

## DCC BRIDGE "HIGH CURRENT" RANGE EXTENDERS

*WORLD'S FIRST MODULAR AND EXPANDABLE FAMILY OF RANGE EXTENDERS*



### 6623A SERIES FEATURES

- ◆ Now with DC currents up to 3000 Amps!
- ◆ Extended Low End Range down to  $0.1\mu\Omega$
- ◆ Modular Design, Expandable Capabilities, Investment Protection
- ◆ Range Extenders in 150A increments with built-in power s and bipolar sources.
- ◆ Linearity:  $\pm 0.01$  ppm of Full Scale
- ◆ No need for external power supplies
- ◆ Eliminates need for external reversing switches
- ◆ Eliminates need for compressed air
- ◆ Complete Measurement Systems Available

6623A-150 Rear View



**GUILDLINE INSTRUMENTS 6623A SERIES** of High Current Range Extenders introduces new patent-pending design concepts and the best in modularity of any Range Extender ever produced. The 6623A Series consists of a family of range extenders, with available current outputs from 3 Amps to 3000 Amps.

Designed to operate with our widely fielded 6622A series of **ONE-BRIDGE** systems, these new and exciting Range Extenders provide customers with unique and individualized workload solutions. Real solutions that address not only current and future workload expectations, but also deal with ever tightening budget and payback calculations used in today's buying decisions.

The 6623A series of high current range extenders increases the measurement range and test current output capability on the 6622A Bridges. The measurement specifications are now provided as a complete and inclusive specification when used with the 6622A Series Bridge.

**The 6623A Series Provides Widest Range of Expandable Outputs without the need for external switching, air sources or separate Power Supplies!**

As with our 6622A Bridge, the 6623A Series modular design allows you to buy what is required today with existing budgets, and when current requirements change, expand your extender in 150 Amp increments to meet your needs without any loss of your original investment!

The heart of the 6623A design is our patent pending 150A supply. This means the 6623A can provide the required current with automatic polarity reversal at user selected intervals, without using external switches or air supplies. This self contained range extender allows you to fully automate calibration procedures.

Guildline's newly designed and innovative internal supply used in the 6623A series eliminates the costly requirements for purchasing external power supplies, use of air compressors or external switches and even the software programming pains associated with implementing these external components. A procedure developed for our 150 Amp Model will work the same as on our 600, 1000 or even 3000 Amp models or any increment in between.

## 6623A SERIES DCC BRIDGE RANGE EXTENDERS

**Range Extenders** allow DCC Bridges to measure “lower” resistance values (shunt) at higher currents. Using proprietary technologies, Guildline engineers have again provided our customers with the most value and flexibility in expanding the **shunt measurement** capability. Unlike many existing range extender products, the 6623A Series has been designed from the ground up. This has allowed Guildline to substantially improve measurement functionality, size, power handling as well as addressing budget considerations. Any 6623A Series Range Extender can be used with any of our 6622A Series **ONE-BRIDGE** solutions. The 6622A Bridge automatically configures the model 6623A you have connected, knows what current ranges are available, and warns you when currents beyond the limits of the attached range extender are requested. How's that for smart integration!



### 6623A-3 Amp Model

The 6623A Series starts with our 6623A-3 Amp Model. At only 2U in height and rack size, this unit is perfect for those applications where very high currents are not required, but higher currents than the typical 150 mA provided by DCC Bridges are needed. This allows precision calibration down to the 1 mOhm range at currents up to 3 Amps. This is perfect when looking at calibration of milli-ohm standards, decade boxes with 1m, 10m and 100m Ohm dials. The 3 Amp model can also be used to calibrate resistances up to 1 Ohm. If your application falls within this area, then the 6623A-3 is the proper model for your application. The 6623A-3 is also used for division of higher currents when working with 6623A models above 600 Amps.

The 6623A-3 Amp is available in bench or rack configurations and power requirements are from 120V to 240VAC, 50/60 Hz.

#### 6623A-3 Amp Range Extender Measurement Specifications

6623A (Rx/Rs) Ratio <sup>2</sup> -Uncertainties	10 <sup>-3</sup> :1	10 <sup>-2</sup> :1	10 <sup>-1</sup> :1
Base Model & XR Models	± 0.8 ppm	± 0.7 ppm	± 0.7 ppm
6622A-XP/XPR/HV Models	± 0.7 ppm	± 0.6 ppm	± 0.6 ppm

### 6623A-150 Amp and 6623A-300 Amp Standard Models

Need to go higher in currents? Consider the 6623A-150 or 6623A-300 Amp models. These models are very compact requiring only 4U in height. That's only 7 inches high for up to 300 Amps of current output! In fact, when used with any of the 6622A Series bridges, the combined height is still only 14 inches. In this space, you can have a measurement capability from 1 uOhm all the way up to 1 GOhm. These models are available in Bench and Rack configurations.

