 mV	0.04 W	50	75	50	Resistance wire
10 mΩ	100 mΩ	4.0 A	40 mV	0.16 W	50	75	20	
100 mΩ	1 Ω	1.6 A	0.16 V	0.25 W	50	75	20	
1 Ω	10 Ω	0.8 A	0.8 V	0.6 W	20	25	20	Wirewound, non-inductive
10 Ω	100 Ω	0.25 A	2.5 V	0.6 W	20	25	15	
100 Ω	1 kΩ	80 mA	8 V	0.6 W	20	25	5	
1 kΩ	10 kΩ	23 mA	23 V	0.5 W	20	25	5	
10 kΩ	100 kΩ	7 mA	70 V	0.5 W	20	25	5	
100 kΩ	1 MΩ	2.3 mA*	230 V*	0.5 W*	20	25	5	
1 MΩ	10 MΩ	0.7 mA*	700 V*	0.5 W*	20	25	5	Metal oxide film
10 MΩ	100 MΩ	0.1 mA*	1000 V*	0.1 W*	50	100	10	

*Subject to maximum of 2000 V to case

Accuracy:

≤1 MΩ decades: ±(0.01% + 2 mΩ)

10 MΩ decades: ±0.03%

after subtraction of zero resistance, at 23°C; traceable to SI

Zero resistance:

≤1 MΩ decades: <1 mΩ per decade at dc

10 MΩ decade: ≈3 mΩ at dc

Max voltage to case:

2000 V peak

Terminals:

Gold-plated, 5-way, tellurium-copper binding posts with low thermal emf and low resistance. Rear outputs are available as an option.

Environmental conditions:

Operating: 10°C to 40°C; <50% RH

Storage: -40°C to 70°C

Typical Value of Zero Impedance:

Zero Resistance (R₀):

<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 (L₀):

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 decade	31 cm W x 8.9 cm H x 10.2 cm D (12.2" x 3.5" x 4")	1.7 kg (3.8 lb)
4-5 decade	37.6 cm W x 8.9 cm H x 10.2 cm D (14.8" x 3.5" x 4")	2.0 kg (4.3 lb)
6-7 decades	43.9 cm W x 8.9 cm H x 10.2 cm D (17.3" x 3.5" x 4")	2.4 kg (5.3 lb)
8-9 decades	48.3 cm W x 17.8 cm H x 17.8 cm D (19" x 7" x 7")	3.5 kg (7.7 lb)
10-11 decades		3.7 kg (8.1 lb)

ORDERING INFORMATION

Model	Total resistance	Number of decades	Resolution
1433-01	1.11 Ω	3	0.001 Ω
1433-00	111.1 Ω	4	0.01 Ω
1433-02	1.111 k Ω	4	0.1 Ω
1433-04	11.11 k Ω	4	1 Ω
1433-06	111.1 k Ω	4	10 Ω
1433-08	1.111 M Ω	4	100 Ω
1433-09	11.11 M Ω	4	1 k Ω
1433-09A	111.1 M Ω	4	10 k Ω
1433-10	1.1111 k Ω	5	0.01 Ω
1433-12	11.111 k Ω	5	0.1 Ω
1433-14	111.11 k Ω	5	1 Ω
1433-16	1.1111 M Ω	5	10 Ω
1433-18	11.111 M Ω	5	100 Ω
1433-18A	111.11 M Ω	5	1 k Ω
1433-19	1.111 11 k Ω	6	0.001 Ω
1433-20	11.1111 k Ω	6	0.01 Ω
1433-22	111.111 k Ω	6	0.1 Ω
1433-24	1.111 11 M Ω	6	1 Ω
1433-26	11.1111 M Ω	6	10 Ω
1433-27	111.111 M Ω	6	100 Ω

Model	Total resistance	Number of decades	Resolution
1433-28	11.111 11 k Ω	7	0.001 Ω
1433-29	111.1111 k Ω	7	0.01 Ω
1433-31	1.111 111 M Ω	7	0.1 Ω
1433-33	11.111 11 M Ω	7	1 Ω
1433-34	111.1111 M Ω	7	10 Ω
1433-35	111.111 11 k Ω	8	0.001 Ω
1433-36	1.111 111 1 M Ω	8	0.01 Ω
1433-37	11.111 111 M Ω	8	0.1 Ω
1433-38	111.111 11 M Ω	8	1 Ω
1433-39	1.111 111 11 M Ω	9	0.001 Ω
1433-39A	11.111 111 1 M Ω	9	0.01 Ω
1433-39B	111.111 111 M Ω	9	0.1 Ω
1433-40A	11.111 111 11 M Ω	10	0.001 Ω
1433-40	111.111 111 1 M Ω	10	0.01 Ω
1433-41	111.111 111 11 M Ω	11	0.001 Ω

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 posts



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IET Labs:

<u>1433-09</u>	<u>1433-35</u>	<u>1433-39</u>	<u>1433-33</u>	<u>1433-06</u>	<u>1433-37</u>	<u>1433-38</u>	<u>1433-34</u>	<u>1433-36</u>	<u>1433-31</u>	<u>1433-39A</u>	<u>1433-02</u>
<u>1433-40A</u>	<u>1433-16</u>	<u>1433-12</u>	<u>1433-18</u>	<u>1433-10</u>	<u>1433-14</u>	<u>1433-19</u>	<u>1433-18A</u>	<u>1433-10A</u>	<u>1433-08</u>	<u>1433-01</u>	<u>1433-20</u>
<u>1433-28</u>	<u>1433-24</u>	<u>1433-22</u>	<u>1433-26</u>	<u>1433-29</u>	<u>1433-27</u>	<u>1433-39B</u>	<u>1433-04</u>	<u>1433-40</u>	<u>1433-09A</u>	<u>1433-00</u>	<u>1433-41</u>