



6011D 150/300 AMP RANGE EXTENDER



Featuring

- ▶ Modular Designed Base Unit with Expanded Capabilities to 3000 A
- ▶ Ampere-Turn Sensitivity = $2 \mu\text{AT} = 0.02 \text{ ppm}$
- ▶ Precision Shunts and DCCT Calibrations
- ▶ Stand Alone Operation or Extends the Range of the 6010.6242 Series of Resistance Bridges
- ▶ 6100 Series of High Current Linear Supplies
- ▶ Bench Top or Rack Mount
- ▶ Your Partner in ISO 17025 Accreditation Through Coaching, System Design & Implementation, Calibration Services and Ongoing Expert Support

Overview

The model 6011D is an automated precision DC Range Extender employing the Direct Current Comparator (DCC) principle developed at the National Research Council of Canada (NRCC). Measurements International Limited (MIL) has extended this technology into an extender that will operate as a stand-alone device for the measurement of DC current.

This instrument may also be used as an easy means of extending the resistor-to-resistor ratios of the model 6010 Automatic Resistance Bridge to the micro ohm region. For this application, the automated range extender acts as a precision current divider to extend the range of the model 6010 by ratios of 10:1, 100:1, and 1000:1 or 30:1, 300:1, and 3000:1. Measurement selections, results, and calibration data are transmitted over the IEEE-488 interface bus.

The model 6011D has a precision DCC (also called DC Current Transformer). This is based on the original current comparator work done by N.L. Kusters at the NRCC. Over the years, MIL has improved this comparator in many ways.

This instrument uses a two-core magnetic modulation technique in a feedback loop to generate a secondary current. This secondary current is further modified by a circuit, which monitors the primary current and the turns ratio of the comparator toroid. Together, these two circuits create an effective loop-gain in excess of 10^7 , which forces the secondary ampere-turns to be equal to the primary ampere-turns, thus, making the instrument act as a precision DC Current Transformer.

| Feature | Benefit |
|-----------------|--|
| MI Design | 20+ Years of proven reliability and accuracy |
| 6010 Compatible | Works with existing MI Resistance Bridges to extend current stimulus for Current Shunt Calibration |
| No TC | No Temperature coefficient contributor in uncertainty calculation. |
| Stand Alone Use | Can be used as a Current Divider for Precision Current Measurements |



Measurements International

Metrology is Our Science, Accuracy is Our Business™

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Specifications: Rev 3

| 6011D/150 | |
|------------------------|----------------------------------|
| Ratio | 1000:1, 100:1, 10:1 |
| Maximum Input Current | 150 A, 10 A, 1 A |
| Maximum Output Current | 150 mA |
| Linearity | < 0.02 ppm for All Ratios |
| Accuracy | < 0.4 ppm, < 0.3 ppm, < 0.2 ppm |
| Current Resolution | < 0.05 ppm of Full-scale Current |
| Output Compliance | 10 V DC |
| Operating Environment | 18 to 34°C, 10 to 80% RH |
| Warranty | 1 Year Parts & Labour |

| 6011D/300 | |
|------------------------|----------------------------------|
| Ratio | 3000:1, 300:1, 30:1 |
| Maximum Input Current | 300 A, 30 A, 3 A |
| Maximum Output Current | 100 mA |
| Linearity | < 0.02 ppm for All Ratios |
| Accuracy | < 0.4 ppm, < 0.3 ppm, < 0.2 ppm |
| Current Resolution | < 0.05 ppm of Full-scale Current |
| Output Compliance | 10 V DC |
| Operating Environment | 18 to 34°C, 10 to 80% RH |
| Warranty | 1 Years Parts & Labour |

Dimensions (L × W × H):

265 x 439 x 380 (mm) - 6011D/150

426 x 559 x 213 (mm) - 6011D/300

Weight:

20 kg

Shipping Weight:

27 kg

Mains Power:

100, 120, 220, 240 V_{AC}, 50/60 Hz

250 VA

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