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Short Form Catalog

Resistance

Capacitance

Inductance

RTD Simulators

Micro-Ohmmeters

Voltage Dividers

Variacs

Sound Meters

Stroboscopes

V/I Source

874 Connectors

R-C-L Bridges

A2LA ISO-17025 Accredited 2073.01

IN THE GENRAD TRADITION



THE WORLD STANDARD IN METROLOGY SINCE 1915

RESISTANCE DECADES

RS Series *Digital Resistance Substituters*

- Ranges from 0.01 Ω to 100 M Ω
- Accuracy from 0.05% to 1%
- Economical, indispensable tools for a variety of uses in engineering and design
- Color coded direct reading - No fumbling with multiple slide or rotary switches
- Compact, convenient, and rugged



GR 1433 Series *Precision Decade Resistors*

- Ranges from 1 m Ω to 111 M Ω
- 0.01% accuracy
- TC as low as 3 ppm/ $^{\circ}\text{C}$
- Stability as low as 5 ppm/yr
- Very good frequency characteristics



HRRS - HRRS-5KV Series *High-Resistance, Decade Resistors*

- Ranges from 10 Ω to 10 T Ω
- Accuracies from 0.01% to 1%
- TC as low as 5 ppm/ $^{\circ}\text{C}$
- Stability as low as 10 ppm/yr
- 1 kV or 5 kV rating; 10 kV and higher also available



HARS-LX Series *Laboratory-Standard Decade Resistors*

- Ranges from 1 m Ω to over 121 M Ω
- 20 ppm accuracy
- 5 ppm/yr stability
- Low TC - as low as 3ppm/ $^{\circ}\text{C}$
- High performance, solid-silver-contact switches



HPRS Series *High-Power Decade Resistors*

- Ranges from 1 m Ω to 100 M Ω
- 225 W/decade, 250 W max or higher
- Accuracies of 0.5% or 1%
- Rated at 1000 V or higher
- Special and custom configurations available



RTD-Z, RTD-X, RTD-250 Series *RTD Simulators*

- Ranges from 10 Ω to over 1 k Ω with 1 m Ω resolution
- Up to 50 ppm absolute accuracy
- No "zero-resistance" subtraction required: direct setting
- Independent of contact resistance variation
- Ideal for DIN PT-100, PT-100, ANSI PT-50 and NI-120 systems



RESISTANCE STANDARDS

SRL Series *Highest-Performance, Lowest-TC Resistance Standards*

- Ranges from 1 m Ω to 10 T Ω
- Ultra stable: <2 ppm/yr, typical
- Extremely low TC: <2 ppm total for 18 -28 $^{\circ}$ C range
- Metrology grade; no oil bath required
- Custom values and combination units available



SRX and SRC Series *High-Accuracy Resistance Standards*

- Ranges from 1 m Ω to 10 T Ω
- Very stable: as low as 10 ppm/yr
- Excellent TC: as low as 1 ppm/ $^{\circ}$ C
- Custom values and combination units available
- Excellent reference or working standards



VRS-100 Series *Set of High-Resistance Standards*

- 10 or more resistors from 1 k Ω to 10 T Ω
- Customer selected values available
- Accuracy to 20 ppm
- Excellent stability and TC
- Up to 5 kV rating



HATS-LR Series *High-Accuracy, Low-Resistance Transfer Standards*

- Steps from 1 Ω to 100 k Ω
- Transfer from 0.1 Ω to 1 M Ω
- High transfer accuracy - to 1 ppm



HATS-Y Series *High-Accuracy, High-Resistance Transfer Standards*

- Steps from 1 M Ω to 100 M Ω
- Transfers from 0.1 M Ω to 1 G Ω
- 11 precisely matched resistors
- High transfer accuracy - better than 2 ppm



KVD and GR 1455 Series *Kelvin-Varley Voltage Dividers*

- Linearity as high as 0.1 ppm
- Input impedance 1 k Ω , 10 k Ω and 100 k Ω
- Resolution to 0.1 ppm
- High frequency model, down 3 dB at 7.5 MHz
- KVD-500 economical thumbwheel switch series available



CAPACITANCE

CS Series *Digital Capacitance Substituters*

- Ranges from 1 pF to 100 μ F
- Accuracies from 0.5% to 4%
- Economical, indispensable tools for a variety of uses in engineering and design
- Color coded direct reading - No fumbling with multiple slide or rotary switches
- Compact, convenient, and rugged



GR 1413 and HACS-Z Series *Precision Decade Capacitors*

- Ranges from 1 pF to 11,000 μ F (Over 54 standard models available)
- High Accuracy - 0.05% or 0.1%
- Low-zero capacitance - <0.1 pF
- Excellent stability - 100 ppm/yr
- Excellent TC - as low as 20 ppm/°C



