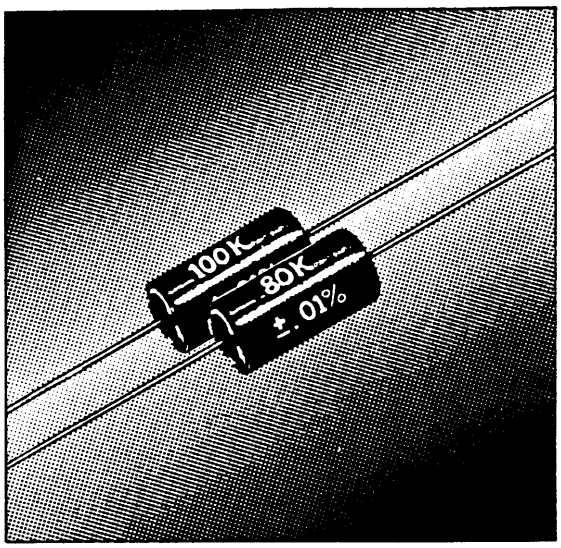
GENERAL RESISTANCE

341-897→990

PRECISION WIREWOUND RESISTORS



ECONISTOR

FEATURES: ±3ppm per deg. C temperature coefficient. Full Load Stability ±50ppm max. after three years. Tolerance ±0.005%, ±0.01%, ±0.025% and ±0.1%. Axial leads. From stock in 111 popular standard values: to order in any value from 1 ohm to 1.1 Meg.

Ohmic Values

ECONISTORS are available in 111 standard values from 1Ω to 1MΩ and in any "non-standard" values from 1Ω to 1.1MΩ. Any of four tolerances is available; 0.1%, 0.25%, 0.01% and 0.005% (0.005% available on values of 100Ω and above only). Type 8E16 includes all values below 700KΩ: values of 700KΩ and above are type 8E24. The types are identical except dimensionally; Type 8E16 is 12.70mm long: Type 8E24 is 19.05mm long. Both are manufactured using all welded construction.

8E16D 10R
TO
8E16D 10K

SPECIFICATIONS

Tolerance at 25 deg.C:
±0.005%, ±0.01%, ±0.025%, ±0.1%

Temperature Coefficient:
±3ppm/deg.C typical over 0 deg.C to +85deg.C
5ppm max over −55 deg.C to +125 deg.C

Full Load Stability:
±35ppm/10,000hrs. ±50ppm/26,000hrs.

No Load Stability:
±25ppm/10,000hrs.) over full temp. range
±35ppm/26,000hrs.) −55 deg.C to +125 deg.C

Power Rating:
0.33 watt (+85 deg.C)
0.25 watt (+110 deg.C)

Max. Continuous Working Voltage:
Up to 250V d.c. or peak as determined by $\sqrt{PR}$

Noise: Essentially non-measurable

Thermal e.m.f.
<0.2μV/deg. C typical <1.5μV/deg. C max.

Encapsulation:
Moulded epoxy

Leads: 22 a.w.g. tinned copper

Windings:
Balanced multiple π for low reactance. Exclusive 'air cushion' technique provides virtually stressless elements for improved performance. Non-inductively wound. Direction of winding reversed at half turns point.

STOCKED IN ±0.1% & ±0.01% IN LISTED VALUES BELOW

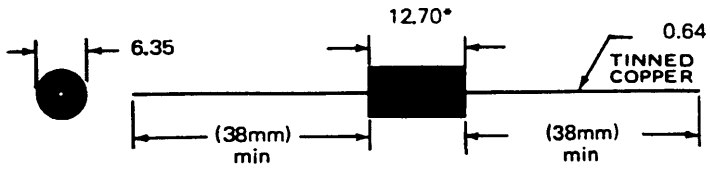
1Ω	103.90Ω†	194.07Ω†	680Ω*	4.7K*	27K*	180K
2Ω	107.79Ω†	200Ω	700Ω	5K	30K	200K
5Ω	109.73Ω†	212.02Ω†	800Ω	5.6K*	33K*	250K
10Ω	111.67Ω†	220Ω*	820Ω*	6K	39K	300K
20Ω	115.54Ω†	229.67Ω†	900Ω	6.8K*	40K	320K*
30Ω	119.40Ω†	247.04Ω†	1K	7K	47K*	400K
40Ω	120Ω	250Ω	1.2K*	8K	50K	500K
50Ω	123.24Ω†	270Ω*	1.5K	8.2K*	56K*	990K
60Ω	125Ω†	300Ω	1.8K*	9K	60K	1M
60.25Ω†	127.07Ω†	330Ω*	2K	9.9K	68K*	
62.50Ω*	130.89Ω†	350Ω	2.2K	10K	70K	
70Ω	134.70Ω†	390Ω*	2.5K	12K*	80K	
80Ω	138.50Ω	400Ω	2.7K*	15K*	82K*	
84.27Ω†	150Ω*	470Ω*	3K	18K*	90K	
90Ω	157.31Ω†	500Ω	3.3K*	20K	99K	
92.16Ω†	175.84Ω†	560Ω*	3.9K*	22K*	100K	
100Ω	180Ω*	600Ω	4K	25K	160K*	

A number of values listed are RTD simulation values. See page A10 for temperature equivalents.

