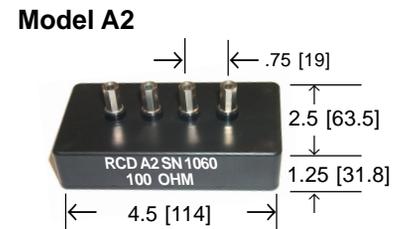


RESISTANCE STANDARDS ULTRA STABLE

A SERIES



RESISTORS • CAPACITORS • COILS • DELAY LINES



- Designed for use as DC Resistance Standards in industrial, research, and metrology laboratories
- Standards are individually tested and certified to the National Institute of Standards and Technology
- Accuracies to $\pm 0.0005\%$!
- Choice of models: A1 offers utmost precision and stability for 'primary standard' applications, A2 offers economical 'secondary standard' performance
- Values from 0.01Ω to $1M\Omega$ are standard (any decade or intermediate value can be offered on a custom basis from 0.001Ω to $10^{13}\Omega$, consult factory)
- Low thermal EMF and voltage coefficients
- RCD standards lab offers recalibration services
- Low temperature coefficient (approx. 10ppm/°C)
- Operating temperature: 0°C to $+40^\circ\text{C}$
- Low cost 2-terminal banana plug standards avail.

RCD - The standard by which others are measured!

RCD has been manufacturing precision resistors for more than 30 years, which have evolved into some of the most precise and stable standards available worldwide, up to 10 times more accurate than competitive models!

Series A1: Made of premium resistance wire, wound on insulated brass spools for precise matching of TCE, and pre-conditioned to assure utmost stability. The element is immersed in moisture-free oil inside a sealed metal container. Available in two grades, A1A to $\pm 0.0005\%$ and A1B to $\pm 0.001\%$. A1A standards are not only traceable to the NIST, but also include a computerized TC chart giving corrections for every 0.01°C from 18 to 30°C . Series A1 are provided with a thermometer well at the center of the standard. As an option, a 100 Ω platinum RTD element (RCD type PTF1 accurate to 0.1°C) can be imbedded in the midst of the resistance windings. Heavy duty leads enable series/parallel connections without compromising the guaranteed limit of error.

Series A2: Precision resistors with 4-terminal brass binding posts designed for less critical applications such as secondary reference standards. Molded low-profile case with flexible internal insulation protects the resistance element from damage even when exposed to non-laboratory environments, such as production or R&D departments. Gold plated binding posts available.

A1 SPECIFICATIONS

Resistance Value	Nom. Tolerance		Measured Value Resolution	Accuracy of Measured Value*		Wattage Rating	Current Rating	Long Term Stability**		Power Coef.* (ppm/mW)	
	A1A	A1B		A1A	A1B			A1A	A1B	A1A	A1B
0.1 Ω	$\pm 0.005\%$	$\pm 0.05\%$ (.01% avail)	0.0000001 Ω	5ppm	10ppm	1.0W	3.2A	1-5ppm	2-10ppm	.002	.010
1.0 Ω	$\pm 0.0005\%$	$\pm 0.003\%$ (.001% avail)	0.000001 Ω	3ppm	10ppm	1.0W	1.0A	0.5-3ppm	1-5ppm	.001	.005
10 Ω	$\pm 0.0005\%$	$\pm 0.003\%$ (.001% avail)	0.00001 Ω	4ppm	10ppm	1.0W	.32A	0.5-3ppm	1-5ppm	.001	.005
50 Ω	N/A	$\pm 0.003\%$ (.001% avail)	0.00001 Ω	-	10ppm	1.0W	.14A	N/A	1-5ppm	N/A	.005
100 Ω	$\pm 0.0005\%$	$\pm 0.003\%$ (.001% avail)	0.0001 Ω	4ppm	10ppm	1.0W	.1A	0.5-3ppm	1-5ppm	.001	.005
400 Ω	N/A	$\pm 0.003\%$ (.001% avail)	0.0001 Ω	-	10ppm	1.0W	.05A	N/A	1-5ppm	N/A	.005
1K Ω	$\pm 0.0005\%$	$\pm 0.003\%$ (.001% avail)	0.001 Ω	5ppm	10ppm	1.0W	.032A	0.5-3ppm	1-5ppm	.001	.005
10K Ω	$\pm 0.0005\%$	$\pm 0.003\%$ (.001% avail)	0.01 Ω	7ppm	10ppm	1.0W	.01A	0.5-3ppm	1-5ppm	.001	.005

A2 SPECIFICATIONS

Resistance Value	Nominal Tolerance	Measured Value Resolution	Accuracy of Meas. Value*	Wattage Rating	Current Rating	Long Term Stability**	Power Coef. (ppm/mW) *
0.01 Ω	$\pm 0.05\%$ (.01% avail)	0.000001 Ω	200ppm	1.0W	10A	20-100ppm	0.5
0.1 Ω	$\pm 0.03\%$ (.01% avail)	0.00001 Ω	50ppm	1.0W	3.2A	10-50ppm	0.3
1.0 Ω	$\pm 0.01\%$ (.005% avail)	0.0001 Ω	20ppm	1.0W	1A	5-25ppm	0.3
10 Ω	$\pm 0.01\%$ (.005% avail)	0.001 Ω	20ppm	1.0W	.32A	5-25ppm	0.1
50 Ω	$\pm 0.01\%$ (.005% avail)	0.001 Ω	20ppm	1.0W	.14A	5-25ppm	0.1
100 Ω	$\pm 0.01\%$ (.005% avail)	0.001 Ω	20ppm	1.0W	.1A	5-25ppm	0.1
400 Ω	$\pm 0.01\%$ (.005% avail)	0.001 Ω	20ppm	1.0W	.05A	5-25ppm	0.1
1K Ω	$\pm 0.01\%$ (.005% avail)	0.01 Ω	20ppm	1.0W	.032A	5-25ppm	0.1
10K Ω	$\pm 0.01\%$ (.005% avail)	0.1 Ω	20ppm	1.0W	.01A	5-25ppm	0.1
100K Ω	$\pm 0.01\%$ (.005% avail)	1.0 Ω	50ppm	1.0W	.0032A	5-25ppm	0.1
1M Ω	$\pm 0.01\%$ (.005% avail)	10.0 Ω	200ppm	1.0W	.001A	10-50ppm	0.1

HOW TO ORDER:

Standards can be ordered as complete sets or individually. SET-A1A has six A1A standards (0.1 Ω , 1 Ω , 10 Ω , 100 Ω , 1K, 10K). SET-A1B has eight A1B standards (0.1 Ω , 1 Ω , 10 Ω , 50 Ω , 100 Ω , 400 Ω , 1K, 10K). SET-A2 has eleven A2 standards (0.01 Ω , 0.1 Ω , 1 Ω , 10 Ω , 50 Ω , 100 Ω , 400 Ω , 1K, 10K, 100K, 1M). Order individual standards by denoting the model number and value, e.g. "A1A - 1 OHM", "A1B - 10K", "A2 - 1M". Indicate non-standard tolerances, e.g. "A2 - 1 OHM .005%". Lead-free RoHS-compliant design is available by adding "W" to end of p/n. Custom values are available.

* Tested at $25 \pm 0.05^\circ\text{C}$ in a well stirred oil bath at $<100\text{mW}$ (5ppm=.0005%, 10ppm=.001%, etc.)

**Typical stability under conditions of normal use over 1 year period.