

Technical data

# 5560A High-Performance Multi-Product Calibrator

## 5550A Performance Multi-Product Calibrator

## 5540A Multi-Product Calibrator



**Most comprehensive workload coverage, latest technology, intuitive redesigned front panel, MET/CAL™ compatibility and much more**

### **5560A: The most comprehensive workload coverage**

The 5560A calibrates the most popular benchtop 6.5-digit multimeters with better than 4:1 test uncertainty ratio (TUR), oscilloscopes to 2 GHz, and clamp meters to 1500 A.

Technical improvements include 30 A continuous current output with no duty cycle and synthesized inductance functionality. These improvements enable you to calibrate modern and full-functional benchtop multimeters and clamp meters. Oscilloscope bandwidth to 2 GHz and edge rise time of <175 pS allows the 5560A to handle an even broader workload. A large variety of thermocouple types and a new thermocouple connector enables easier connection and broadens the temperature workload coverage. The workload is expanded even further when the 5560A is used with a 52120A amplifier and appropriate coil to increase the current output to 6000 A, for calibrating high-current devices such as Rogowski coils.

### **5560A: The next generation high-performing calibrator supporting the widest workload coverage**

The 5560A Calibrator defines a new class of high-performance multi-product calibrator, providing the broadest electrical workload coverage and highest accuracy for calibrating the most demanding modern workloads.

### **5550A: Optimized for your multimeter workload**

The 5550A Performance Multi-Product Calibrator enhances the 5522A with new calibration ranges optimized to better match your existing digital multimeter workload in a modern, ruggedized instrument with intuitive graphical interface.

### **5540A: Better performance for on-site or mobile calibration**

The 5540A Multi-Product Calibrator extends the capabilities of the 5502A with better performance suited for on-site or mobile calibration.

**5550A: Optimized for your multimeter workload**

The 5550A Performance Multi-Product Calibrator enhances the 5522A Multi-Product Calibrator with new calibration ranges optimized to better match your existing digital multimeter workload in a modern, ruggedized instrument with an intuitive graphical interface.

It calibrates the most popular benchtop digital multimeters with improved test uncertainty ratios (TURs), oscilloscopes to 1 GHz, and clamp meters to 1500 A with continuous current output.

Technical improvements include 30 A continuous current output, which reduces wait time during heavy usage. A range redesign enables you to calibrate your existing benchtop multimeters with greater confidence. A larger variety of thermocouple types and a new thermocouple connector enables easier connection and broadens the temperature workload coverage. The workload is expanded even further when the 5550A is used with a 52120A amplifier to increase the current output to 6000 A, for calibrating high-current components such as Rogowski coils.



The 5560A provides the broadest workload coverage, including most 6.5-digit multimeters.

**Match your setup to your application**

A variety of options and accessories lets you match your setup to your applications. An optional portability kit makes the 5560A, 5550A or 5540A an excellent fit for on-site or mobile calibration. The DMM AUTOCAL Adapter minimizes lead changes during digital multimeter calibration, increasing efficiency without sacrificing and compromising accuracy. The portability kit provides ruggedized handles and bumpers, including protection for the front panel with a cover that also acts as storage for cables and accessories.



The 5560A provides the broadest workload coverage, including oscilloscopes to 2 GHz.

**5540A: Better performance for on-site or mobile calibration**

The 5540A Multi-Product Calibrator extends the capabilities of the 5502A Multi-Product Calibrator with better performance suited for on-site or mobile calibration, covering many of the most demanding field instrumentation workloads. It calibrates the most popular handheld digital multimeters with increased test uncertainty ratios (TURs), oscilloscopes to 600 MHz, and clamp meters to 1500 A with continuous current output.

Technical improvements include a current range increase from 20 A to 30 A of continuous current output, which reduces wait time during heavy usage. A range redesign enables you to calibrate your existing handheld digital multimeters with greater confidence. A larger variety of thermocouple types and a new thermocouple connector enables easier connection and broadens the temperature workload coverage. The workload is expanded even further when the 5540A is used with the 52120A amplifier to increase the current output to 6000 A, for calibrating high-current components such as Rogowski coils.