Any value from 1Ω to 1.1MΩ available to order.

** stocked in ±0.1% tol. only.*
† stocked in ±0.01% tol. only.

DIMENSIONS (mm)



*19.05 for values of 700K and above.

RHOPOINT COMPONENTS
Holland Road, Hurst Green,
Oxted, Surrey
RH8 9BB
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Tel: 0883 717988
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ECONISTOR

CONSTRUCTION

ECONISTORS are wound on a proprietry multi-section bobbin with the termination wires moulded deep into the body of the bobbin. Each copper to resistance-wire join is thus positioned near to the centre of the resistor and spaced apart from each other by only 2mm. This is an important factor in minimizing the effect of thermal e.m.f.s. (See separate note on thermal e.m.f.s.) This method of construction also effectively isolates the fine resistance wire mechanically from the termination wires. To minimize inductance the direction of winding is reversed at the half turns point.

During the manufacturing process each resistor undergoes an ageing process for a minimum of 1 week in a temperature controlled oven in order to completely stabilize the winding prior to calibration.

ECONISTORS are encapsulated in a moulded epoxy shell which fully seals the winding.

MANUFACTURING

The highest quality materials are used; all processing is performed in temperature/ humidity controlled "clean rooms"; each step is carefully monitored.

THERMAL E.M.F.s

The temperature difference between the two copper to resistance wire joins is the critical factor. If the two junctions are at the same temperature, then the effect of thermal e.m.f.s. is minimized.

The construction of ECONISTORS is such that the two junctions are not more than 2mm apart, thus reducing any possibility of temperature difference almost to zero. This largely negates the effect of thermal e.m.f.s. in ECONISTORS.

The thermal e.m.f. of the resistance material to copper join for ECONISTORS is $<0.2\mu V$/deg.C

RESISTANCE WIRE

Highest quality copper alloy wire drawn from melts of known resistivity and controlled temperature co-efficient.

ACCURACY

Calibration is at 25°C against equipment traceable to N.B.S. (U.S.). During calibration the electrical connection is made ≈ 10mm along the lead-out wires from the body.

OPERATING TEMPERATURE

The maximum operating temperature due to ambient and power dissipation within the resistor is 160 deg.C.

SOLVENT RESISTANCE

The body material and identification marking is resistant to all commonly used P.C. board solvents.

LEAD PULL STRENGTH

2kg (Limited only by inherent strength of copper lead material).

RESISTANCE OF TERMINATION LEADS

Type 8E16—0.52m Ohms/cm
Type 8E24—0.33m Ohms/cm

VOLTAGE CO-EFFICIENT

Essentially zero

FULL LOAD STABILITY

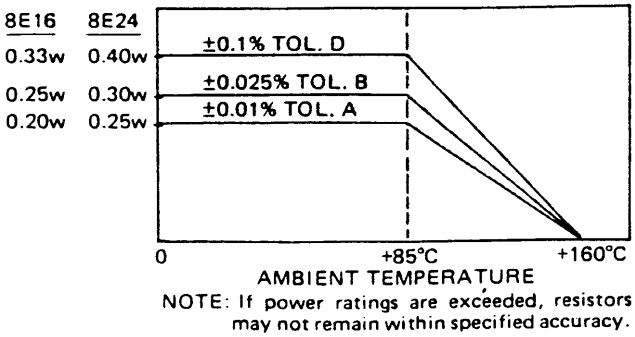
±35ppm/year
±50ppm/3 years

NO LOAD STABILITY

±25ppm/year } over full temperature
±35ppm/3 years } range, −55°C to +125°C

ECONISTORS ARE APPROVED TO MIL−R−93

POWER DERATING CURVES



NOTE: If power ratings are exceeded, resistors may not remain within specified accuracy.

ORDERING PROCEDURE

Example:

8E 16 A 10K

8E 16	A	10K
Style and Gen. Specs.	Tolerance X = 0.005% A = 0.01% B = 0.025% D = 0.1%	R value in Ohms

Matched pairs and ratio matched resistors are available against specific enquiries

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