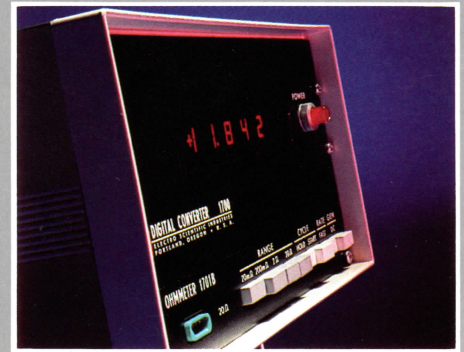
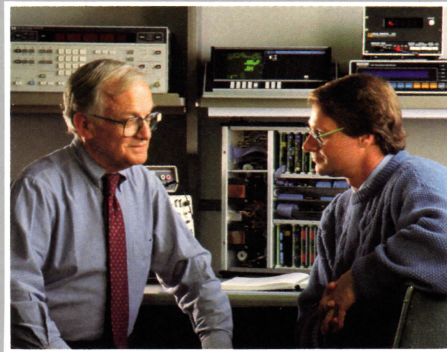
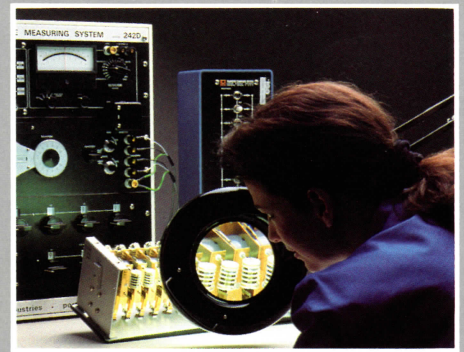




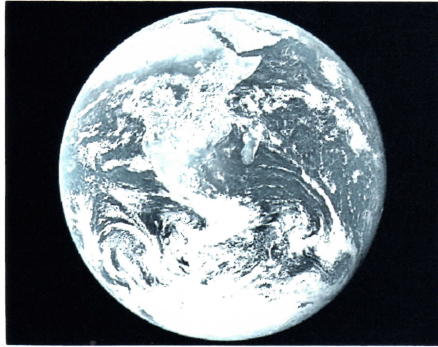
# Precision Standards, Instruments and Components

PARTNERS IN PRECISION



Electro Scientific Industries, Inc.

## PARTNERS WORLDWIDE



For more than 35 years, Electro Scientific Industries, Inc. (ESI) has been recognized in the metrology community as a leader in resistance standards and measuring equipment. Building on this technology, ESI has expanded worldwide with new applications and new designs for the microelectronics industry.

Today, we not only offer precision instrumentation for the standards and calibration market, we also provide systems and materials for the production, handling and testing of passive components, and advanced laser trimming and processing systems for hybrid and semiconductor manufacturers.

Customer satisfaction and product integrity are two major reasons for ESI's leadership role in the world of metrology. We are your partners in precision dedicated to working with you to develop solutions to your measurement challenges.

ESI is an international corporation headquartered in Portland, Oregon, with subsidiaries in the U.S., Europe and Asia. Manufacturing facilities are located in Oregon and California. A network of sales and service representatives in more than 30 countries provide support services for our customers around the world.

Photo courtesy of Oregon Museum of Science and Industry, Portland, Oregon

# Partners in Precision

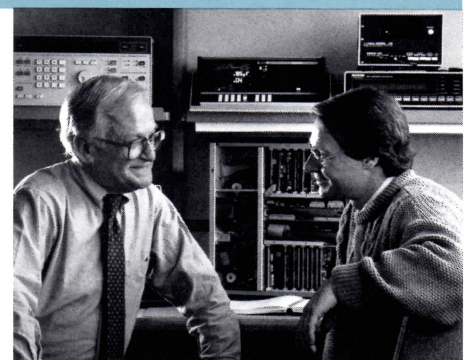
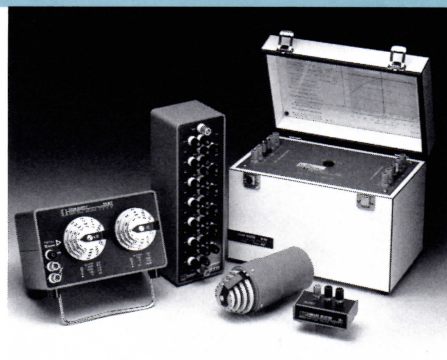
Whether you manage a cal lab, lead a quality assurance department, or operate an instrument service facility, we at ESI know you must have absolute confidence in your measurements. You require accuracy, stability, reliability and precision.

We also know you have unique measurement needs. That's why we take a team approach, listening and working with you, to insure that you get the exact product you want.

Partnership is more than just a slogan. It reflects our ongoing commitment to quality improvement — to provide you with excellent products that will help you reduce calibration costs, improve yields and increase profits.

It also reflects our commitment to provide dependable support services, and to work with you in developing solutions to meet your future needs.

You expect excellence and that's what we deliver. When it comes to quality, we make no compromise. We are your partners in precision.



## Standards you can count on

For over 35 years, calibration laboratories around the world have relied on ESI precision standards and calibration systems. Our reputation is built on sound design, strict manufacturing control, as well as thorough product testing and calibration.

We have a strong corporate commitment to continuous quality improvement. We look to the future, incorporating the best of the new technologies into our products and designs. We take measurement precision and accuracy to their limits. And of course, our standards and components are traceable to the National Institute of Standards and Technology.

At ESI, we set the standards for quality. Standards you can count on.