The 5540A calibrator offers better performance suited for on-site or mobile calibration

Workload is expanded even further when the 5560A is used with a 52120A Transconductance Amplifier to increase the current output to 6000 A, for calibrating high-current components such as Rogowski coils.



52120A Transconductance Amplifier

## Key features and benefits

Comparing the 5560A, 5550A, and 5540A			
Feature	5560A	5550A	5540A
4:1 test TUR for most popular 6.5-digit multimeters	•		
30 A continuous current output extends AC/DC measurement ranges	•	•	•
Calibrate meters that measure AC/DC voltage, resistance and capacitance	•	•	•
Calibrate meters that measure inductance	•	•	
Ranging optimized to better match your existing digital multimeter workload	•	•	•
New optional 1-, 2-, 10-turn and redesigned 50-turn current coils expand workload coverage even further	•	•	•
17.8 centimeter (7-inch) color touch screen with new graphical user interface provides an intuitive calibration experience	•	•	•
Optional DMM AUTOCAL Adapter to calibrate digital multimeters with minimal-to-no lead changes	•	•	•
Visual Connection Management™ output terminals guide connections, preventing connection errors	•	•	•
Reverse power protection prevents costly operator errors	•	•	•
Oscilloscope calibration options expand workload coverage	Up to 2 GHz	Up to 1 GHz	Up to 600 MHz

## Calibrate a wide workload of modern test instruments



### Calibrating digital multimeters

#### 4:1 test uncertainty ratio

The 5560A calibrates a complete range of electrical workload, but it is especially ideal as a 6.5-digit multimeter calibrator, with a 4:1 test uncertainty ratio (TUR) for most popular bench-top models.

The 5550A is functionally similar to the Fluke Calibration 5522A Multi-Product Calibrator; however, this new model has been enhanced with the latest technology and usability features. It calibrates most 5.5-digit multimeters and even some 6.5-digit multimeters with a 4:1 TUR across its measurement range.

The 5540A Multi-Product Calibrator extends the workload capabilities of the 5502A Multi-Product Calibrator, improving performance suited for real-time demand on-site or mobile calibration. It calibrates most 4.5-digit multimeters with a 4:1 TUR across its measurement range.

A 4:1 TUR enables you to quickly meet or exceed manufacturers' specifications for calibrating digital multimeters without guardbanding and the need for additional equipment. This simplifies setup and reduces the number of standards required to calibrate the most demanding digital multimeters.

#### Inductance sourcing expands 5560A and 5550A workload coverage

A new inductance sourcing function expands workload coverage to more types of modern digital multimeters.

#### Digital-to-analog converter design independent of switch resistance

A new patented ultra-linear digital-to-analog design enables the 5560A, 5550A and 5540A to achieve performance specifications that were not possible in the 5522A and 5502A, allowing you to calibrate a more accurate and demanding workload.

#### Optimized ranging for complete workload coverage

"Ranging" refers to the range over which a particular specification applies.

In the 5522A and 5502A calibrators, ranging occurs in multiples of 3.3x; however, most bench top multimeters typically range at 1.2x. Since ranging was different in these older models, at some points the calibrator alone is not optimized to calibrate the digital multimeter at its ideal specification point.



The 5560A, 5550A and 5540A are now optimized to match the range switching of the most popular 6.5-digit, 5.5-digit and 4.5-digit DMMs. These ranging improvements enable you to calibrate more of your multimeter workload with a single calibrator.

**Fast settling time**

Calibrate multimeters significantly faster with improved settling time in the 5560A, 5550A and 5540A. In some cases, these new calibrators settle 50 % faster than previous models. You'll have less wait time and more time actually performing the tests.

**Re-mapped output terminals limits lead changes**

We've re-mapped the output terminals on the 5560A, 5550A and 5540A, decoupling Aux and Sense outputs, making it possible to calibrate most workloads with minimal lead changes.

The new terminal layout marks a distinct improvement over older models. The 5522A and 5502A, for example, has shared Sense and AUX terminals, as well as shared ground and guard, so you have to change leads frequently during a multimeter calibration. On the 5560A, 5550A

and 5540A, all the terminals are dedicated and the guard terminal is moved to the side, enabling you to connect the leads once and complete the meter calibration efficiently.

