



Measurements International
Metrology is Our Science, Accuracy is Our Business™

High Current Measurement Systems

Accurate. Proven. Reliable.

www.mintl.com • sales@mintl.com

Confidence in Every Measurement you Make



Measurements International's High Current DC Measurement Systems provide accurate, repeatable, and traceable measurements of resistors, shunts, and DCCTs at high current levels. Built on proven MI current comparator bridge technology, these systems deliver metrology-grade confidence for precision DC resistance measurement applications. Flexible system configurations allow users to select the current range and measurement setup best suited to their laboratory requirements.



Performance that Delivers

1. Accurate

Traceable, repeatable DC resistance measurement for resistors and shunts at the highest levels of accuracy.

Build around MI's proven current comparator bridge technology for metrology-grade confidence.

Designed to reduce uncertainty where current level, stability, and repeatability are critical.

2. Performance That Drives Results

Measure resistors and shunts under high-current operating conditions for more meaningful results.

Stable, repeatable measurements support demanding laboratory and calibration applications.

Improves confidence in product verification, calibration, and performance testing.

3. Complete Measurement Coverage

Configurable system options allow users to select the current range best suited for their environments.

Supports precision measurement of DCCTs, and both standard resistors and high-current shunts.

Combines bridge technology, current supply, and system integration into one complete solution.

4. The Results

Greater confidence in the accuracy and stability of high-current DC resistance measurements.

A flexible measurement platform that can be tailored to laboratory requirements.

Long-term value backed by MI's experience in precision electrical metrology.

Overview

MI's DC High Current Shunt Measurement Systems are engineered for laboratories that require the highest level of accuracy, stability, and confidence when measuring low-value resistance, precision current shunts, and DCCTs. Built around MI's proven **6020 Series Resistance Bridges and High Current Range Extenders**, these systems expand measurement capability to lower resistance values—down to $1\ \mu\Omega$ —at current levels up to 10,000 A, while maintaining the sound metrology principles that have made MI a trusted name in resistance measurement worldwide.

As the original manufacturer of the Automated Resistance Measurement System, MI brings decades of current comparator expertise, system design knowledge, and calibration experience to every solution. Each system is designed to deliver exceptional measurement performance, low uncertainty, and reliability for demanding laboratory, military, and industrial applications.

MI's 6020 Series Bridges and Shunt Measurement Systems are used by many of the world's leading National Measurement Institutes (NMIs), military laboratories, and high-level calibration facilities, including organizations supporting the U.S. Air Force, U.S. Army, and U.S. Navy.

More than a product supplier, MI is your long-term metrology partner. From system design and implementation to training, calibration, application support, and ongoing technical service, MI provides the expertise required to help laboratories improve capability, reduce measurement uncertainty, and maintain a competitive advantage.



Capabilities and Applications

Accurate. Proven. Reliable.

- Designed for precision DC current shunt and low-resistance measurements at high current levels, as well as DCCTs.
- Expands the MI 6020 Series Resistance Bridge measurement range down to $1\ \mu\Omega$.
- Supports high-current resistance measurements above 6020A stand alone 150 mA up to 10,000, A depending on system configuration.
- Provides low-uncertainty measurement performance for demanding accredited laboratory and military calibration applications.
- Large achievable ratio range of 1:1 to 1,000,000:1
- Configurable as a complete measurement system with bridge, high-current range extenders, software, standards, fixtures, calibration, and technical support.

Direct Current Comparator Bridges

MI's **6020A Direct Current Comparator Bridge** builds on the proven foundation of the 6010, long recognized as an industry workhorse in precision resistance measurement. Designed for labs requiring the highest levels of accuracy, stability, and confidence, the 6020A advances MI's trusted Current Comparator Bridge technology for modern primary and secondary resistance calibration.

Delivering exceptional ratio accuracy, low measurement uncertainty, and reliable, long-term performance, the 6020A provides the measurement foundation required to maintain traceability to the practical realization of the ohm with confidence. It covers a resistance range of 0.1 Ω to 13 k Ω with ratio capability up to 13:1—optimized for low-resistance measurement and shunt calibration. Used by National Measurement Institutes, military laboratories, and leading industrial calibration facilities worldwide, the

6020A continues MI's legacy of precision, reliability, and metrology excellence.