## A full product line

We have a tradition at ESI of working with customers to develop the products you need. Your challenges are often the catalyst for new developments and advances. The result is a full product line designed to meet your requirements for precise resistance standards and measurement instrumentation:

### Resistance Reference Standards.

Standard resistors, resistance transfer standards, reference voltage dividers and rheostats for a wide range of DC and audio frequency applications.

### Precision Resistance Measurement Equipment.

Precision resistance measuring systems for standards laboratories and production applications.

### Impedance Measurement Equipment.

LRC meters, ohmmeters, production test equipment for measuring components in incoming inspection, quality control, and engineering benchtop applications.

## Service and support

ESI backs each of its products with a commitment to provide customers with continuing personalized service and support.

Our application engineers will assist you to insure efficient integration of our products into your calibration facility and they are always available to answer your questions or help resolve technical problems.

Manuals and documentation are designed to make product operation and maintenance as easy as possible.

In-plant repair and calibration programs guarantee fast service turn-around, and a comprehensive inventory and repair parts program insures prompt delivery of parts. We're ready to help whenever you need us.

# Resistance Standards and Measuring Systems

Precise, accurate and stable standards. At ESI we know that's what your lab needs. We design our resistance standards and measuring equipment to meet your exacting requirements, so you can be confident about your measurements.

You can count on ESI for accuracy and stability in a broad range of precision resistance standards — highly accurate inter-laboratory standards, precision



reference standards and reliable working standards, all traceable to the National Institute of Standards and Technology (NIST).

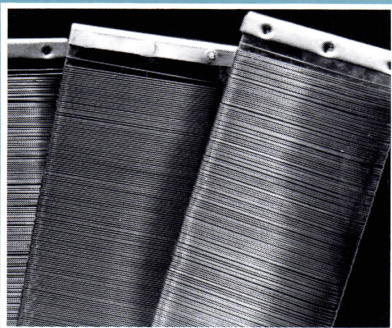
From sound electrical design using wirewound resistors for superior short- and long-term stability to rugged mechanical construction for protection and shielding, depend on ESI quality standards to help you calibrate and maintain measuring systems and instruments throughout your facility.

## Applications

Calibration and measurement in DC and audio frequency applications, including meter calibration, resistance transfers, voltage and current division, turns-ratio measurement, linearity checking and ratio measuring.

## WIREWOUND RESISTORS The building blocks of ESI precision

The wirewound resistor is the core technology — the building block — of ESI's resistance measurement products. These proprietary resistors approach the ideal for a resistive element — precise initial accuracy, low drift with time and varying environment, small response to temperature changes and low noise and thermal generation.



This superior performance is achieved by using carefully selected compatible materials and stringent manufacturing procedures, developed exclusively at ESI. Each resistor is individually adjusted to extremely close tolerances after a special proprietary aging process. This aging process relieves any stress developed during manufacturing and ensures that the resistor is stable to better than a few parts per million per year.

The wirewound resistor is the key technology that provides you with ultraprecise standards of superior stability and accuracy. That translates into greater measurement precision, higher testing throughput and ultimately, improved productivity and quality throughout your facility.

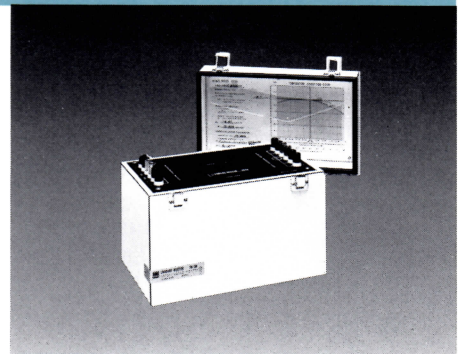
## STANDARD RESISTORS



**Model SR1  
Standard  
Resistor**

- Versatile working standard
- 50 ppm long-term accuracy for most values
- Values range from 0.01  $\Omega$  to 10 M $\Omega$
- Accurate, stable, low cost

The SR1 Standard Resistor is a single-value standard for use on the bench or in remote calibration applications. Available in ten models, decade values from 0.01  $\Omega$  to 10 M $\Omega$ , the SR1 features a long-term accuracy of better than 50 ppm for most values, with initial accuracy of 20 ppm. Terminals on the top and bottom of each unit allow four-terminal measurements and connecting two or more units together in series or parallel for a wide variety of resistance values.

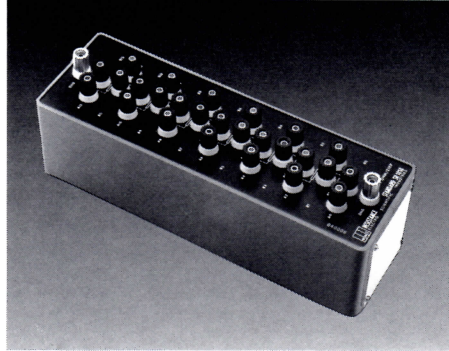


**Model SR104  
Transportable  
Resistance Standard**

- 10 k $\Omega$  value for accurate transfers
- Temperature coefficient 0.1 ppm per  $^{\circ}\text{C}$
- Stability 0.5 ppm per year after second year
- Accuracy 3 ppm initial; 1 ppm calibration accuracy
- Traceability test report provided

The Model SR104 Transportable Resistance Standard is a portable standard, consisting of a five-terminal resistor with an internal temperature sensor, both hermetically sealed inside a thermally lagged, oil-filled container. Establishing a reference level at 10 k $\Omega$ , instead of the traditional 1  $\Omega$ , the SR104 offers a substantial improvement in accuracy and stability at the center of the commonly used resistance range. Each instrument includes temperature coefficient data and calibration traceable to the NIST. Long term stability is 0.5 ppm per year. Accuracy is 3 ppm initial with 1 ppm calibration accuracy. The SR104's extremely low temperature coefficient facilitates precise laboratory comparisons without critical environmental control.