**High-quality lead set included; optional DMM AUTOCAL Adapter for dedicated multimeter calibration**

5560A, 5550A and 5540A ship with a Fluke Calibration lead set that gives you a high-quality connection, matched to your calibrator.

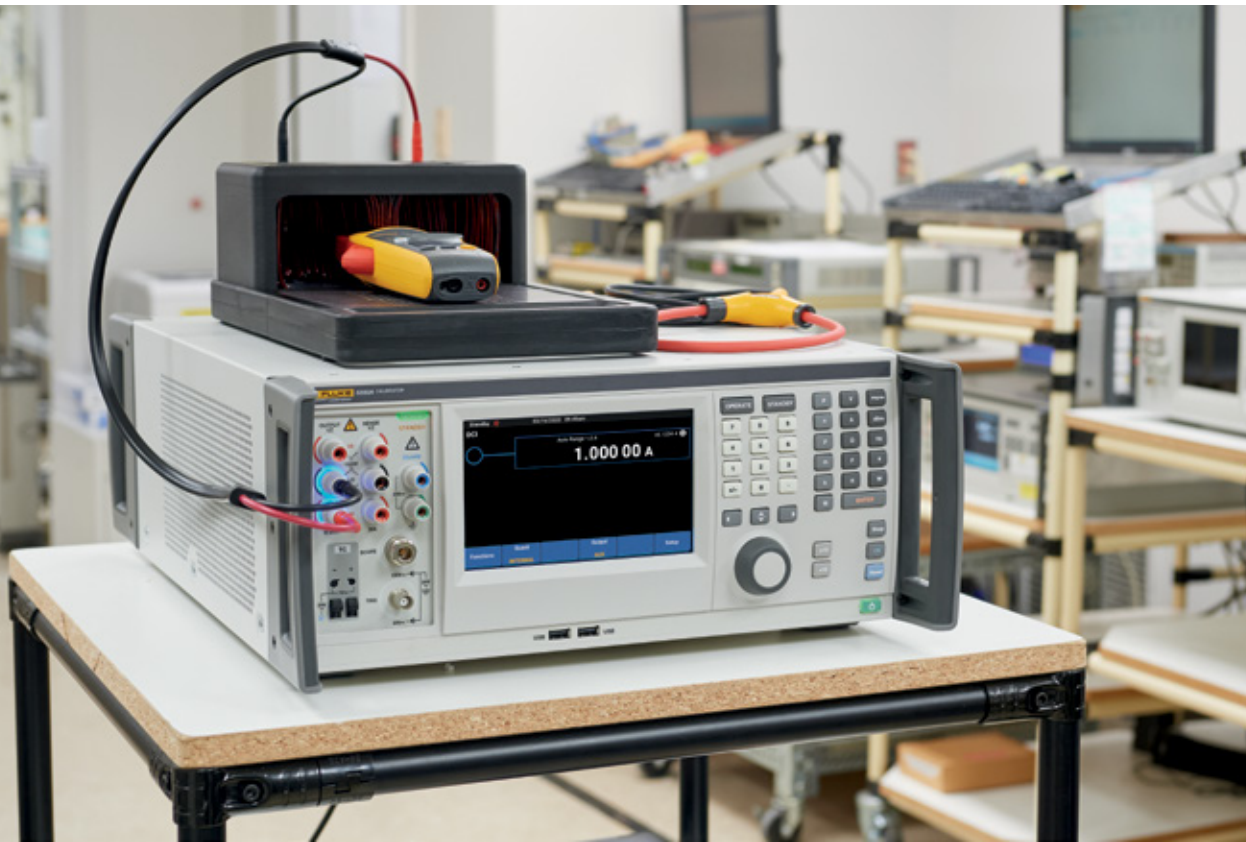
An optional DMM AUTOCAL Adapter lets you easily dedicate the calibrator to a digital multimeter workload. The adapter plugs directly into the calibrator's output terminals and gives you the same functionality as the included leads but with greater convenience and efficiency, reducing user error.

Optional DMM AUTOCAL Adapter lets you dedicate the calibrator to a digital multimeter workload.



