6623A SERIES

DCC BRIDGE "HIGH CURRENT" RANGE EXTENDERS

World's First **Modular and Expandable** *Family of Bridge Current Range Extenders*

6623A-600 Ampere Complete Range Extender
One of over 64 available Current Outputs!

FEATURES

- Unique Guildline PATENTED Design
- Dual Design – Extender and Precision DC Source
- Includes Built-in Precision Current Source with Electronic Polarity Switching
- Linearity: ± 0.01 ppm of Full Scale
- Output Current Stability Typically < 10 ppm for 1000 A and Higher - Best in the World!
- Advanced Modular Design, Over 64 Expandable Outputs in 150 A Increments to 10,000 A, Investment Protection
- Measures Resistances Down to 0.1 μΩ
- Automatic Control from 6622A Series Bridge
- Automatic Load Balancing
- NO External Power Supplies Required
- NO Need for any Mechanical Reversing Switches and Compressed Gas
- Unique USB Programmable Controller (model 66259) Allows 6623A to be Used as Stand-Alone Precision DC Current Source
- Safety (Fault) Protections in Place
- Complete Shunt Measurement Systems Available

Guildline's 6623A Series of High Current Range Extenders / Sources is based on patented technology and provides the best in performance and modularity. The 6623A Series consists of a family of range extenders, with available current outputs from 3 A to 10,000 A.

THE 6623A SERIES PROVIDES THE WIDEST RANGE OF OUTPUT CURRENTS & ELIMINATES THE REQUIREMENTS FOR MECHANICAL SWITCHING, COMPRESSED GAS OR SEPARATE POWER SUPPLIES!

Designed to operate with our widely fielded 6622A Series of ***One-Bridge*** Systems, these proven Range Extenders provide customers with unique and individualized workload solutions. Real solutions that address not only existing and future workload requirements, but also deal with ever tightening budget constraints.

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

As with our 6622A Resistance Bridges, 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 A increments to meet your future needs without any loss of your original investment!

Guildline's innovative internal precision current source used in the 6623A Series eliminates the costly requirements for purchasing external power supplies, mechanical switches, use of compressed Argon gas, and even the software programming issues associated with implementing these external components. A procedure developed for a 6623A-150 A Model will work the same as on our 300 A, 1000 A or even 10,000 A models or any increment in between.

Range Extenders allow DCC Bridges to measure lower resistance values or shunts at higher currents. Using patented technologies, Guildline provides our customers with the most value and flexibility in expanding their **low resistance and shunt measurement** capability. Unlike competitive products designed more than 25 years ago, the 6623A Series has the functionality and ease of use expected from a modern instrument. Guildline has dramatically **improved measurement functionality**, size, power handling as well as addressing budget considerations. For example, the 6625A Measurement system shown on the left is capable of automated measurements from **1 µΩ at 300 A** all the way to **1 GΩ** at **1000 V**; all in a height *less than 35"* (<1 meter) and completely operational on a single standard **120 VAC, 15 A circuit!**

COMPLETE 6625A MEASUREMENT SYSTEM
1µΩ TO 1GΩ AT 300 AMPERES SHOWN

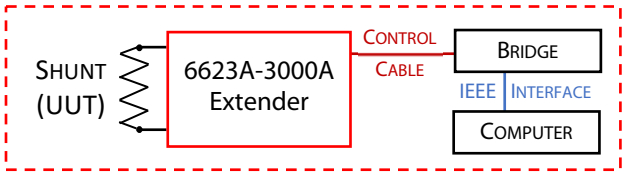
A 6623A Series Range Extender typically can be used with any of our 6622A Series ***One-Bridge*** solutions, however they should be calibrated together to ensure best performance. The 6622A Bridge automatically configures the model 6623A you have connected, knows what current ranges are available, and warns you when currents beyond the limits of the attached range extender are requested. How's that for smart integration!

All 6623A Models are completely upgradeable with no loss of your initial investment. For example, if you started with the 300 A unit shown above, and now require 3000 A, don't worry! Simply send back your 300 A unit, pay the difference from what you spent on the 300 A unit with respect to the new unit you want, and Guildline will send back a new 3000 A unit. Plug it into your Bridge and you are ready to go! No need to rewrite already developed procedures and no need to provide additional training. The 3000 A unit operates exactly the same as the 300 A unit.

NEW PATENTED DESIGN AND TECHNOLOGY

Older Guildline range extenders, copied and sold today by competitors, had three components: range extender(s), external power supply(s) from a third party, and a mechanical polarity reversing switch operated by compressed argon gas. Depending on high current requirements you could have several extenders, several power supplies, and always required mechanical switching. Also note that the third party power supplies were not precision current sources and use mechanical switches to provide proper load balancing (i.e. do not automatically adjust for load). Custom Software were also required to control the various standards from different vendors.