## RESISTANCE TRANSFER STANDARDS

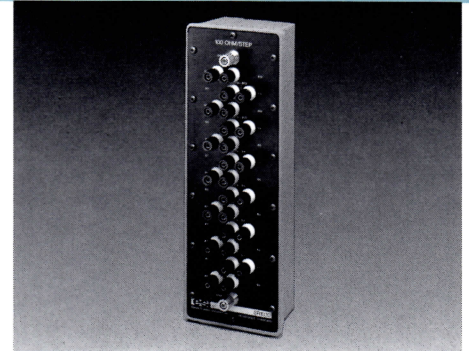


**Model SR1010  
Resistance Transfer  
Standard**

- Part-per-million transfers from 100 m $\Omega$  to 1 M $\Omega$  from single reference standard
- Twelve equal-value precision resistors
- Six models, decade steps 1  $\Omega$  to 100 k $\Omega$
- Unique four-terminal junctions
- Calibration readings attached

The Model SR1010 Resistance Transfer Standard is used for accurate resistance transfers and is ideal for use as a multi-value standard resistor or reference voltage divider. It is available in standard values of 1, 10, 100, 1 k, 10 k and 100 k $\Omega$ . Initial accuracy is  $\pm 20$  ppm of nominal value, matched within 10 ppm. Long term accuracy is  $\pm 50$  ppm of nominal value.

The SR1010 contains 12 nominally equal resistors connected in series by specially designed true four-terminal junctions. Using optional shorting bars and networks, the transfer standard may be placed in series, series/parallel, or parallel to provide highly accurate ratios of 100:1 and 10:1.



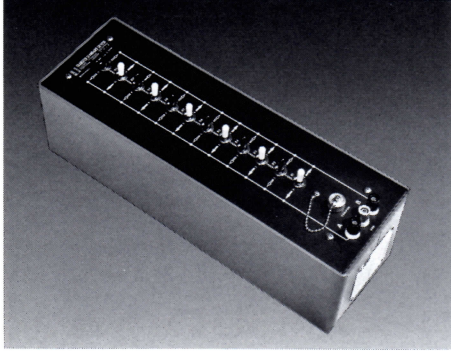
**Model SR1030  
Resistance Transfer  
Standard**

- Part-per-million transfers from 100 m $\Omega$  to 1 M $\Omega$
- Unique oil-encased resistors for thermal isolation, maximum short-term stability
- Excellent long-term stability,  $\pm 20$  ppm for six months,  $\pm 35$  ppm for 2 years.
- Accuracy calibrated to  $\pm 10$  ppm

The Model SR1030 Resistance Transfer Standard offers the stability and accuracy of a laboratory reference standard in a lightweight, portable construction design, making this resistance transfer standard useful on the bench and in remote calibration, repair, production or R&D sites.

Each SR1030 is encased in a mineral oil bath that thermally isolates resistors from temperature variations during resistance transfers for superior short-term thermal stability. The SR1030 exhibits excellent short-term and long-term accuracy: 20 ppm for 6 months, 35 ppm for 2 years. That means longer mean time between calibrations of the SR1030 for greater calibration throughput.

Six models are available in decades from 1  $\Omega$  to 100 k $\Omega$  per step. The SR1030 provides ratios of 10:1 and 100:1 using series, series/parallel or parallel connection. Calibration readings traceable to the NIST are provided.

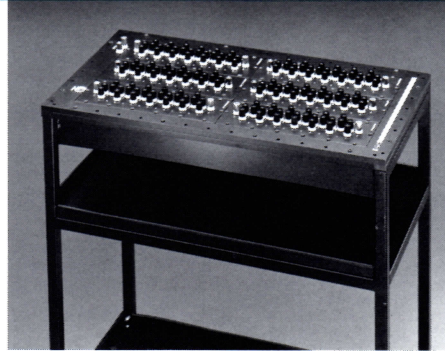


### Model SR1050 High-Resistance Transfer Standard

- Resistance transfers from 100 k $\Omega$  to 110 M $\Omega$
- Eleven equal-value precision resistors
- Two models, decade steps 1 M $\Omega$  and 10 M $\Omega$
- Complete control of insulation resistance in resistance transfers

The Model SR1050 High-Resistance Transfer Standard provides precise transfer measurements up to 110 M $\Omega$ . Based on a unique method for establishing known ratios, the standard uses a transfer technique that consists of switching resistance sections in series, series/parallel or parallel sections. The SR1050 is designed to eliminate insulation leakage errors in the transfer of calibration from one resistance level to another using three-terminal measurement techniques.

Two models, 1 M $\Omega$  and 10 M $\Omega$  resistance standards, are available. Short-term stability is suitable for comparisons repeatable within 2 ppm. Initial accuracy is  $\pm 25$  ppm of nominal value, matched within 10 ppm. Long-term accuracy is  $\pm 50$  ppm of nominal value.