Better yet, the 150A and 300A have the 3A Range Extender built in! This means that the 6623A-3 is not required for these models and all this is 4U of height. Like the 6623A-3A, the 150 Amp and 300 Amp models can be used with standard dedicated, 120 VAC power. This means you do not need special power, or compressed air to operate external mechanical switches, brought in to operate these models. There is also no requirement for special heat exhausts. These features allow for complete flexibility when designing room layouts. These models allow for operator terminals in either the front or rear and with only one lead to connect to the 6622A Bridge, installation and operation is very easy. As with all 6623A models, the 150 Amp and 300 Amp models can be expanded all the way to our world leading 3000 Amp model. Complete investment protection!

#### 6623A-150 Amp Range Extender Measurement Specifications

6623A (Rx/Rs) Ratio <sup>2</sup> -Uncertainties	10 <sup>-6</sup> :1	10 <sup>-5</sup> :1	10 <sup>-4</sup> :1	10 <sup>-3</sup> :1	10 <sup>-2</sup> :1	10 <sup>-1</sup> :1
Base Model & XR Models	± 20 ppm	± 10ppm	± 3 ppm	± 0.8 ppm	± 0.7 ppm	± 0.7 ppm
6622A-XP/XPR/HV Models	± 18 ppm	± 9 ppm	± 2.5 ppm	± 0.7 ppm	± 0.6 ppm	± 0.6 ppm

#### 6623A-300 Amp Range Extender Measurement Specifications

6623A (Rx/Rs) Ratio <sup>2</sup> -Uncertainties	10 <sup>-6</sup> :1	10 <sup>-5</sup> :1	10 <sup>-4</sup> :1	10 <sup>-3</sup> :1	10 <sup>-2</sup> :1	10 <sup>-1</sup> :1
Base Model & XR Models	± 15 ppm	± 8 ppm	± 2 ppm	± 0.8 ppm	± 0.7 ppm	± 0.7 ppm
6622A-XP/XPR/HV Models	± 12 ppm	± 7 ppm	± 1.5 ppm	± 0.7 ppm	± 0.6 ppm	± 0.6 ppm

## 6623A-450 Amp and 6623A-600 Amp Standard Models

The 450 and 600 Amp models are also available in bench or rack mount configuration and like our lower current series can be expanded all the way to 3000 Amps. At only 5U in height, these compact models produce more current in the world's smallest available footprint for range extenders. In fact, these complete current extender models are about the same size as the separate power supplies required by other manufacturers. These units are available only in single phase 220V, 50 Hz or 60 Hz. They incorporate the 6623A-3 Model for the division of the high current.

### 6623A-450 and 600 Amp Range Extender Specifications

Note: Specifications are also applicable for Models 750 Amps and 900 Amps, however these models are only available in a rack mount configuration and require the 6623A-3A.

6623A (Rx/Rs) Ratio <sup>1</sup> -Uncertainties	10 <sup>-6</sup> : 1	10 <sup>-5</sup> : 1	10 <sup>-4</sup> : 1	10 <sup>-3</sup> : 1	10 <sup>-2</sup> : 1	10 <sup>-1</sup> : 1
Base Model & XR Models	± 15 ppm	± 8 ppm	± 2 ppm	± 0.8 ppm	± 0.7 ppm	± 0.7 ppm
6622A-XP/XPR/HV Models	± 12 ppm	± 7 ppm	± 1.5 ppm	± 0.7 ppm	± 0.6 ppm	± 0.6 ppm

## 6623A-1000 Amp, 6623A-2000 and 6623A-3000 Amp Standard Models

Need higher currents? Then consider the 6623A Series of 1000, 2000 and yes - even 3000 Amp Standard models. With our unique 150 Amp patent pending design, we can provide standard models in-between these values (such as 750 Amps, 900 Amps, 1500 Amps, 2150 Amps, 2300 Amps, etc), however we have selected our most popular current ranges and provide them as standard configurations. All these currents are available as standard products or through our unique upgrade paths from previous models. Because of the potentially large current outputs, there are some operational considerations when purchasing these models. However, procedures developed for any previous model will continue to work and these models only add to the current capability you need!

The Standard Models, and 150 Amp increments of these series (eg 750 Amps, 900 Amps, 1500 Amps, 2150 Amps etc), require a separate rack to mount the units. They also require the model 6623A-3A. This is due to heat dissipation and higher current handling requirements. That said, these are extremely compact models. The 1000 Amp model, with the required 6623A-3 Amp current division and toroid, is still only 12U (i.e 21") in height.

Better yet, each additional 1000 Amps (or increment of) only adds 5U (that's 8.75") to the total height. This means that a 2000 Amp Model is 17U, while our 3000 Amp model is only 22U, less than 40" of rack height space. When purchasing these models, they do require 220 VAC and all terminals are in the rear for operator safety!