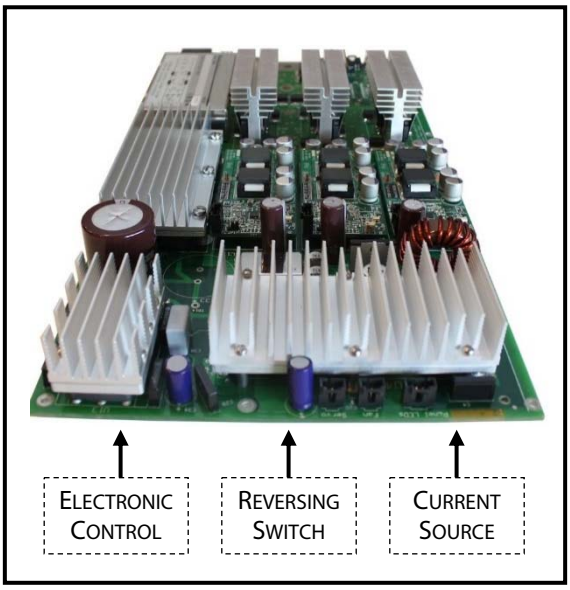
The 6623A Series was designed to replace the 25 year old technology that Guildline used in the past, and that is still used by competitors. The 6623A unique design **includes the extender, electronic reversing switch and precision current source (i.e. not just a power supply) in a single unit**, and controllable from a connected Bridge to provide full automation. The best part is that **all operations are the same** whether it is 3 A, 150 A or up to 10,000 A or any of **our over (64) sixty-four available 6623A Models**. Also important is that the 6623A Series does not use mechanical swiches which at some point in time will fail!



The modern, patented design of the 6623A provides improved performance, materially better reliability, has far fewer components, and is very compact. For example, a 6623A 3000 A range extender is only an **amazing 35 inches or 89 cm high**. By comparison the old technology used by the competition requires two (2x) 5-foot tall (152 cm) racks with multiple standards from multiple vendors. Also, for Guildline's 6623As – **NO Compressed Argon Gas**, **NO 208 V_{ac} 3-Phase** required for external power supplies, **NO manual adjustments** for load, **NO** multiple extenders requiring wiring setup changes, and **NO** external computer and complex procedures to **learn, program and support**.

6623A HAS ALL THE STANDARDS ON A SINGLE BOARD!

"OLD DESIGNS REQUIRE SEPARATE STANDARDS"



The heart of Guildline's 6623A design is our patented 150 ampere precision current source operating on a single board that Guildline spent over 1 million dollars ($1,000,000) to develop. This board is an electronically programmed single precision current source that provides both positive and negative test currents of equal magnitude via electronic polarity switching! This board incorporates automatic load balancing and smart electronics. Guildline's innovative internal current source used in the 6623A Series eliminates the costly requirements for purchasing external power supplies, use of external mechanical switches and compressed gas; and even the software programming difficulties associated with implementing these external components. This means a Guildline Bridge controls the 6623A to provide the required output current with automatic electronic polarity reversal, thus takes automation and support to a whole new level.

Each board has ***SMART TECHNOLOGY*** incorporated into the design that allows command and control in terms of operation, switching and board protection. This allows a connected Guildline DCC Bridge, or stand-alone control unit, to operate the current source without requiring a separate computer and custom programming.

In addition, Guildline's ***SMART TECHNOLOGY*** provides for more robust operation. For example, if a single board were to fail, **your System is not down**. You simply operate at a reduced current. If you had a 1000 A unit which has 7 boards, and a board fails, your system would continue to operate at 900 A. Send the board back for repair and when it is returned, simply insert it back in. The status of all boards is monitored and displayed visually via a LED bank

A Guildline 6623A-300A Range Extender, with more than 100 Systems already fielded, is a single unit that is 4-U high (i.e. about 18 cm or 7 inches) which contains internally two 150A precision current source PCBs, a single 300 A range extender, and ***SMART TECHNOLOGY***. The 6623A-300A comes with a control cable that connects directly to a Guildline DCC Bridge. Output current is controlled by the Bridge. NO separate custom program is required or separate PC to control a bridge, NO third-party power supplies and NO separate mechanical switch. In contrast competitive offerings using old technology require at least 5 different pieces of equipment and a 152 cm (i.e. 5 foot) equipment rack.