Measurements International's **6020HR and 6020HRX Direct Current Comparator Bridges** extend the proven performance of MI's 6020 Series, made for labs requiring expanded measurement capability, higher voltage operation, and exceptional resistance measurement confidence.

Designed for high-resistance and extended-range applications, the 6020HR and 6020HRX increase the measurement range up to 1 G Ω and support test voltages up to 1000 V, providing greater flexibility for precision resistance calibration across a wider range of standards. Built on MI's trusted current comparator technology, these bridges deliver the accuracy, stability, and low uncertainty required for demanding primary and secondary resistance measurement programs.

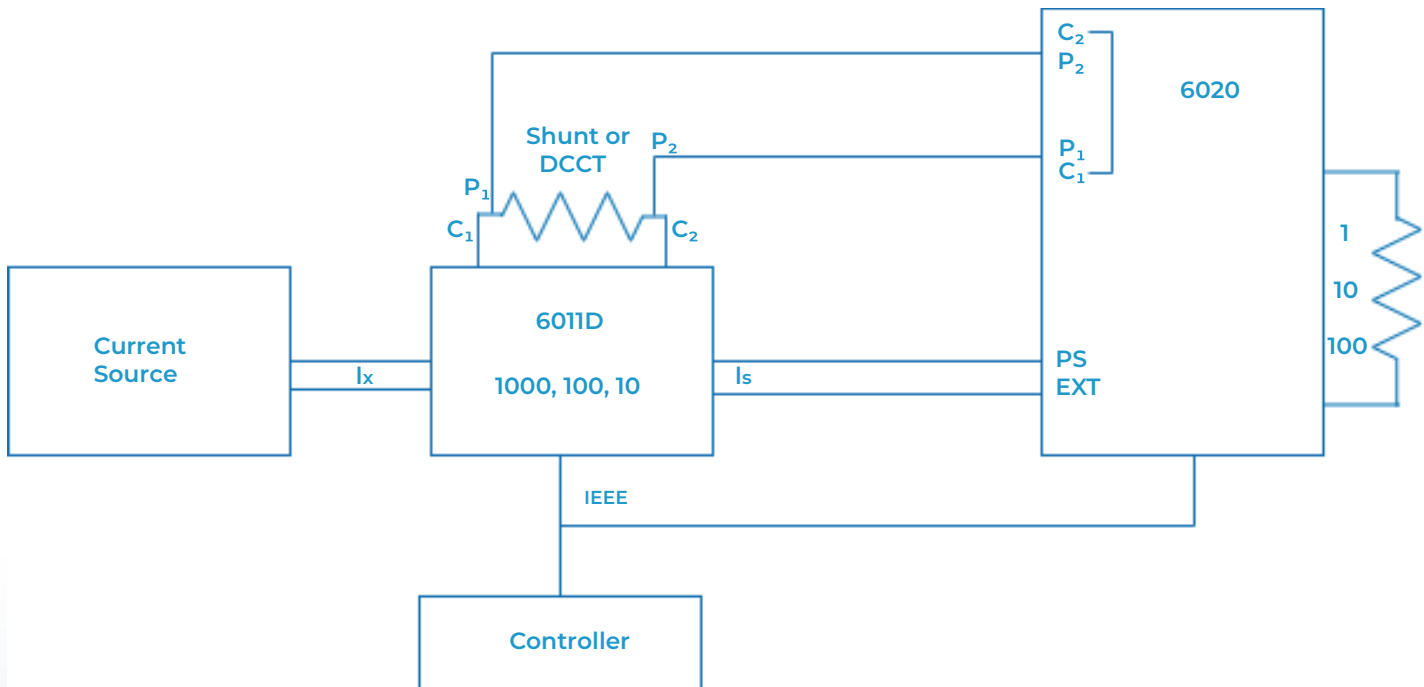
Different Needs, Different Features, Different Results