### Model SR1060 Resistance Transfer Standard System

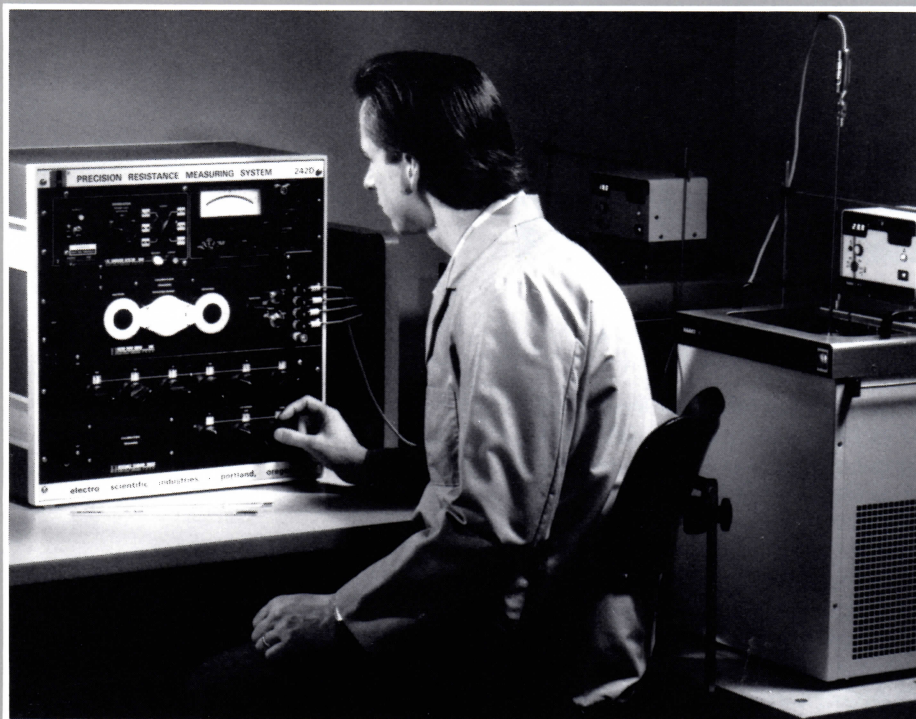
- Part-per-million transfers from 100 m $\Omega$  to 1 M $\Omega$  from single reference standard
- Thermally isolated by oil for maximum short-term thermal stability
- Long-term stability  $\pm 20$  ppm for 180 days,  $\pm 35$  ppm for 2 years
- Accuracy calibrated to  $\pm 10$  ppm.
- Seven decades of resistance transfer
- Calibration readings traceable to the NIST

The SR1060 Resistance Transfer Standard is an extremely accurate, stable resistance standard that fits easily on a bench top or in a mobile shock absorbed cart. It consists of six transfer standards in decades from 1  $\Omega$  to 100 k $\Omega$ .

Each decade standard consists of 12 nominally equal resistors matched to within 10 ppm. Using the optional shorting bars and connecting networks, the SR1060 can provide ratios of 10:1 and 100:1 resistance transfers using series, series/parallel or parallel connections.

Mineral oil baths encase all standards, except the 100 k $\Omega$  standard, to provide thermal isolation for superior short-term thermal stability. The SR1060 exhibits superior long-term stability— $\pm 20$  ppm of nominal for 180 days,  $\pm 35$  ppm for two years.

# Precision Resistance Measuring Systems



ESI precision measuring equipment gives you what your resistance measurement applications demand: accuracy, precision and stability, designed into every piece of equipment.

Because precision is a vital concern in cal lab applications, we've designed our systems with precision wirewound resistors, guarding and shielding to ensure stability and accuracy. Fast system measuring speeds give you greater calibration and testing throughput.

For your high precision component measurement and production, ESI resistance meters and digital ohmmeters give you high test throughput, accuracy, and a

wide range of DC resistance testing. And because all meters are designed for both benchtop and automated test environments, including handler/communication interfaces for computer integration, you have more versatility in test setup.

## Applications

Resistance measurement in quality control and cal lab applications including manual and high speed production testing and sorting of resistors; low ohm measurements of components; production of precision wirewound resistors.



## Model 242D Precision Resistance Measuring System

- 10 ppm direct reading accuracy, 5 ppm optional
- 1 ppm comparison accuracy with 0.1 ppm resolution
- Direct or percent deviation readout
- Matched generator-detector
- Complete guarding and shielding

The 242D system provides the ultimate in resistance measurement from 10 m $\Omega$  to 120 M $\Omega$ . It has been carefully designed for use in standards laboratories and quality control where precision is a vital concern.

Three compatible, precision instruments have been joined into one complete measurement system: a Model RS925D Decade Resistance Standard, a Model 240C Kelvin ratio bridge and a Model 801B DC generator-detector. Direct reading accuracy of 10 ppm is maintained over a wide range without the need for correction tables or computations of any kind. Optional direct reading accuracy of 5 ppm is available.

Complete guarding and shielding reduce noise in both high and low resistance measurements. Yoke balance and lead compensation in the bridge circuit allow low-resistance measurements previously unattainable in systems of this type.





### Model SP2522B Digital Resistance Meter

- 0.02% basic accuracy
- 100  $\mu\Omega$  resolution to 200 M $\Omega$  full scale
- 10 programmable sorting limits, percent or absolute deviation
- IEEE-488 or RS-232-C option

This digital resistance meter provides the high throughput, high accuracy and wide range DC resistance testing you need in high speed production testing of resistors. Versatile handler interfaces and optional communication interfaces are available for easy integration of the SP2522B into most automated resistor testing environments.

The SP2522B features 0.02% basic accuracy and measurement times as low as 37 milliseconds. Resolution of 100  $\mu\Omega$  on the lowest scale and an upper range of 200 M $\Omega$  give you extreme measurement flexibility.