**Digital multimeter calibration features**

Comparing the 5560A, 5550A, and 5540A			
Feature	5560A	5550A	5540A
Calibrate 6.5-digit multimeters that measure voltage, current, resistance, capacitance and inductance	•		
4:1 test uncertainty ratio for most popular 6.5-digit multimeters	•		
4:1 test uncertainty ratio for most popular 5.5-digit multimeters	•	•	
4:1 test uncertainty ratio for most popular 4.5-digit multimeters	•	•	•
Calibrate 5.5-digit multimeters that measure voltage, current, resistance, capacitance and inductance	•	•	
Calibrate with improved settling time	•	•	•
New output terminal layout optimized for digital multimeter calibration	•	•	•
Optional DMM AUTOCAL Adapter accessory for dedicated digital multimeter calibration	•	•	•



## Calibrating clamp meters and ammeters

The increased 30 A output enables you to use the 5560A, 5550A, and 5540A as a 30 A calibrator for higher current workloads, such as clamp meters up to 1500 A (with optional current coil).

Continuous output means you don't need to put the calibrator on standby for cool down periods while using the current function. That lets you increase throughput, which can be a real time-saver if you calibrate a lot of ammeters.

A new optional 1-, 2-, 10-turn current coil and a redesigned 50-turn current coil work with the 5560A, 5550A and 5540A to enable you to calibrate workload that includes clamp-type current meters and oscilloscope current probes. Each coil, like the calibrator, is designed for continuous use at 30 A with a minimum duty cycle which improves calibration throughput as much as four times.

Expand workload coverage even more. Use the 5560A, 5550A or the 5540A with the Fluke Calibration 52120A Transconductance Amplifier to increase the current output to 6000 A, ideal for calibrating high-current components such as Rogowski coils.

## Clamp meter calibration features

Comparing the 5560A, 5550A, and 5540A			
Feature	5560A	5550A	5540A
30 A continuous current AC/DC output, extending the calibrator's current ranges	•	•	•
New optional 1, 2, 10-turn and redesigned 50-turn current coils	•	•	•
Expand workload coverage	•	•	•
Get enhanced throughput by avoiding duty cycling	•	•	•
Calibrate a wider range of workload, including oscilloscope current probes at various ranges	•	•	•
Use with the 52120A Transconductance Amplifier to boost current output to 6000 A	•	•	•



A new optional 1-, 2-, 10-turn current coil (left) and a redesigned 50-turn current coil (right) work with the 5560A, 5550A and 5540A, enabling you to calibrate workload that includes clamp-type current meters and oscilloscope current probes.



## Calibrate oscilloscopes

Three options provide capabilities to calibrate oscilloscopes to 2 GHz with the 5560A; 1 GHz with the 5550A; or 600 MHz with the 5540A. Easily verify dynamic response, bandwidth, timing, multiple triggering functions, input resistance and more.

Rise time is a crucial oscilloscope calibration specification. An oscilloscope should have fast rise time for it to capture rapid transitions; otherwise, the results could be misleading and significant information may not be displayed. The 5560A, 5550A, and 5540A calibrators feature a faster edge specification to enable coverage of a wide variety of oscilloscopes. You can accurately source a rapid transition to calibrate fast edge rise times in modern oscilloscopes. Edge is less than 175 pS, a 58% improvement from the 5522A calibrator.

The 5560A, 5550A and 5540A also include improved leveled sine wave output. SSB phase noise is now specified in each model, allowing you to see a more accurate output signal. The source VSWR is also specified and verified. These improved specifications, when combined with leveled sine, allow calibration of increasingly demanding workload.

Using the options to calibrate oscilloscopes lets you simplify operator training because technicians only need to learn to use one calibrator.



## Oscilloscope calibration features

Comparing the 5560A, 5550A, and 5540A			
Feature	5560A	5550A	5540A
600 MHz oscilloscope calibration option.	•	•	•
1 GHz oscilloscope calibration option	•	•	
2 GHz oscilloscope calibration option	•		
≤ 175 ps Edge Rise Time	•	•	•
Improved leveled sine wave specifications	•	•	•

### Rugged design for laboratories or on-site work

#### Reverse power protection without false tripping

The 5560A, 5550A and 5540A provide reverse power protection and immediate output disconnection on the output terminals for all functions. The protections apply to external voltages up to 300 Vpk and help protect the calibrator’s internal circuitry from costly operator error—preventing damage and keeping the calibrator up and running.