Guildline's design philosophy is to avoid problems and this is reflected in the 6623A design. The patented modular current source provides a single DC current source (i.e. NOT a bi-polar supply) with electronic polarity switching. **This avoids the requirements to match bi-polar power supplies, avoids the very real problem of needing compressed argon gas, and avoids the most common failure point with Range Extender or Shunt Measurement Systems which is the mechanical switch!**

Complete Modularity – The 6623A High Current Series starts with a 150 A Range Extender / Precision Current Source with one Guildline designed and manufactured 6623A 150 A board. This is a completely self contained extender requiring no reversing switch and no external third-party power supply. Now need to go to 300 A? Simply send your unit back, we will add a second 150 A board, put it in a case and return. **You simply only pay the difference from what you paid for your 150 Ampere Range Extender, what a new 300 Ampere Range Extender costs, and a calibration. That's it.** When you get it back, your procedures will work, operation is the same, no new standards to learn – **This is as easy as it gets!**

How about going up to 450 A or even 600 A? Same Process – From a 300 A unit we simply add 1 or 2 boards (i.e. 600 A will run off 120 V or 240 V) – and procedures still work, **operation is same. Easy to upgrade**, and you maintain your original investment from the 150 A Extender. The Guildline 6623A Series **offers over 64 configurations** using multiple 150 A precision current source PCBs with electronic switching. And the Guildline 6623A Series can be expanded to 10,000 A – **ALL modular and operating the same way** and programmed the same way.

In addition Guildline's 6623A Models can operate as independent low uncertainty DC Current Sources, controlled via a separate 66259 Stand-Alone Controller. When you use the 66259 Programmable Controller, you do not need a Resistance Bridge. Simply connect the 66259 to any 6623A Precision Current Source / Range Extender. You now have a USB Programmable Precision Current Source with full control of all measurement parameters via the 66259. Guildline's precision current source automatically adjusts for load and has been NMI verified to operate at 5 ppm stability with 1000 A of output current. This is two orders of magnitude better performance than the third-party power supplies used by competitors.

6623A Models Design and Features!

6623A-3 and 6623A-10 Ampere Models

The 6623A Series starts with the 6623A-3 and 6623A-10 Models in rack or bench mount configurations. At only 3U in height, these units are perfect for those applications where currents up to 10 A are required. These currents allow precision calibration down to the 1 mΩ range. This is perfect when looking at calibration of milli-ohm standards; and decade boxes with 1 mΩ, 10 mΩ and 100 mΩ dials. These models can also calibrate shunts up to 10 A. The 6623A-3 provides division of higher currents when working with 6623A models from 1000 A to 3000 A. The 6623A-10 is also used for division of higher currents when working with 6623A models 4000 A up to 10,000 A. All models ≤10 A use patent protected 5 A DC current source PCBs.

6623A-150 and 6623A-300 Ampere Standard Models

Need to go higher in currents? Consider the 6623A-150 or 6623A-300 ampere models. These models are very compact requiring only 3U in height for the 150 A and 4U for the 300 A. That is only 7 inches high or 18 cm for up to 300 A of current output including electronic polarity switching and built-in precision current sources! When used with any of the 6622A Series bridges, the combined height is still only 8U or 9U (about 15 inches or 1/3 of a meter). In this space, you can have a measurement capability from 300 A at 1 μΩ all the way up to 1 kVdc at 1 GΩ. These models are available in Bench and Rack configurations. Power requirements are only 120VAC, 50/60 Hz. Competitors are still using old technology that requires an external voltage source, two external current sources, two range extenders, and mechanical switching to provide the same functionality and 300 A range.

Like the 6623A 3 A and 10 A models, the 150 A and 300 A models can be used with standard dedicated, 120 VAC power. This means you do not need special power to operate these models. There is also no requirement for special heat exhausts. These features allow for complete flexibility when designing room layouts. The 6623A 150 A and 300 A models can be expanded all the way to our world class leading 10,000 A model. Complete investment protection!

6623A-450 and 6623A-600 Ampere Standard Models

The 450 and 600 ampere models are also available in bench or rack mount configuration and like our lower current series can be expanded all the way to 10,000 A. At only 5U (8.75" or 22.2 cm) in height, these compact models produce more current in the world's smallest available footprint for range extenders than any other product sold today. Models up to 450 A can run on 120 VAC (50/60 Hz) or single phase 208 V, 50 Hz or 60 Hz. Like the 150 A and 300 A models, these products do not require multiple external cascaded range extenders, do not require multiple external current sources, and do not require external mechanical switches. They are self contained with no additional standards required. This one unit shown is ALL you need for current measurements to 600 amperes!

Going Higher In Current Models – A True Modular Design!

As stated, the heart of the 6623A Range Extender is our ***Smart Technology*** - Patented Board. This advanced board's modularity and integration is best shown using a 6623A-1000A picture and internal diagram. This 1000 A Precision Current Source contains up to a maximum of seven (7) 150 A PCBs. This means EACH 1000 A Unit can provide current outputs of up to 1050 amperes in a 5U high chassis (i.e. 22.23 cm or 8.75 inches).