Feature	6020A	6020HR / 6020HRX
Resistance Range	<ul style="list-style-type: none"> · 0.1 Ω - 13 kΩ · Optimized for low resistance measurement and shunt calibration. 	<ul style="list-style-type: none"> · 0.1 Ω - 1 GΩ · Wide measurement range from very low to high resistance.
Ratio Capability	<ul style="list-style-type: none"> · Up to 13:1 · Standard ratio capability for high current applications 	<ul style="list-style-type: none"> · Up to 100:1 · Higher ratio capability for greater comparison flexibility
High Current Capability	<ul style="list-style-type: none"> · Optimized for high current systems. Works with MI range extenders and current sources up to 10,000 A. 	<ul style="list-style-type: none"> · Compatible with high current systems while extending measurement capability across a wider range.
Voltage Capability	<ul style="list-style-type: none"> · N/A 	<ul style="list-style-type: none"> · Up to 1000 V · Higher voltage capability for measuring higher resistance values.
Measurement Performance	<ul style="list-style-type: none"> · Fast, stable DCCT bridge measurements. Selectable averaging and equipment times. No filtering required. 	<ul style="list-style-type: none"> · Precision and accuracy across a wide resistance range with excellent stability and repeatability.
Ideal For	<ul style="list-style-type: none"> · Labs focusing on high current resistance and shunt calibration with emphasis on low-resistance performance. 	<ul style="list-style-type: none"> · Advanced calibration labs requiring a wide resistance range, higher ratios, and higher voltage capability.
Technology	<ul style="list-style-type: none"> · Built on MI's proven DCC bridge technology. · Trusted by NMIs worldwide. 	<ul style="list-style-type: none"> · The same trusted DCC technology with expanded capability for today and the future.

6020-150 & 6020-300 System Uncertainties

Range	Current (A) 150 300	6020 / 6011 Uncertainties
$10^{-3} : 1$	150 300	0.41 ppm
$10^{-2} : 1$	10 30	0.31 ppm
$10^{-1} : 1$	1 10	0.21 ppm