GR 1412 *Stable Decade Capacitor*

- Range from 50 pF - 1.11115 μ F in 1 pF steps
- Resolution: Better than 1 pF
- Accuracy of \pm (0.5% + 5 pF)
- Verification of calibration for many instruments, including LCR meters and DMM's



GR 1417 *Four Terminal High-Performance, High-Capacitance Standard*

- Decade steps from 1 μ F to 1 F (1,000,000 μ F)
- Laboratory standard / working standard
- Dissipation factor standard



GR 1422 Series *Low-Loss, Ultra High-Performance, Variable Air Capacitors*

- Ranges from 0.02 pF to 1100 pF
- Accuracies better than \pm (0.01% + 0.000 pF)
- 2-terminal and 3-terminal versions
- Settable to 40 ppm
- Stability better than 0.02% full scale per year



GR 1404 Series *Primary Capacitance Standards*

- Used by National Laboratories as a primary standard for the calibration of working standards
- The de facto capacitance standard at all levels of Metrology
- Standard for dissipation factor
- Available in 10 pF, 100 pF and 1000 pF
- Ultra stable - 20 ppm/yr; typically better
- Hermetically sealed in dry nitrogen



GR 1409 and SCA Series *Reference or Working Capacitance Standards*

- Values from 1 pF to over 2000 μ F available
- Custom values available
- 0.01%/yr stability
- TC as low as 10 ppm/°C
- Low loss - D low as .0002



INDUCTANCE

LS Series *Digital Inductance Substituters*

- Ranges from 1 μH to 100 H
- Accuracy 2%; up to 0.5% also available
- Economical, indispensable tools for a variety of uses in engineering and design
- Color coded direct reading - No fumbling with multiple slide or rotary switches
- Compact, convenient, and rugged



GR 1491 Series *Precision Decade Inductors*

- Ranges from 100 μH to 10 H
- Shielded toroidal cores for small mutual inductance and minimal effect from external fields
- Sealed against moisture for long-term stability
- Suitable for use as a standard
- High Q, 200 and greater



GR 1482 Series *Primary Inductance Standards*

- A standard for national laboratories and all levels of metrology
- Stability typically much better than 0.01%/yr
- Values from 50 μH to 10 H
- Standard for Q
- Low, known temperature coefficient
- Self shielding toroidal design



PROGRAMMABLE R-C-L

PZS Series *Programmable Resistance, Capacitance, Inductance and RTD Decade Boxes*

- Very wide range available for resistance, capacitance, and inductance
- Multiple control: IEEE-488.2, RS232 or manual thumbwheel switches
- SCPI command language
- Accuracies available from 0.01% to 4%
- Special RTD and custom configurations available
- High-power and custom combinations available



IMPEDANCE MEASUREMENT

GR 1620 and 1621 *Precision Capacitance Measuring Systems*

- Ultra-precision and highest-performance
- 10^{-7} pF to 10 μF
- 10 μS to 1000 μS
- 10 Hz to 100 kHz
- Up to 150 V input from oscillator
- 2-terminal and 3-terminal measurement



LCR-500 *Digital LCR Bridge*

- Ranges from 1 m Ω - 10 M Ω ; 0.1 pF - 10 mF; 0.1 μH to 10,000 H
- Autoranging and manual
- 120 Hz or 1 kHz operation
- True bridge complex impedance capacity, L/C/R Values as well as D/Q



MICRO-OHMMETERS

LOM-510A *High-Accuracy Micro-Ohmmeter*

- Range from 1 $\mu\Omega$ to 200 Ω , with 1 $\mu\Omega$ resolution
- 0.02% basic accuracy
- Digital output
- Switched dc; constant dc; and pulsed mode for different applications
- Microprobes for chips and traces
- Automobile battery clamps for large objects



LOM-DO4000/4001 *Cost-Effective Portable Digital Micro-Ohmmeter*

- Wide measurement range 10 $\mu\Omega$ - 4 k Ω , with 10 $\mu\Omega$ resolution
- True 4-wire measurement eliminates lead resistance errors
- Auto/manual range selection
- Automatic temperature compensation
- Displays resistance and temperature



LOM-DO7e *Rugged Portable Micro-Ohmmeter*

- True 4-wire measurement eliminates lead resistance errors
- 6 push-button ranges from 6 m Ω to 600 Ω .
- Resolution of 0.1 $\mu\Omega$
- Up to 10 A measuring current
- Printer output