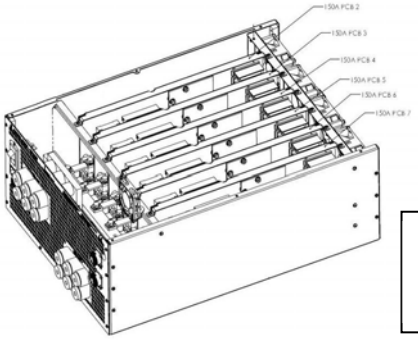


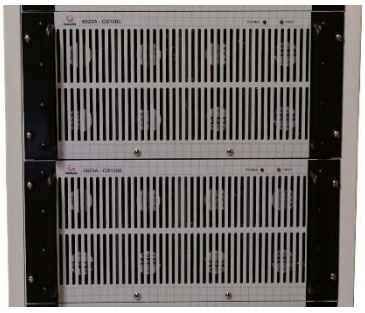
Diagram showing placement of Smart Boards in 1000 A Current Source and delivered Product

6623A-3000

If a customer requires 1500 A, a fully populated 1000 A Current Source, as previously shown, will be provided along with a second 1000 A chassis populated with only three 150 A PCBs to provide currents up to 1500 A. If 2000 A are required in the future, simply send back the partially populated Current Source (leaving one and the ability to continue to run at 1000 A with your System) and Guildline will add 3 more boards to expand the current capability to 2000 A. Since we are not changing any range extenders, any power supplies, any polarity reversal switches; your system will run just as it did before with the same procedures, same software, same operation, but at higher currents. If you require 3000 A in the future, we will simply send an additional 1000 A current source and connecting buss bars for mounting in the System rack. With this design you are never down and are assured of true upgradeability.

Guildline's 150 A PCB's "smart" technology provides command control in terms of operation, switching and even board protection. If a board was to fail, your system is not down. You simply operate at a reduced current. If you had a 1000 A unit and a board fails, your system would continue to operate at 900 A. Send the board back for repair and when it is returned, simply insert it back in. The status of all boards is monitored and displayed visually via a LED bank.

With a 6623A Range Extender, the operation and ease of connections is amazing. For high currents the 6623A uses 500 Ampere cables designed and manufactured by Guildline. With the unique "circular" connection on the buss bars and compression welded cable ends, each 500 Ampere cable will provide the exact same contact resistance, regardless of how the cable is connected. This setup avoids operator variability and greatly simplifies operation.



6623A-2000 A Front and Rear (44 cm or 17.5 inches tall)

In contrast, the competition requires multiple Extenders, multiple Power Supplies, and mechanical Reversing Switches for currents up to 400 A. For currents > 400 Amperes pressurized Argon gas is required to drive large mechanical switches, specialized power circuits (i.e. minimal 3- Phase 208 V) must be installed, and outside air venting is required. When using competitor's equipment, customers must also buy custom buss bar adapters for each different shunt they want to calibrate.

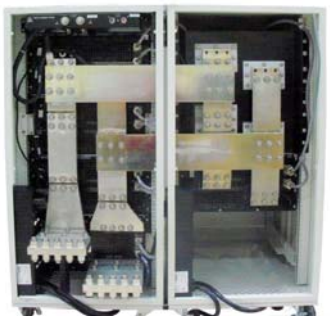
6623A-1000, 6623A-2000 and 6623A-3000 Ampere Standard Models

6623A-1000

Need higher currents? The 6623A Series comes with standard models for 1000, 2000 and 3000 Amperes. With our unique 150 A patented design, we can provide standard models in-between these values (such as 750 A, 900 A, 1500 A, 2150 A, 2300 A, 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 path for smaller current models. Procedures developed for any 6623A model will work with all 6623A models. The 6623A Series is also very compact. The 1000 A model is only 13U (i.e. 23 inches or 58 cm) in height. Better yet, each additional 1000 A (or increment of) only adds 5U (i.e. 8.75" or 22.2 cm) to the total height. This means that a 2000 A Model is 18U, while our 3000 A model is only 23U (i.e. about 40 inches or 1 meter). Also note that all of these models only require a single phase circuit.

6623A-4000, 6623A-5000 and 6623A-6000 Ampere Standard Models

When you move to the 4000 A to 6000 A Models, only a second rack is required. The Range Extender is still controlled via the Bridge or optional 66259 stand-alone controller. The additional 1000 A Precision Current Sources are simply mounted in a second cabinet and the buss bar system allows easy access for connecting current cables up to the unit.