#### 1000 V direct amplifier

A newly designed amplifier enables the calibrator to generate low frequency AC voltages without the use of a transformer.

#### Optional portability kit

For those who work in the field, the portability kit protects the calibrator and makes it easier to transport. The kit includes front/rear bumpers and an easy-grip side handle.

A transit case (included) is designed for shipping the calibrator, with or without the portability kit.



The optional portability kit protects the calibrator and makes it easier to transport.

**Visual Connection Management™ terminals**

Light up to indicate active terminals, helping you know which connection to make

**Isolated terminal block**

New terminal layout optimized for digital multimeter calibration with minimal lead changes

**Touch screen display**

Easy-to-read intuitive menu structure lets you access any feature within three button presses or less

**OPERATE and STANDBY modes**

OPERATE illuminates when the output terminals are active. STANDBY illuminates when the terminals are not active.

**Calculator keyboard**

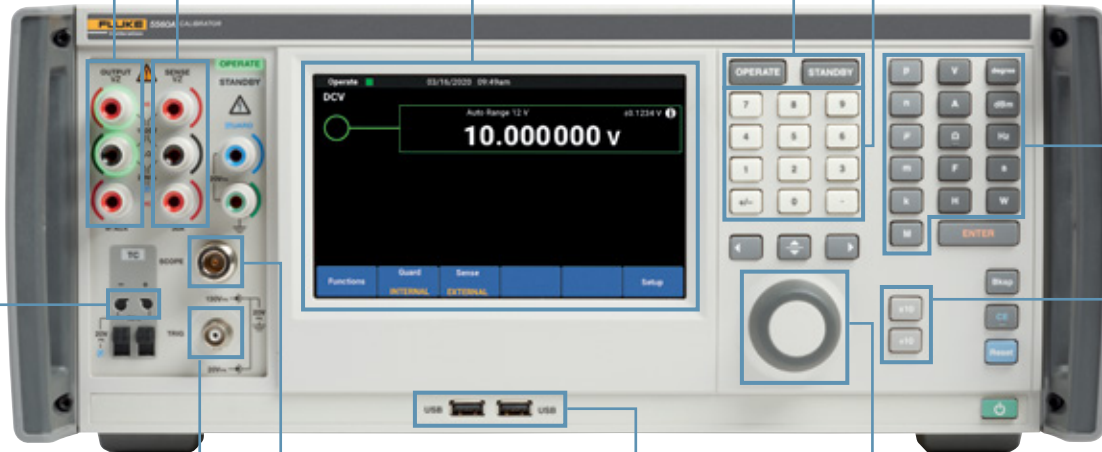
A simple calculator-style keyboard makes it easy to enter values quickly

**Output units**

Select output units easily after entering the value

**Multiplier keys**

These keys let you conveniently step a measurement up or down



**Thermocouple connector**

New thermocouple connector lets you connect multiple types of thermocouple types, including bare wire.

**Trigger**

BNC connector is used to trigger the oscilloscope during oscilloscope calibrations. Active with option installed

**Scope output**

Type N connector is used for outputs during oscilloscope calibrations. Active with option installed

**USB**

Calibration reports can be stored on USB memory sticks for easy transfer to a PC

**Output dial**

To adjust the reading, simply rotate the output dial and the error is displayed directly in ppm or percent

**Power switch**

A power switch automatically senses and adapts to the incoming mains power and frequency

**Internal circuit boards**

Internal printed circuit boards feature the latest digital design technology



**Multi-interface**

Ethernet, RS-232, GPIB and USB interfaces

**Compatibility**

Compatible with the Fluke Calibration 52120A Amplifier

## Features you expect from a modern instrument

### Front and rear panel improvements

Visual Connection Management™ output terminals light up to indicate which terminals are active, guiding the user to make the correct connections and reducing user error.