Low ohm accuracy is enhanced by ESI's switched DC feature. Sorting by either percent or absolute deviation into 11 bins is easily programmed. Other features include autoranging, bin counts, remote programmability and data logging through IEEE-488 and RS-232-C interfaces.



### Model 1700 Digital Ohmmeter

- Low ohm resolution to 0.1  $\mu\Omega$
- Fast measurements — up to 13 per second
- 0.02% basic accuracy
- Switched DC and constant DC test signals
- Four-terminal connection
- Fast warmup, low drift

For accurate, low ohm measurements with low current test levels, choose the Model 1700 Digital Ohmmeter. The 1700 measures resistors, PCB stripes, thermistors, motor windings, fuses, explosive primers, welds, busbars and wire — most any component exhibiting resistance.

Basic 0.02% accuracy and 4-terminal connection assure measurement accuracy. Three plug-in amplifiers provide wide range capability from 0.1  $\mu\Omega$  resolution to 20 M $\Omega$ .

Contributing to the 1700's increased accuracy is a switched DC measurement mode that cancels errors inherent in low ohm measurement circuitry, and those caused by thermally generated voltages in the device under test. Low current test levels and single cycle mode reduce heating of components.

Limits comparator accessory provides LEDs for Go/No-Go results and relay closures for interfacing to a parts handler or for remote operation.



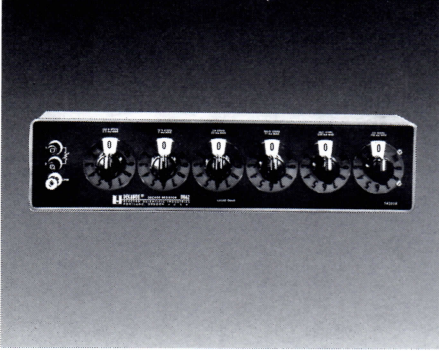
### Models 262/263 Resistance Deviation Bridges

- Fast response for accurate resistor winding cutoff
- Built-in, 8-decade standard (Model 263)
- Filters virtually all AC noise
- Accuracy: 0.01%-262; 0.02%-263
- 1 m $\Omega$  to 100 M $\Omega$  range
- Six deviation ranges

The Model 262 Resistance Comparator and Model 263 Resistance Deviation Bridge are designed for accurately determining the cutoff for wire-wound resistors, trimming metal film resistors or testing and sorting any type of discrete resistors.

Ideal for on-line bench work, these low cost, compact trimming bridges feature an exceptionally fast response — a few milliseconds — that permits operation of a resistor winding jig at maximum speed without loss of accuracy. Virtually all AC noise is filtered out, even in a congested production environment.

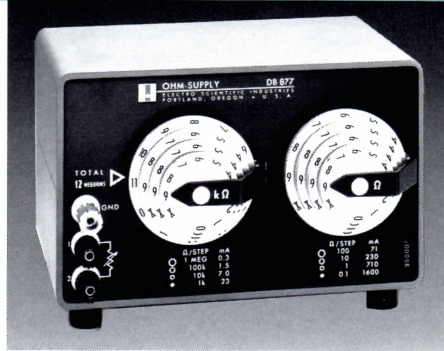
## DECADE RESISTORS



**Model DB62  
Dekabox In-line  
Decade Resistor**

- 0.01% initial accuracy
- Precision DC and audio frequency use
- Six in-line decades
- Low temperature and power coefficient
- Four standard values

For precision DC and audio frequency applications, the Model DB62 Dekabox features high accuracy, ease of setting and rapid, error-free reading. The DB62 has six, in-line decades with resolution from 10 m $\Omega$  per step. The largest total resistance available is slightly greater than 11 M $\Omega$ . Initial accuracy of the decades is 0.01%. Four standard values are available: 11.1111 k $\Omega$  (0.01  $\Omega$ /step), 111.111 k $\Omega$  (0.1  $\Omega$ /step), 1.11111 M $\Omega$  (1  $\Omega$ /step), and 11.1111 M $\Omega$  (10  $\Omega$ /step).



**Model DB877  
Dekabox Decade  
Resistor**

- 0.02% initial accuracy
- Eight decades of precision fixed resistors
- 120 million divisions of resolution
- Low temperature and power coefficient

The Model DB877 Dekabox provides long-term dependable service in precision DC and audio frequency applications. A coaxial dial arrangement provides up to 120 million divisions of resolution that allow, first, coarse approximation then, progressively finer steps to arrive at an exact resistance value. Eight decades of precision wirewound resistors provide a total resistance of 12 M $\Omega$  with 0.1  $\Omega$  as the smallest step. Initial accuracy of resistance increments is 0.02%.

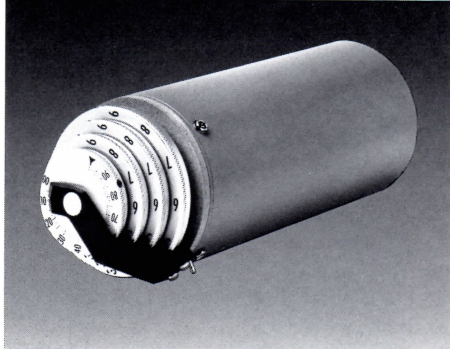


**Model RS925D  
Decade Resistance  
Standard**

- $\pm 20$  ppm per year accuracy
- Provides 10 significant figures of resolution
- Decade steps range from 10 m $\Omega$  per step to 100 k $\Omega$  per step
- 20 M $\Omega$  resolution with a continuous rheostat
- Four-terminal, continuously variable resistance standard

Simplify your resistance measurements with this four-terminal, continuously variable 1.2 M $\Omega$  resistance standard. The Model RS925D is a switchable, rack-mounted resistance standard providing 10 significant figures of resolution. Total value of 1.2 M $\Omega$  is achieved in eight decades plus a 105 division rheostat (0.0001  $\Omega$  per division). Initial adjustment accuracy of decades is  $\pm 20$  ppm at any setting. Stability is ( $\pm 20$  ppm + 0.5 m $\Omega$ ) per year.