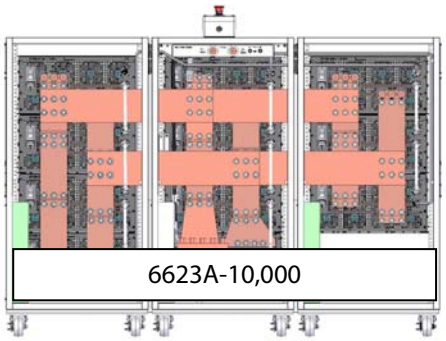


6623A-4000

A customer can output current from 300 A to 6000 A **without ever having to change a cable.** All switching and programming is accomplished from the Bridge and it is as simple as entering the desired current output. All 6623A Models above 600 A also come with an emergency output current cut-off switch for user safety.

6623A-7000, 6623A-8000, 6623A-9000 & 6623A-10000 Ampere Standard Models

All from a single patented 150 A Precision Current Source, Guildline can now deliver standard Range Extender Systems with output currents up to 10,000 A. No water cooling, no compressed Argon gas, no mechanical switches - nothing else is required.



6623A-10,000

When we go above 6000 A all we have to do is mount the additional current sources into a third cabinet. You can visually see how easy it is to go from 6 kA all the way to 10 kA in a modular and upgradeable path that no one else can provide.

Like all our 6623A Series Range Extenders, no special control or programming is required. The current outputs are simply entered as a desired current output from the Bridge or Stand-Alone Controller and the System responds.

The 6623A Series - Built on years of experience and unique engineering design – providing best uncertainties, ease of use, and built-in expansion capability for customers!

See for yourself – Guildline Instrument's 6623A modern technology versus a 25-year old approach. **Ask for a demo 300 A** Extender from both Guildline and the competition and compare them in your laboratory.

General Specifications (All Models)			
Temperature Coefficient ►	±0.01 ppm/°C		
Ratio Transformation Linearity ►	±0.01 ppm of Full Scale Ratio		
Test Current Resolution ►	± 17 bits		
Communications	Via 6622A Bridge - IEEE 488.2 (SCPI Based Instructions)		Via 66259 - USB
Operating Temperature to Full Specifications►		23 °C ± 3 °C	73 °F ± 5.4 °F
Maximum Operating Range (<50 % RH) ►		+18 °C to +28 °C	+64.4 °F to +82.4 °F
Temperature Storage Range ►		-20 °C to +60 °C	-4 °F to +140 °F
Operating Humidity	20 % to 70 % RH	Storage Humidity	15 % to 80 % RH

3 Year Test Current Specifications (All Models)

6623A-3 and 6623A-10		3 A[1]	10 A (x20)[2]	10 A (x100)[2]
Test Current Specifications	Output Range	± 0.1 A to ± 3 A	± 0.1 A to ± 10 A	± 0.1 A to ± 10 A
	Accuracy	±0.1% ± 0.4 mA	±0.1% ± 0.4 mA	±0.1% ± 0.4 mA
	Stability (10 minutes)	±0.01% ± 0.1 mA	±0.01% ± 0.1 mA	±0.01% ± 0.1 mA
	Compliance	± 5 Volts	± 8 Volts	± 8 Volts

6623A-150		3 A	15 A	150 A
Test Current Specifications	Output Range	± 0.1 A to ± 3 A	± 3 A to ± 15 A	± 15 A to ± 150 A
	Accuracy	±0.1 % ± 0.4 mA	±0.3 % ± 5 mA	± 0.3 % ± 30 mA
	Stability (10 minutes)	±0.005 % ± 0.1 mA	±0.005 % ± 2 mA	±0.005 % ± 3 mA
	Compliance	± 5 Volts	± 7.5 Volts	± 1.5 Volts

6623A-300		3 A	15 A	300 A
Test Current Specifications	Output Range	± 0.1 A to ± 3 A	± 3 A to ± 15 A	± 15 A to ± 300 A
	Accuracy	±0.1 % ± 0.4 mA	±0.3 % ± 5 mA	±0.3 % ± 30 mA
	Stability (10 minutes)	±0.005 % ± 0.1 mA	±0.005 % ± 2 mA	±0.005 % ± 3 mA
	Compliance	± 5 Volts	± 7.5 Volts	± 1.5 Volts

6623A-450/600		3 A	30 A	450/600 A
Test Current Specifications	Output Range	± 0.1 A to ± 3 A	± 3 A to ± 30 A	± 30 A to ± 450/600 A
	Accuracy	±0.1 % ± 0.4 mA	±0.3 % ± 5 mA	±0.3 % ± 30 mA
	Stability (10 minutes)	±0.005 % ± 0.1 mA	±0.005 % ± 2 mA	±0.005 % ± 3 mA
	Compliance	± 5 Volts	± 7.5 Volts	± 1.5 Volts