LOM-DO5000 *High-Performance Micro-Ohmmeter*

- Wide measurement range 0.1 $\mu\Omega$ to 30,000 Ω
- 0.03% Accuracy
- Programmable measuring current: 10% to 100% 10A max
- Programmable HI/LO limits
- Automatic temperature compensation



VOLTAGE/CURRENT SOURCE

VI-700 Series *Precision Manual or Programmable Voltage & Current Source*

- Voltage output range of 100 μV to 200 V
- Current output range of 0.1 μA to 200 mA
- IEEE-488.2 Programmable or thumbwheel operation
- 3.5 digit resolution, 0.75 LSD accuracy
- May be used as a component in a closed-loop control system



OUTPUT POWER METERS

GR 1840-A *Output Power Meter*

- 20 Hz to 20 kHz
- 0.1 mW to 20 W
- 0.6 Ω to 32 k Ω input impedance
- True RMS reading



SOUND LEVEL METERS & CALIBRATORS

GR 1565-B Precision Sound Level Meter

GR 1562-A Precision Sound Level Calibrator

- The workhorses of the industry; conforming to national/international standards
- 40 to 120 dB measurement range
- Weighting A,B and C
- Lead-zirconate-titanate ceramic microphone
- Calibrator frequencies: 125, 250, 500, 1000 and 2000 Hz at 114 dB



1765 Cost-Effective Sound Level Meter

1762 Cost-Effective Sound Level Calibrator

- A and C and flat weighting,
- 30 to 130 dB range
- Accuracy 1 dB; resolution 0.1 dB, IEC651 Type 2
- Fast and slow detection characteristics
- Autoranging and settable threshold
- Calibrator 94 dB and 114 dB at 1 kHz



STROBOSCOPES

GR 1531-AB and GR 1538-B and GR 1539-A High-Performance Stroboscopes

- 110 to 150,000 fpm in 4 ranges; speeds up to 1,000,000 rpm measurable
- External trigger
- Very high beam intensity up to 15×10^6 candela
- Beam width 10° at $\frac{1}{2}$ -intensity points



GR 1542-B and GR 1546-B Digital and Cost-Effective Stroboscopes

- 100 to 25,000 fpm in 3 ranges
- Freeze repetitive motion for real-time inspection
- Machine maintenance - Printing line applications - Motor troubleshooting
- RPM readout with $>0.01\%$ accuracy



VARIACS

GR Variac Variable Autotransformers

- Virtually every GR Variac model is available



874 & 900 CONNECTORS

GR 874 and GR 900 Connectors, Adapters and Cables

- Virtually every GR 874 and many GR 900 connectors, adapters and cables are available.



CALIBRATION & REPAIR

As an A2LA ISO-17025 accredited laboratory, IET Labs has demonstrated its ability to perform specific tests, types of tests, and calibrations in accordance with our "Scope of Accreditation for Calibration Services". We are compliant with the calibration requirements for ISO 9001, ISO 17025, ANSI Z540-1-1994, and MIL-STD-45662A.

Even though IET Labs specializes in calibration and repair of IET/GenRad instruments and standards, we can service many instruments regardless of manufacturer.

Please allow us to quote you on the calibration or repair of your:

- | | | | |
|----------------------------|------------------------|------------------------|-------------------------------|
| * Calipers | * Hipot Testers | * pH Meters | * Stroboscopes |
| * Capacitors | * Inductors | * Pressure Instruments | * Standards (LCR) |
| * Conductivity Meters | * LCR Bridges & Meters | * Resistivity Meter | * Static Meters |
| * Decade Boxes | * Logic Analyzers | * Resistors | * Stopwatches & Timers |
| * Digital Multimeter (DMM) | * Mechanical | * RTD Simulators | * Tachometers |
| * Flow Instruments | * Megohmmeters | * Shunts | * Temperature Meters |
| * Gaussmeters | * Multimeters | * Sound Level Meters | * Variable Auto Transformers |
| * Ground Tester | * Oscilloscopes | * Speed Instruments | * Voltage and Current Sources |

IET LABS, INC

Since 1976, IET Labs, Inc. has had a long-standing commitment to conform the instruments and standards we offer to the customer's needs rather than to have the customer settle for what is available. We devote our customer service and applications entirely to the customer's satisfaction in the quality standards, test instruments and calibration service we provide.

In the year 2000, IET Labs acquired the GenRad standards, decades, audio and strobe product lines and now continues to service and support these "In the Genrad Tradition..." The rich experience and high competence of IET Lab's engineering staff, many of whom are leading authorities in their fields, are available to our customers in the form of advice on measurement problems as well as in the superior design of our products.

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