## VOLTAGE DIVIDERS AND RATIO TRANSFORMERS



**Models DP1211/1311  
Dekapot Decade  
Potentiometers**

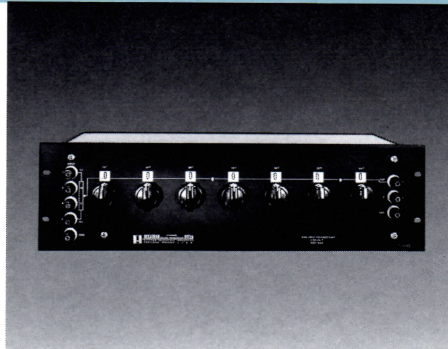
- $\pm 20$  ppm + 0.5 dial division long-term accuracy
- Kelvin-Varley circuit
- Panel-mounting area from 27.1 to 45.2 cm<sup>2</sup>
- Precision resistors for exceptional stability and reliability
- Solid silver-alloy switch contacts for long life, low contact resistance

The DP1211 and DP1311 are 2 and 3 decade respectively. Dekapot® coaxial-dial Kelvin-Varley voltage dividers. 1 k $\Omega$  and 10 k $\Omega$  units with  $\pm 0.01\%$  input resistance accuracy are available. Linearity is  $\pm 15$  ppm. Panel mounting only.

**Models DS1463/DS1464  
Dekastat Decade  
Resistors**

- 0.02% initial accuracy
- Coaxial dials minimize panel space
- Rapid setting, convenient in-line reading
- Stainless steel shafting and detents

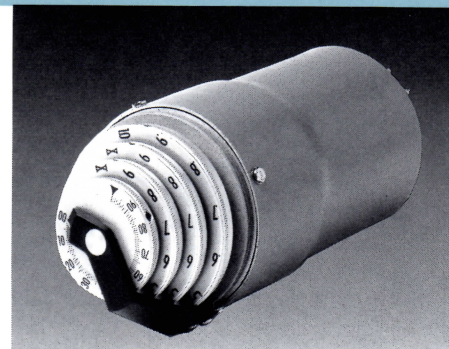
The DS1463 and DS1464 Dekastat® contain three and four decades of precision resistors respectively. Total resistances of 1.2 k $\Omega$ , 12 k $\Omega$ , and 120 k $\Omega$  are available. Initial incremental accuracy is 0.02%. Panel mounting only. Ruggedized and sealed units for military applications are available on request.



**Model DT72A  
Dekatran Decade  
Transformer Standard**

- 0.5 ppm laboratory standard
- Over-windings provide additional 0.1 taps
- In-line dials and readings
- Calibration certificate supplied

The Model DT72A Dekatran Decade Transformer Standard is an AC decade voltage divider used in calibration of ratio transformers, AC voltage standards and AC measuring equipment and meters. This seven-decade laboratory standard provides basic accuracy of 0.5 ppm, with accuracy increasing to  $\pm 0.1$  ppm at lower dial settings. Resolution is 0.1 ppm of input. Highly accurate, direct reading current division can be achieved with the DT72A. All units are provided with a calibration certificate traceable to the National Institute of Standards and Technology.



**Model DT1145  
Dekatran Decade  
Ratio Transformer**

- Coaxial dial, rapid setting voltage divider
- Ideal as working standards in test setups and cal labs
- Exceptionally low output impedance
- $\pm 10$  ppm linearity
- 0.001% resolution per dial division
- Bench or panel mounting

Model DT1145 Dekatran Decade Ratio Transformer is designed for a variety of audio frequency applications, including voltage and current division, turns-ratio measurement, divider calibration and impedance comparison. It features high input impedance, low output impedance and low phase shift, making it ideal for use as a working standard in test setups and calibration laboratories.

The DT1145 is a panel-mounted, coaxial dial, rapid setting voltage divider with three decades plus a 100 division interpolating potentiometer. Linearity is  $\pm 10$  ppm; resolution is 0.001% per dial division.



## Impedance Measurement

When it comes to test and measurement, the most important thing ESI can offer you is quality. Quality means confidence: confidence that you have the most reliable measurement data; that you have flexibility with a variety of test fixtures and accessories for manual as well as automated testing; and that you can easily set up and operate your measur-

ing systems. With ESI impedance measuring equipment, you'll find instruments for most of your testing applications — from quality control of multilayer ceramic capacitors with the Model 5300 Flash Tester, to testing capacitors, resistors and inductors with the Model 2160 VideoBridge with software packages for complete component test statistics.

ESI's emphasis on quality enables you to meet demands for component reliability and improve testing throughput.

### Applications

Impedance testing of passive components in incoming inspection, production testing, component evaluation and production quality control.