6623A-1000/2000/3000		30 A	150 A	1 kA / 2 kA / 3 kA
Test Current Specifications (Note 1)	Output Range	± 3 A to ± 30 A	± 30 A to ± 150 A	± 150 A to ± 1k/2k/3k A
	Accuracy	±0.3 % ± 5 mA	±0.3 % ± 30 mA	±0.35 % ± 150 mA
	Stability (10 minutes)	±0.005 % ± 2 mA	±0.005 % ± 3 mA	±0.005 % ± 50 mA
	Compliance	± 7.5 Volts	± 1.5 Volts	± 1.5 Volts

3 Year Test Current Specifications - Continued (All Models)

6623A-4000/5000/6000		30 A	300 A	4 kA / 5 kA / 6 kA
Test Current Specifications (Note 2)	Output Range	± 10 A to ± 30 A	± 30 A to ± 300 A	± 300 A to ± 6000A
	Accuracy	±0.3 % ± 5 mA	±0.3 % ± 30 mA	±0.35 % ± 150 mA
	Stability (10 minutes)	±0.005 % ± 2 mA	±0.005 % ± 3 mA	±0.005 % ± 100 mA
	Compliance	± 7.5 Volts	± 1.5 Volts	± 1.5 Volts

6623A-7k/8k/9k/10k		30 A	300 A	7kA / 8kA / 9kA /10kA
Test Current Specifications (Note 2)	Output Range	± 10 A to ± 30 A	± 30 A to ± 300 A	± 300 A to ± 10000A
	Accuracy	±0.3 % ± 5 mA	±0.3 % ± 30 mA	±0.35 % ± 150 mA
	Stability (10 minutes)	±0.005 % ± 2 mA	±0.005 % ± 3mA	±0.005 % ± 100 mA
	Compliance	± 7.5 Volts	± 1.5 Volts	± 1.5 Volts

1 - For currents <3 amperes refer to 6623A-3 Specifications.
2 - For Currents <10 amperes, refer to 6623A-10 Specifications
3 – Typically output current stability is < ±0.0001 % or < 10 ppm for all models

6623A Series 36 Month Ratio Accuracy

Standard Model[1]	Transformation Ratio(s)	Ratio Accuracy	Maximum Ratio Current	Resistance Range
6623A - 3	20 : 1	±0.2 ppm	3 A	1 mΩ to 10 Ω
6623A - 10	20 : 1	±0.2 ppm	3 A	0.1 mΩ to 10 Ω
	100 : 1	±0.3 ppm	10 A	
6623A - 150	20 : 1	±0.3 ppm	3 A	1 μΩ to 10 Ω
	100 : 1	±0.4 ppm	15 A	
	1000 :1	±0.5 ppm	150 A	
6623A - 300	20 : 1	±0.3 ppm	3 A	1 μΩ to 10 Ω
	200 : 1	±0.4 ppm	15 A	
	2000 :1	±0.5 ppm	300 A	
6623A - 450 6623A - 600	20 : 1	±0.3 ppm	3 A	1 μΩ to 10 Ω
	400 : 1	±0.4 ppm	30 A	
	4000 :1	±0.5 ppm	FS	
6623A - 1000 6623A - 2000 6623A - 3000	200:1	±0.4 ppm	30 A	0.1 μΩ to 10 Ω
	2000 : 1	±0.5 ppm	150 A	
	20,000 :1	±0.6 ppm	Full Scale (FS) Current	
6623A - 4000 6623A - 5000 6623A - 6000	400:1	±0.4 ppm	30 A	0.1 μΩ to 10 Ω
	4000 : 1	±0.5 ppm	300 A	
	40,000 :1	±0.6 ppm	Full Scale (FS) Current	
6623A -7000 6623A - 8000 6623A - 9000 6623A – 10000	1000:1	±0.5 ppm	30 A	0.1 μΩ to 10 Ω
	10,000 : 1	±0.6 ppm	300 A	
	100,000 :1	±0.7 ppm	Full Scale (FS) Current	

6623A Range Extender Complete System Measurement Specifications

3 Year Specification Includes Specified Bridge(s), Patented Internal Precision Current Source, Internal Switching, System Scanner and Wiring. Coverage Factor k=2 (95%), Temperature Environment of 23°C ±3°C.