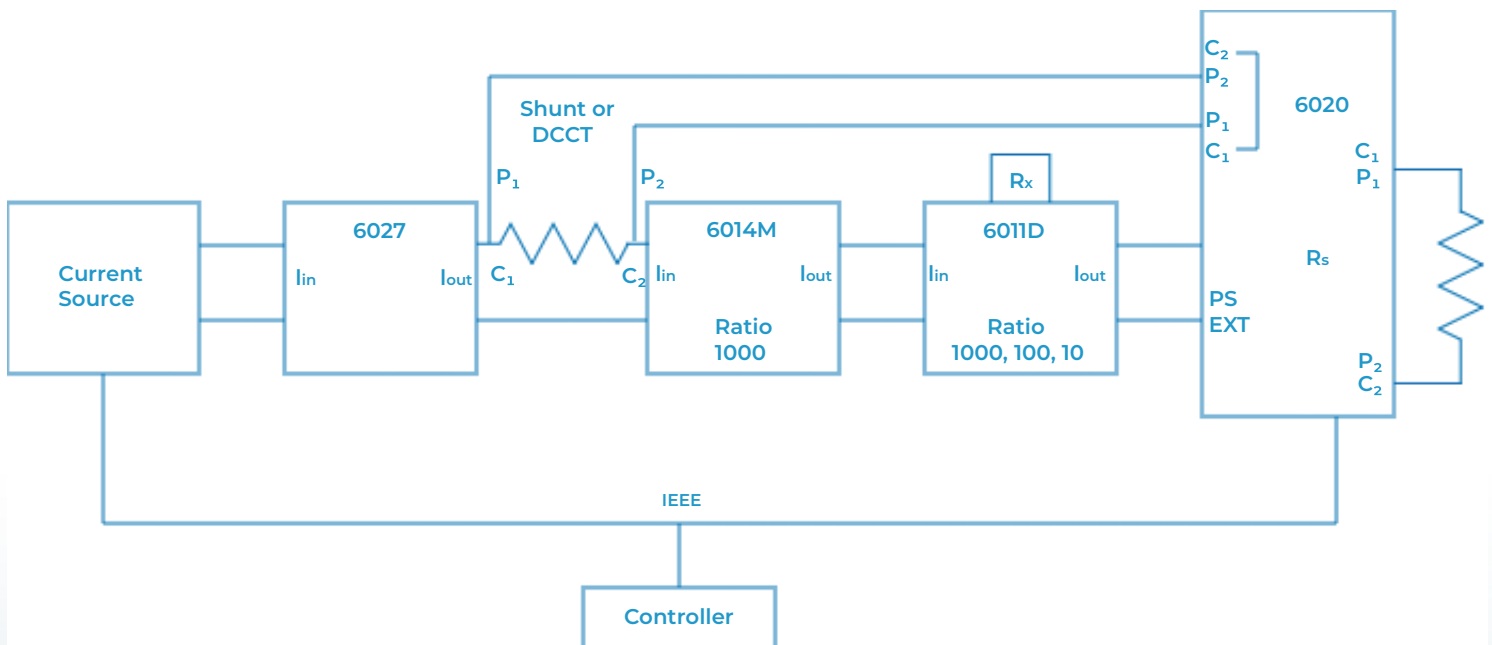
6020-150 and 300 System Configuration



6020-1000 to 10,000 Uncertainties

Range	Current (A)	6020 / 6011 / 6014 Uncertainties
$10^{-6} : 1$	10,000	5 ppm
$10^{-5} : 1$	10,000	5 ppm
$10^{-4} : 1$	3,000	2 ppm
$10^{-3} : 1$	100	0.41 ppm
$10^{-2} : 1$	10	0.31 ppm
$10^{-1} : 1$	1	0.21 ppm

6020-1000 to 10,000 Configuration

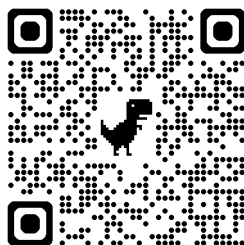


How to Order

1. Choose Your Model



6020A



6020HR



6020HRX

2. Choose Your Current (A)

150 | 300 | 1000 | 2000 | 3000 | 5000 | 10,000

3. Contact sales@mintl.com

Full Resistance Lab Accessories List

Optional Accessories

4210A	10-Channel Matrix Scanner
4220A	20-Channel Matrix Scanner
9300A	Air Bath
9400A	Oil Bath
9210A/B	Series of Oil Resistors (0.1 Ω to 1 M Ω)
9331R	Series of Precision Standard Resistors (Selectable values from 0.1 Ω to 100 M Ω)
9331	Series Standard Air Resistors (Selectable values from 10 $\mu\Omega$ to 100 M Ω)
9332	Series of Current Shunts (Selectable values from 1 A to 3000 A)
6311A	Precision Current Divider 300 A
6314A	Precision Current Divider 3000 A
1310B	Automated Resistance Standard
J005-SPEC	Measurement Cable 4-conductor

Specifications

Measurement Range		
Resistance	150 mA – 150 A 1 $\mu\Omega$ to 1 Ω	150 mA – 10000 A 0.1 $\mu\Omega$ to 1 Ω
Accuracy & Stability		
Linearity	± 0.01 ppm of full-scale	
Warm-up time (to full accuracy)	1 minute	
Temperature Coefficient	0.01 ppm/ $^{\circ}\text{C}$	
Test Current		
Resolution	± 16 -bit	
Accuracy	0 – 5 A	$\pm 1\%$
	5 – 150 A	
	150 A – 10000 A	$\pm 0.1\% + 450$ mA
Stability	0 – 150 A	$\pm 0.01\%$ of range + 1-bit for 8 hours
	150 A – 10000 A	$\pm 0.01\% + 100$ mA
Compliance Voltage		
	0 – 150 A	4.2 V
	150 A – 10000 A	10 V
Communication		
Interface	IEEE-488	
Operating Conditions		
Temperature Range	$+10$ $^{\circ}\text{C}$ to $+40$ $^{\circ}\text{C}$	
Humidity Range	Operating: 20 % to 70 % RH Storage: 15 % to 80 % RH	
Warranty		
Standard	2 years	

Corporate Headquarters

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