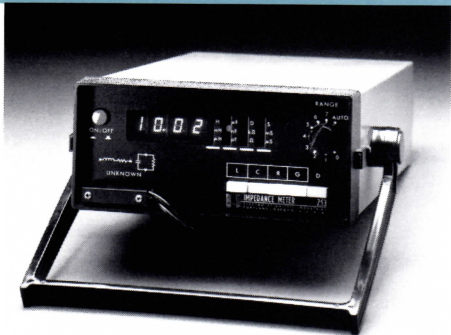
**Model 5300  
Flash Tester**

- Flash/DWV test for ceramic capacitors
- Detects marginal parts — ideal for zero defect programs
- Meets MIL-39014-C requirements
- High voltage stress up to 1250 VDC
- Test times as low as 30 ms
- Handler and communication interfaces
- Bin count and data reports

Increase your confidence in capacitor quality with the Model 5300 Flash Tester. The 5300 uses high voltage stress testing to screen marginal parts that could be susceptible to failure during actual use, including parts not detected by other flash testing methods. The Model 5300 is ideal for component evaluation, incoming inspection and military component screening applications.

Test all types of multilayer ceramic capacitors, as well as certain types of plastic film capacitors. With separate stress and check tests, the Model 5300 detects multiple failure modes: open parts, shorts, leakage current failures during charge soak and arc-overs. Employing a unique constant current charging method, the Model 5300 builds test voltages more rapidly and with greater component stress than other testing methods.

Versatile handler interface connects to a wide range of handlers.



### Models 252/253/254 Digital LRC Meters

- Automatic L, R, C, G and D measurements
- 1 kHz test frequency
- 0.25% basic accuracy
- Limits comparator option
- Small size, light weight, easy operation

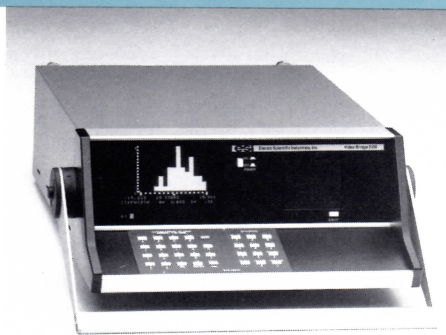
The Model 252 series of digital impedance bridges is designed to meet the needs of incoming inspection and component evaluation applications. These bridges feature four-terminal measurement and direct, digital display of the most used values of inductance, resistance, capacitance, dissipation factor and conductance.

The Model 252 line's fast and straightforward operation is ideal for a wide variety of hand testing applications. The addition of the Model 1412B Universal Limits Comparator speeds incoming inspection as well as low volume production testing.

Optional battery power makes the 252 line perfect for aircraft shipboard maintenance, utility line service, and any application where portability is a must.

The 253 features auto-ranging for faster and easier setup. Capacitance measurement capability is extended to 2000  $\mu$ F.

Model 254, the 120 Hz (100 Hz, optional) test frequency version, is excellent for line frequency component testing. You can easily and economically test power supply capacitors, motors, inductors, transformers and lighting capacitors at the proper frequency.



### Models 2150/2160 VideoBridge Impedance Test Instruments

- Frequencies from 20 Hz to 150 kHz
- 0.02% basic accuracy
- CRT displays setup and results simultaneously
- Measures 16 impedance functions
- Auto LRC selects test function automatically
- Cassette tape drive (Model 2160) for saving test setups and loading application software
- Non-volatile Memory Option

The Model 2150/2160 VideoBridge Impedance Test Instruments offer flexibility, excellent measurement capability and convenience in impedance measurement applications. Choose from over 3,000 different test frequencies from 20 Hz to 150 kHz. Microprocessor control gives you the flexibility to measure sixteen different impedance functions, including 100 kHz ESR or D. Instrument basic accuracy is 0.02%.

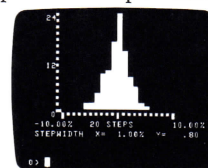
Test fixture zeroing for all ranges is completed in one simple process. The Auto LRC function identifies the component type and sets the meter to the right function. Non-volatile Memory Option protects data and setup information against power failure.

The CRT displays your test results in large crisp characters. Test conditions are displayed simultaneously above the results. The Model 2160's tape drive allows you to store up to 13 test setups per side of tape — ready to be recalled in seconds, saving setup time and reducing operator error.

RS-232-C, IEEE-488 and handler interfaces are available.

### VideoBridge Statistics Software

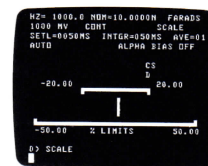
Monitoring component quality is faster and easier with VideoBridge Statistic Software. You get complete component lot and test sample statistics without a separate computer. Statistics Software generates test set up records, mean values, standard deviation, histograms and yield predictions — all the data you need for strict quality control. Results are displayed on the CRT or sent to a printer for permanent record.



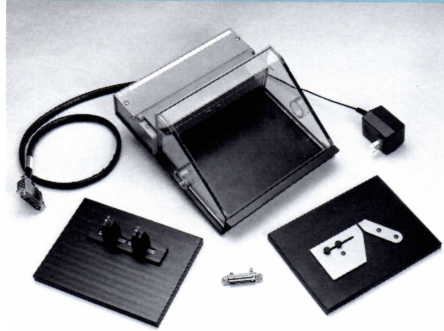
### Analog Display Software

Analog Display Software speeds passive component tuning by providing an easily interpreted scale and cursor display on the 2160 VideoBridge. This package replaces analog comparator bridges and the need for external standards.

Measurements are displayed in an analog scale. Simply make component adjustments until cursor lines up with nominal value mark. Three scale and cursor formats are available.