6623A-3	x20 – 3A 1 mΩ ~ 50mΩ	x20 – 3A 50mΩ ~10 Ω
6622A Base, 6622- XR	± 0.8 ppm	± 0.7 ppm
6622A-XP, XPR. & HV Models	± 0.7 ppm	± 0.6 ppm

6623A-10	x100 – 10A 0.1mΩ ~ 0.5mΩ	x100 – 10A 0.5mΩ ~ 0.01Ω	x20 – 3A 1mΩ ~ 50mΩ	x20 – 3A 50mΩ ~10 Ω
6622A Base, 6622- XR	± 3.5 ppm	± 0.9 ppm	± 0.8 ppm	± 0.7 ppm
6622A-XP, XPR. & HV Models	± 3 ppm	± 0.8 ppm	± 0.7 ppm	± 0.6 ppm

6623A-150	X1000 – 150A 1 μΩ ~ 10 μΩ	X1000 – 150A 10 μΩ ~ 0.1mΩ	X1000 – 150A 0.1mΩ ~ 0.5mΩ	x1000 – 150A 0.5mΩ ~ 0.01Ω	x100 – 15A 1mΩ ~ 50mΩ	x20 – 3A 50mΩ ~10 Ω
6622A Base, 6622- XR	± 20 ppm	± 10 ppm	± 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	x2000 – 300A 1 μΩ ~ 10 μΩ	x2000 – 300A 10 μΩ ~ 0.1mΩ	x2000 – 300A 0.1mΩ ~ 0.5mΩ	x2000 – 300A 0.5mΩ ~ 0.01Ω	x200 – 15A 1mΩ ~ 50mΩ	x20 – 3A 50mΩ ~10 Ω
6622A Base, 6622- XR	± 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-450/600	x4000 – 600A 1 μΩ ~ 10 μΩ	x4000 – 600A 10 μΩ ~ 0.1mΩ	x4000 – 600A 0.1mΩ ~ 0.5mΩ	x4000 – 600A 0.5mΩ ~ 0.01Ω	x400 – 30A 1mΩ ~ 50mΩ	x20 – 3A 50mΩ ~10 Ω
6622A Base, 6622- XR	± 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-1k/2k/3k (note 1)	x20000 – FSA 0.1 μΩ ~ 1 μΩ	x20000 – FSA 1 μΩ ~ 10 μΩ	x20000 – FSA 10 μΩ ~ 0.1mΩ	x20000 – FSA 0.1mΩ ~ 0.5mΩ	x2000 – 150A 0.5mΩ ~ 0.01Ω	x200 – 15A 1mΩ ~ 0.1Ω
6622A Base, 6622- XR	± 18 ppm	± 12 ppm	± 8 ppm	± 2 ppm	± 0.8 ppm	± 0.7 ppm
6622A-XP, XPR. & HV Models	± 16 ppm	± 10 ppm	± 7 ppm	± 1.5 ppm	± 0.7 ppm	± 0.6 ppm

6623A-4k/5k/6k (note 2)	x40000 – FSA 0.1 μΩ ~ 1 μΩ	x40000 – FSA 1 μΩ ~ 10 μΩ	x40000 – FSA 10 μΩ ~ 0.1mΩ	x40000 – FSA 0.1mΩ ~ 0.5mΩ	x4000 – 300A 0.5mΩ ~ 0.01Ω	x400 – 30A 1mΩ ~ 0.1Ω
6622A Base, 6622- XR	± 16 ppm	± 10 ppm	± 6 ppm	± 1.8 ppm	± 0.8 ppm	± 0.7 ppm
6622A-XP, XPR. & HV Models	± 14 ppm	± 8 ppm	± 5 ppm	± 1.4 ppm	± 0.7 ppm	± 0.6 ppm

6623A-7k/8k/9k/10k (note2)	x100 k – FSA 0.1 μΩ ~ 1 μΩ	x100 k – FSA 1 μΩ ~ 10 μΩ	x100 k – FSA 10 μΩ ~ 0.1mΩ	x100 k – FSA 0.1mΩ ~ 0.5mΩ	x10000 – 300A 0.5mΩ ~ 0.01Ω	x1000 – 30 A 1mΩ ~ 0.1Ω*
6622A Base, 6622- XR	± 14 ppm	± 8 ppm	± 5 ppm	± 1.6 ppm	± 0.8 ppm	± 0.7 ppm
6622A-XP, XPR. & HV Models	± 12 ppm	± 6 ppm	± 4 ppm	± 1.2 ppm	± 0.7 ppm	± 0.6 ppm

Note 1: FSA is Full Scale Amperes (from1 kA to 3 kA, depending on model). For x 20 Range - Refer to 6623A-3 Amp Specifications

Note 2: FSA is Full Scale Amperes (from 4 kA to 10 kA, depending on model). For x 20 and x100 Range - Refer to 6623A-10 Amp Specifications