USB ports are placed both on the front and rear of the unit. Use the port at the front to download internal calibration constants; use the rear port for remote communication with a PC—or choose the LAN, IEEE or serial interfaces.

For previous 55XXA users, the 5560A, 5550A and 5540A maintain many front-panel details that characterize their predecessors, including the calculator-style keyboard for entering values easily, an output dial for varying output and keys for selecting common parameters with a single touch.

### Graphical user interface optimized for touchscreen use

A 17.8 centimeter (7-inch) graphical user interface offers intuitive menus that are easy to navigate and read, providing access to common functions with the touch of a finger and eliminating the menu scrolling that was required in previous 55XXA models.

The screen displays all of the information you need for each parameter you're calibrating, with color-coded fields that make it easy to see where you enter data. The menu is simplified and functions are laid out consistently so that once you learn how to operate one you know how to operate them all. Training new users just became much easier.

Status indicators for OPERATE, STANDBY, and HAZARDOUS VOLTAGE appear on the screen in bright letters or icons you can recognize from across the calibration lab.

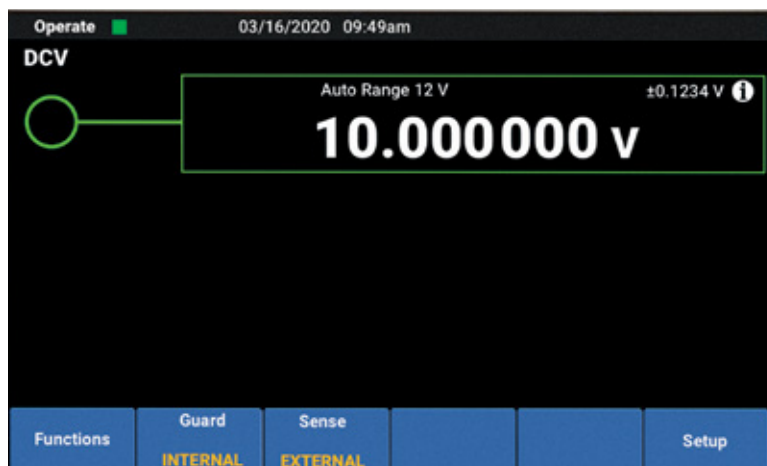
The touch screen interface is available in nine languages, including English, French, German, Spanish, Japanese, Chinese, Portuguese, Russian and Korean.



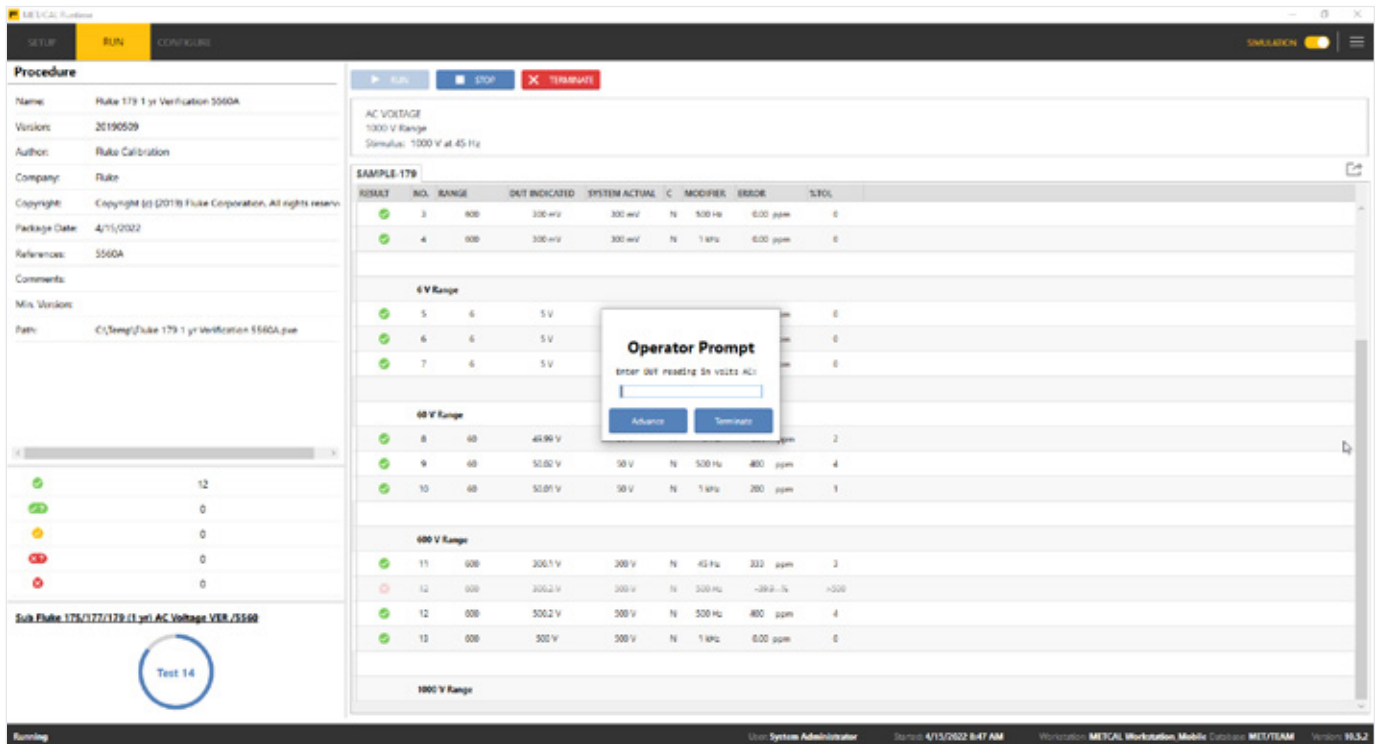
Visual Connection Management output terminals guide the user to make the correct connections.