### 6623A-1000 Amps to 3000 Amps Range Extender Specifications

Note: Specifications are also applicable for Increment Models from 1000 Amps to 3000 Amps

6623A (Rx/Rs) Ratio <sup>1</sup> -Uncertainties	10 <sup>-6</sup> : 1	10 <sup>-5</sup> : 1	10 <sup>-4</sup> : 1	10 <sup>-3</sup> : 1	10 <sup>-2</sup> : 1	10 <sup>-1</sup> : 1
Base Model & XR Models	± 12 ppm	± 8 ppm	± 2 ppm	± 0.8 ppm	± 0.7 ppm	± 0.7 ppm
6622A-XP/XPR/HV Models	± 10 ppm	± 7 ppm	± 1.5 ppm	± 0.7 ppm	± 0.6 ppm	± 0.6 ppm

1 - Uncertainties are Based on using an RS of 1 Ohm

2 - For Specifications for non-standard specified models (eg 900A, 1500A, 2250 A models) contact Guildline Instruments

## 6622A BRIDGEWORKS SOFTWARE

Not only does Guildline provide unique Current Range Extender and DCC Bridge hardware, but we offer complete new solutions for software as well. Two new software programs called **Bridgeworks-R** and **Bridgeworks-C** are now provided for setup, control, measurements, and reporting using both the 6622A Bridge and the 6623A range extender. This allows full automation of measurements using any model of the 6623A Series. The control is provided via the 6622A Series Bridge, which is fully programmable via IEEE 488.2 control.

## 6623A SERIES DCC BRIDGE RANGE EXTENDERS

<b>GENERAL SPECIFICATIONS</b>			
Measurement Range ( $\Omega$ )	3A to 600 A	1 $\mu\Omega$ to 1 $\Omega$	
	$\geq 900A$ to 3000 A	0.1 $\mu\Omega$ to 1 $\Omega$	
Linearity	$\pm 0.01$ ppm of full scale		
Warm-up time to full rated accuracy	45 Minutes		
Temperature Coefficient	0.02 ppm/ $^{\circ}C$		
Communication via 6622A Series Bridge	IEEE 488.2 (SCPI Based Language Instructions)		
Test Current Resolution	$\pm 17$ bits		
Test current Accuracy (via 6622A Bridge)	$\leq 3$ A	$\pm 0.6\% \pm 1$ mA	
	3 A to 15 A	$\pm 1.0\% \pm 100$ mA	
	$> 15A$	$\pm 1.5\% \pm 100$ mA	
Test current Stability	3A Stability (10 Min)	$\pm 0.01\% \pm 0.2$ mA	
	$>3$ A Stability (10 Min)	$\pm 0.05\% \pm 10$ mA	
Compliance Voltage	0.1 to 3 A	$\pm 8$ Volts (limited to 20W)	
	3 A to 15A	$\pm 5$ Volts (limited to 130W)	
	$>15A$	$\pm 4$ Volts (limited to 130W per 150A increments)	
Operating Temperature to Full Specifications	23 $^{\circ}C \pm 4^{\circ}C$		73 $^{\circ}F \pm 7^{\circ}F$
Maximum Operating Range (<50% RH)	+10 $^{\circ}C$ to +40 $^{\circ}C$		+50 $^{\circ}F$ to +104 $^{\circ}F$
Temperature Storage Range	-20 $^{\circ}C$ to +60 $^{\circ}C$		-4 $^{\circ}F$ to +140 $^{\circ}F$
Operating Humidity	20% to 70% RH	Storage Humidity	15% to 80% RH

### WARRANTY

Over 50 Years of Guildline innovation in engineering and design has resulted in very reliable products. This is reflected in Guildline's industry leading **2-Year Warranty** for all 6623A Range Extender Series and covers both parts and labor.

### SERVICE AND SUPPORT

Guildline is pleased to announce that we are **ISO 17025 Accredited**. We have the widest range of resistance accredited with a range of **1  $\mu\Omega$  all the way to 10 P $\Omega$** . Whether you own a Guildline product and have other manufacturer's standards, **call today** and see what we can do for you.

<b>ORDERING INFORMATION</b>	
<b>Model</b>	<b>3 Amp to 600 Amp Available in Bench Configuration.</b>
<b>6623A-3</b>	External 3A Range Extender for DCC Resistance Bridge
<b>6623A-150</b>	External 150A Range Extender for DCC Resistance Bridge
<b>6623A-300</b>	External 300A Range Extender for DCC Resistance Bridge
<b>6623A-450</b>	External 450A Range Extender for DCC Resistance Bridge
<b>6623A-600</b>	External 600A Range Extender for DCC Resistance Bridge
<b>6623A-1000</b>	External 1000A Range Extender for DCC Resistance Bridge
<b>6623A-2000</b>	External 2000A Range Extender for DCC Resistance Bridge
<b>6623A-3000</b>	External 3000A Range Extender for DCC Resistance Bridge
6623A-XXX	Other Value - Specify Value in 150A Increments
SM6623A	Service Manual (Extra Charge)
Many other types of test and communication leads and accessories are available	

**GUILDLINE IS DISTRIBUTED BY:**

#### **Guildline Instruments Limited**

21 Gilroy Street, PO Box 99  
Smiths Falls, Ontario  
Canada, K7A 4S9

Phone: (613) 283-3000 Fax: (613) 283-6082

Web: [www.guildline.com](http://www.guildline.com)

Email: [sales@guildline.com](mailto:sales@guildline.com)