6623A Series Models Dimensions

Standard Models[1]	6623A Dimensions (Height x Width x Depth)			
	Rack		Bench	
6623A-3/10	5.2" x 20.7" x 20.3"	132 x 526 x 516 mm	5.7" x 17.3" x 20.3"	145 x 440 x 516 mm
6623A-150	5.2" x 20.7" x 27.1"	132 x 526 x 693 mm	5.7" x 17.5" x 27.1"	145 x 445 x 693 mm
6623A-300	7.0" x 20.7" x 27.1"	178 x 526 x 693 mm	7.5" x 17.5" x 27.1"	145 x 445 x 693 mm
6623A-450/600	8.75" x 20.7" x 29.1"	222 x 526 x 739 mm	10" x 17.5" x 29.4"	254 x 445 x 747 mm
6623A-1k/2k/3k	44.7" x 21.8" x 36.7"	1135 x 552 x 932 mm		
6623A-4k/5k/6k	44.7" x 44.1" x 36.7"	1135 x 1120 x 932 mm		
6623A-7k/8k/9k/10k	44.7" x 66.2" x 36.7"	1135 x 1682 x 932 mm		

6623A Series Models Power and Weight Requirements

Standard Models[1]	6623A Power Requirements and Weight						
	Power			Rack Model Weight		Bench Unit Weight	
	Voltage	Frequency	VA (max) **	lbs	kg	lbs	kg
6623A-3	100 VAC to 240 VAC ± 10 %	50/60 Hz ± 5 %	100	23	10.5	28	12.7
6623A-10			400	25	11.4	30	13.7
6623A-150			800	46	21	50	22.7
6623A-300			1000	62	28.2	70	31.8
6623A-450			1250	67	30.5	86	39.1
6623A-600	208 VAC to 240 VAC ± 10 %	50/60 Hz ± 5 %	1900	76	34.5	95	43.2
6623A-1000			2600	360	164		
6623A-2000			4700	490	223		
6623A-3000			6800	620	282		
6623A-4000	208 VAC to 240 VAC ± 10 %	50/60 Hz ± 5 %	9200	930	423		
6623A-5000			11400	1070	486		
6623A-6000			13600	1210	550		
6623A-7000			16100	2030	923		
6623A-8000			18400	2170	986		
6623A-9000			20700	2310	1050		
6623A-10000			23000	2450	1114		

1 - Any model in increments of 150 A from 150 A to 10,000 A is available. Please contact Guildline for specifications. As a general rule, the specifications are typically close to the next higher model (eg a 1100 A to 1850 A models would have the same specifications as the 2000 A model).

Bridgeworks Software™

Not only does Guildline provide unique Current Range Extender and DCC Bridge hardware, but we offer a complete software solution. The **Bridgeworks™** software program provides setup, control, measurements, and reporting using the 6622A Bridge and the 6623A Range Extender; or the 66259 Stand-Alone Controller and the 6623A Range Extender. This allows full automation of measurements using any model of the 6623A Series.

Complete - Right Down to the Cables and Lead Sets!

All 6623A Models come with Cables covering the current range. Incorporating a unique, high compression connection that eliminates thermals at the terminals, these cables are available in current ratings of 3 A, 30 A, 100 A, 300 A, and 500 A values. For higher currents ultra high compression is used for the connectors at the end of the cables, eliminating contact resistance and making them the best high current cables that are commercially available. Standard length is 1.5 meters and Guildline can make them in any length. Guildline also provides precision low thermal leads for the voltage measurement. Note that the 6623A pricing is inclusive of all cables and lead sets. Competitors charge extra for the custom buss bars needed for their 25-year old technology.

Service and Support

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

Ordering Information	
3 A to 600 A Models Available in Bench Configuration.	
6623A-3	3 A Range Extender / Precision Current Source
6623A-10	10 A Range Extender / Precision Current Source
6623A-150	150 A Range Extender / Precision Current Source
6623A-300	300 A Range Extender / Precision Current Source
6623A-450	450 A Range Extender / Precision Current Source
6623A-600	600 A Range Extender / Precision Current Source
6623A-1000	1000 A Range Extender / Precision Current Source
6623A-2000	2000 A Range Extender / Precision Current Source
6623A-3000	3000 A Range Extender / Precision Current Source
6623A-4000	4000 A Range Extender / Precision Current Source
6623A-5000	5000 A Range Extender / Precision Current Source
6623A-6000	6000 A Range Extender / Precision Current Source
6623A-7000	7000 A Range Extender / Precision Current Source
6623A-8000	8000 A Range Extender / Precision Current Source
6623A-9000	9000 A Range Extender / Precision Current Source
6623A-10000	10000 A Range Extender / Precision Current Source
6623A-XXX	Other Value - Specify Maximum Current in 150 A Increments
66259	Programmable Extender Controller
6623A-All Models Include	**ISO/IEC 17025 Accredited Calibration Certificate** Set of Current Leads to support maximum rated current Operator Manual available from Guildline's WebSite

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Guildline Instruments Limited
21 Gilroy Street, PO Box 99
Smiths Falls, Ontario, Canada, K7A 4S9
Web: www.guild*line*.com