USB ports are placed on the front and rear for downloading constants and remote PC communication.



The graphical user interface lets you navigate easily with the touch of a finger.



Automating calibration with MET/CAL software increases throughput and efficiency. Hundreds of procedures are available for the 5560A, 5550A and 5540A.

## MET/CAL™ automation increases throughput and efficiency

Quality standards impose stringent requirements for documenting, reporting, and controlling calibration processes and results. MET/CAL™ Calibration Management Software helps you meet these requirements while increasing throughput and streamlining voltage calibration, resistance calibration, and current calibration processes.

MET/CAL™ is a powerful application for creating, editing and testing calibration procedures and collecting and reporting results on a wide variety of instruments. As the industry-leading software for automated calibration, thousands of calibration procedures have been written to automate a vast array of calibrations around the world.

The 5560A, 5550A and 5540A work with MET/CAL, including hundreds of automated calibration procedures to consistently and dramatically improve throughput. MET/CAL v10.6 and later includes a Function Select Code (FSC) that enables you to add the 5560A, 5550A and 5540A seamlessly to your existing calibration operations. MET/CAL VX.xx supports the oscilloscope calibration options.

You may purchase MET/CAL with MET/TEAM™, a dedicated asset management system. It is the most complete software solution available for calibration professionals. However, if you already use a calibration asset management system, you can integrate MET/CAL into your workflow with MET/CONNECT™ Calibration Integration Software. MET/CONNECT is the hub of a fast-growing community of mainline calibration software providers that have partnered with Fluke Calibration to support MET/CAL automation. Whatever calibration management system you use, MET/CONNECT unlocks calibration and workflow automation in your lab.

## Priority software support helps you stay productive

MET/SUPPORT Gold is an annual membership program offering premium support and services to help you stay as productive as possible with MET/CAL software. Services include free software updates and upgrades, free access to the Fluke MET/CAL Warranted Procedures Library, priority technical support, plus discounts on training and custom procedure development. Members also receive invitations to regular calibration software web seminars and user group meetings. Use only a few of the Gold services and you can easily recover more than the cost of your membership fee.



## Your choice of specifications

### How often to calibrate? You decide.

The 5560A includes 90-day, 1-year, and 2-year specifications, while the 5550A includes 90-day and 1-year specifications and the 5540A includes 1-year specifications. You can manage the cost of ownership and maximize uptime by keeping the calibrator in service as long as possible based on your unique specification requirements. That means you may not need to calibrate it every year.

