



Instruction Sheet

DB 877 DEKABOX® decade resistor

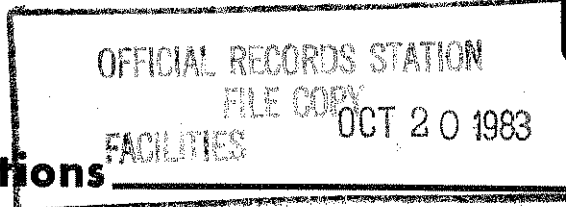
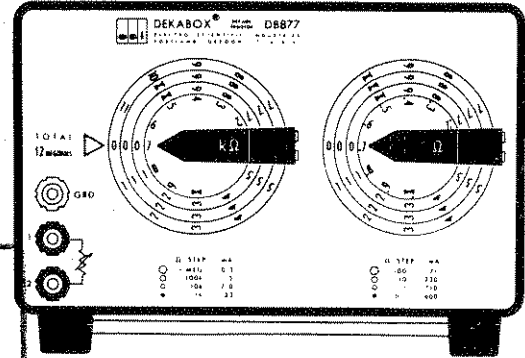
Electro Scientific Industries

13900 N.W. SCIENCE PARK DRIVE • PORTLAND, OREGON 97229

DECEMBER 1973

description

The ESI Model DB 877 DEKABOX® is an eight-decade resistor with double coaxial-dial precision resistance elements.



specifications

Accuracy: Accuracy of resistance increments is given in the accompanying table.
 Accuracy of resistance change from zero setting
 Initial: $\pm(0.01\% + 7 \text{ m}\Omega)$.
 Long-Term: $\pm(0.02\% + 10 \text{ m}\Omega)$.
 Short-Term Switching Repeatability: 1 m Ω (typical).
 Number of Decades: Eight.
 Total Resistance: 12,111,111.0 Ω .

Resistance Per Decade: See table.
 Smallest Step: See table.
 Resistance at Zero Setting: Approximately 40 m Ω .
 Breakdown Voltage: 1000 V peak to case.
 Dimensions: Width 8.5 in. (21.6 cm), height 5.3 in. (13.5 cm), depth 7 in. (17.8 cm).
 Weight: 5.5 lb (2.5 kg).

RATINGS PER STEP FOR EACH DECADE
Model DB 877

RESISTANCE PER DECADE (Ω)	SMALLEST STEP (Ω)	INCREMENTAL ACCURACY		COEFFICIENTS		MAXIMUM RATINGS		
		INITIAL (%)	LONG-TERM (%)	TEMPERATURE (ppm/ $^{\circ}$ C)	POWER (ppm/mW/step)	POWER (mW/step)	CURRENT (mA)	VOLTAGE (V/step)
10 M	1 M	0.02	0.03	5	0.3	90	0.3	300*
1 M	100 k	0.02	0.03	5	0.3	220	1.5	150
100 k	10 k	0.02	0.03	5	0.3	500	7	71
10 k	1 k	0.02	0.03	5	0.3	500	23	23
1 k	100	0.02	0.03	5	0.3	500	71	7.1
100	10	0.03	0.03	15	0.9	500	230	2.3
10	1	0.1	0.12	20	1.2	500	710	0.71
1	0.1	1.0	1.0	60	6	250	1600	0.16

*1000 V peak maximum

warranties

WARRANTY OF QUALITY

Electro Scientific Industries, Inc. warrants its products to be free from defects in material and workmanship for the following periods:

- Two years for components and instruments using passive circuitry. One year for repairs of out-of-warranty items.
- One year for components and instruments using active circuitry (see ESI Metrology Catalog). Six months for repairs of out-of-warranty items.

During the in-warranty periods, we will service or, at our option, replace any device that fails in normal use to meet its published specifications. Batteries, tubes and relays that have given normal service are excepted.