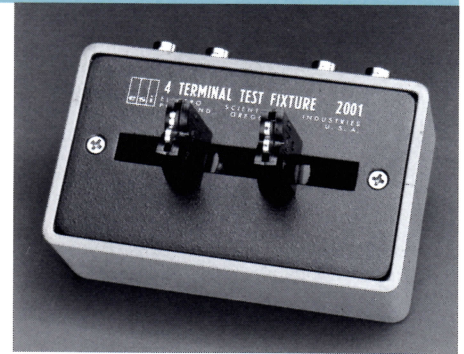


# Accessories



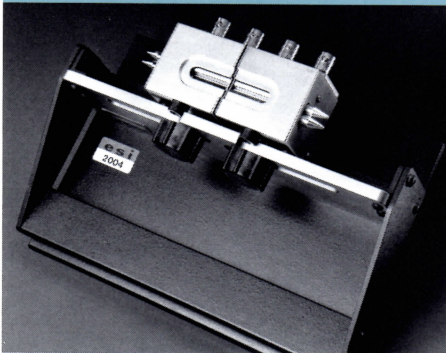
## Model 2010 Test Fixture

Designed for use with the Model 5300 Flash Tester, the 2010 High Voltage Test Fixture features a heavy duty protective cover and built-in interlock for manual flash testing of axial- and radial-leaded parts, and surface mounted parts. Pass/fail LEDs indicate test results. With the optional test connector the 2010 can be used with other high voltage test instruments at up to 1250 VDC.



## Model 2001 Sorting Fixture

Used with ESI LRC meters, the 2001 Sorting Fixture speeds handling of axial-leaded components as long as 66 mm (2.6 in.) and radial-leaded components as small as 20 mm (0.78 in.).



## Model 2003 and 2004 Sorting Fixtures

A rugged four-terminal test fixture for ESI LRC meters. The Model 2003 sorts axial-leaded parts up to 110 mm (4.3 in.) and radial-leaded parts down to 5 mm (0.2 in.) lead spacing.

The Model 2004 Zero-Insertion Force Sorting fixture is similar to the Model 2003, but adds a lever to open jaws.



## Kelvin Klips

Kelvin Klips allow you to make solid four-terminal connection to leaded components. Gold-plated, hardened beryllium-copper jaws ensure low contact resistance. Includes a 1.2 m (4 ft.) cable assembly.



## Model 2005B Chip Component Tweezers

These four-terminal tweezers make solid connections from ESI LRC meters to chip components up to 12.7 mm (0.5 in.). Includes a 1.0 m (39 in.) cable.

# Terms and Conditions

## Terms

On establishment of credit, terms are net 30 days. Minimum billing is \$50.00. This also applies to spare parts and instruction manuals. ESI reserves the right to change the price, design, specifications, or appearance of its products at any time without notice or incurring the obligation either to modify units previously manufactured or to furnish products with previously published specifications.

## Delivery

Most standard items and their spare parts are available off-the-shelf or within 60 days. When special products, or their spare parts are ordered, we will include in our quotation a statement on delivery. Improved delivery can be had by ordering standard catalog items. When ordering spare parts, please identify instrument model and serial number.

## Shipment

Please specify method of shipment. If air freight is requested, specify airlines, otherwise air freight forwarders are used. If no instructions are given, ESI will determine bestway surface route. Unless otherwise requested, shipments will be insured for minimum value with carrier.

## Damage or Breakage

If a shipment is received damaged or broken, file a report at once with the agent of the transportation company and make a claim to them. Then notify us here at the factory, and we will give you instructions for returning the equipment.

## Order Cancellation Charge

If an order for standard catalog items listed in the price list (excluding special products) which has been accepted and acknowledged by ESI is canceled by the customer, the customer is subject to a cancellation and restocking charge equal to 15% of the purchase price.

An order canceled by a customer for a special product will be subject to special engineering charges incurred before receipt of the cancellation notice and a minimum cancellation charge as follows:

Written cancellation notice received by original shipment date	Percentage of product excluding quantity discount
over 151 days	10%
121-150 days	15%
91-120 days	20%
61-90 days	25%
31-60 days	30%
0-30 days	50%

ESI may accept delivery delay requests to the original shipping schedule. However, this change request must be received in writing by ESI at least sixty (60) days before the scheduled shipment date. Delay requests shall be subject to payment of the then current delay charges. If an order is subsequently canceled, the buyer shall be subject to cancellation charges based upon the original shipment date.

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All ESI equipment is calibrated prior to shipment using ESI reference standards, and when applicable, a certificate of traceability of calibration accompanies each instrument. Calibration data is furnished (as noted in price list) with many ESI products classified as standards.

## Warranties

### Warranty Accuracy

### Initial Accuracy:

The specifications stated in product literature are intended as acceptance specifications and are guaranteed for 60 days from the date of shipment. They are typically maintained for a much longer period of time.

## Long-Term Accuracy:

These specifications are guaranteed for the standard warranty period, and are typically maintained for the life of the instrument. Long-term accuracy is implied when not otherwise stated.

## Calibration Accuracy:

Calibration accuracy is the accuracy of ESI calibration data relative to the legal units maintained by the U.S. National Institute of Standards and Technology.

## Warranty of Quality

ESI, Inc. warrants its products to be free from defects in material and workmanship. Rigorous quality control permits the following standard new equipment warranties:

One year from date of shipment on components and instruments. During the in-warranty periods, we will service or, at our option, replace at the factory, any device that fails in normal use to meet its published specifications. Batteries, tubes and relays that have given normal service are excepted. Special systems will have warranty periods as listed in their quotation.

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