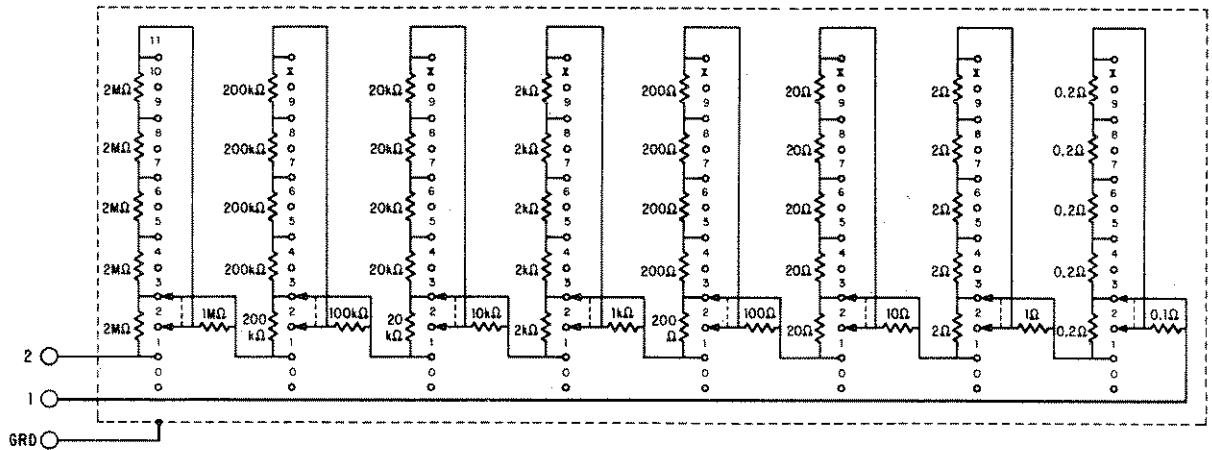
WARRANTY OF TRACEABILITY

Electro Scientific Industries, Inc. maintains reference standards of measurement which are compared with the U. S. National Standards through frequent tests by the U. S. National Bureau of Standards.

ESI working standards and testing apparatus used are calibrated against the ESI reference standards in a rigorously maintained program of measurement control.

The manufacture and final calibration of all ESI instruments are controlled by use of the ESI reference and working standards and testing apparatus in accordance with established procedures and documented results. (Reference MIL-C-45662)

Final calibration of this instrument was performed with reference to the mean values of the ESI reference standards or to ratio devices that were verified at the time and place of use.



operation

Three binding posts are provided on the front panel of the DEKABOX. The GRD binding post is connected to the metal case which forms a shield for the instrument. The resistance between the other two binding posts corresponds to the setting of the coaxial dials, which are arranged to read resistance directly in ohms.

All dials can be turned through a complete circle, which allows settings to be changed rapidly and directly from X to 0. All dials except the first have an X position which corresponds to ten steps on the dial or one step of the next higher dial. The first dial has 12 positions, 0 through 11, which allow a total resistance of more than 12 times the step resistance of the first dial.

calibration

To calibrate the instrument, measure each resistor with a resistance bridge of 0.01% accuracy or better. ESI Models 231, 232 and 242 Resistance Measuring Systems are recommended for this use. The procedure is as follows:

1. Set all dials to 0, measure and record zero resistance.

2. Set each dial to 1, 2, 4, 6, 8, and X in turn and measure the resistance at each setting with all other dials set to 0.
3. Subtract the zero resistance from each measured resistance less than 1 kilohm.

maintenance

Periodic maintenance of DEKABOXES is neither required nor recommended. The switches are lubricated at the time of manufacture and should be cleaned or lubricated only if

they are not making good electrical contact. A switch lubrication kit (ESI Part No. 1343) is available for this purpose.

parts list

The following table lists replacement parts alphabetically by name of part. All parts listed are available from Electro Scientific Industries and must be ordered from the factory. When ordering include the following information:

Model and serial number of the instrument
ESI part number and description of part

Federal Supply Code for Manufacturers (FSCM) for Electro Scientific Industries, Inc. is 11837.

DESCRIPTION	ESI PART NO.	QTY USED
Cap, Binding Post, Black	1170	2
Cap, Binding Post, Gray	1476	2
Cap, Binding Post, Gold Plated	1172	1
Resistor Switch Assembly, 0.1Ω/step	4937	1
-including-		
Resistor, 0.0992Ω	4939	1
Resistor, 0.1992Ω	4938	5
Switch Section	73041	1
Resistor Switch Assembly, 1Ω/step	4899	1
-including-		
Resistor, 0.9992Ω	4901	1
Resistor, 1.9992Ω	4900	5
Switch Section	73041	1
Resistor Switch Assembly, 10Ω/step	4893	1
-including-		
Resistor, 9.9992Ω	4895	1
Resistor, 19.9992Ω	4894	5
Switch Section	73041	1

DESCRIPTION	ESI PART NO.	QTY USED
Resistor Switch Assembly, 100Ω/step	4888	1
-including-		
Resistor, 100Ω	4890	1
Resistor, 200Ω	4889	5
Switch Section	73041	1
Resistor Switch Assembly, 1kΩ/step	4882	1
-including-		
Resistor, 1kΩ	4884	1
Resistor, 2kΩ	4883	5
Switch Section	73041	1
Resistor Switch Assembly, 10kΩ/step	4902	1
-including-		
Resistor, 10kΩ	4904	1
Resistor, 20kΩ	4903	5
Switch Section	73041	1
Resistor Switch Assembly, 100kΩ/step	4905	1
-including-		
Resistor, 100kΩ, Bobbin	4907	1
Resistor, 200kΩ, Bobbin	4906	5
Switch Section	73041	1
Resistor Switch Assembly, 1MΩ/step	4958	1
-including-		
Resistor, 1MΩ, Bobbin	5393	1
Resistor, 2MΩ, Bobbin	5394	5
Switch Section	73041	1