### Metrology training builds team skills

Calibration and metrology training from Fluke Calibration improves the knowledge of you and your colleagues in a wide variety of disciplines. Instructor-led classroom training is available for general topics in metrology that include both hands-on training and training in measurement uncertainty, as well as classes on how to use Fluke Calibration software. On-site training is available for teams with specific training needs. Instructor-led and self-paced online courses are available as well.

Fluke Calibration also offers web seminars, events and road shows on a wide variety of topics. To stay informed about these events, register online and subscribe to our e-news.

### Calibration and repair services keep you up and running

Fluke Calibration offers extensive calibration support and services to ensure long-term customer satisfaction and return on investment. Our worldwide network of service centers offers accredited calibration traceable to national standards. We provide fast, quality repair services and full support in setting up your calibration lab.



Calibration and metrology training includes a variety of offerings including classroom, online, and on-site.

## Specifications

Comparing the 5560A, 5550A, and 5540A			
Function	5560A	5550A	5540A
Direct voltage	0 V to ± 1020 V		
Direct current	0 A to ± 30.2 A		
Alternating voltage	1 mV to 1020 V 3 Hz to 500 kHz		
Alternating current	10 µA to 30.2 A 3 Hz to 30 kHz		
Volt/hertz product	1000 V at 10 kHz/330 V at 100 kHz		
Waveforms	Sine wave and square wave		
Resistance variable	0 Ω to 1200 MΩ		
Capacitance variable	0 nF to 120 mF		
Inductance variable	12 µH to 120 H		-
Power (dual output – phantom loads)	30.9 kW		-
Oscilloscope bandwidth	2.1 GHz, 1.1 GHz, or 600 MHz	1.1 GHz or 600 MHz	600 MHz
Phase lock	Yes		
Phase control	0.01°		-
Frequency uncertainty	<2.5 ppm		
Temperature standard	ITS-90, IPTS-68		
Resistance temperature detectors (RTDs) output	Cu 10 (427), Cu 100 (428), Cu 50 (428), Ni 120 (672), Pt 100 (385), Pt 100 (3916), Pt 100 (3926), Pt 1000 (385), Pt 200 (385), Pt 500 (385) Compensation: off, 2-wire, 4-wire		
External frequency reference 10 MHz	Yes		
Thermocouples (source and measure) External or internal CJR	A1 (BP,A), B, C, D, E, G, J, K, L, N, R, S, T, U, XK, 10 µV/°C, 1 mV/°C		
Interfaces / Remote commands	USB 2.0, Ethernet Telnet, RS-232 and GPIB		
52120A Amplifier current capability	Current capability up to 120 A Current capability up to 360 A with three 52120As (parallel) manual operation		

## Ordering information

Models	Description
5560A	5560A High-Performance Multi-Product Calibrator
5560A/2G	5560A High-Performance Multi-Product Calibrator + 2.1 GHz Oscilloscope Calibration Option
5560A/1G	5560A High-Performance Multi-Product Calibrator + 1.1 GHz Oscilloscope Calibration Option
5560A/600M	5560A High-Performance Multi-Product Calibrator + 600 MHz Oscilloscope Calibration Option
5550A	5550A Performance Multi-Product Calibrator
5550A/1G	5550A Performance Multi-Product Calibrator + 1.1 GHz Oscilloscope Calibration Option
5550A/600M	5550A Performance Multi-Product Calibrator +600 MHz Oscilloscope Calibration Option
5540A	5540A Multi-Product Calibrator
5540A/600M	5540A Multi-Product Calibrator + 600 MHz Oscilloscope Calibration Option

All models include full Accredited 17025 Calibration Certificate traceable to international standards with data.

Optional accessories	Description
55XXA/LEADS	Thermocouple and Test Lead Set with Case
55XXA/COIL 10	1, 2 and 10-Turn Current Coil, Includes an Accredited 17025 Calibration Certificate Traceable to International Standards with Data
55XXA/COIL 50	50-Turn Current Coil, Includes an Accredited 17025 Calibration Certificate Traceable to International Standards with Data
55XXA/ DMMCAL	DMM AUTOCAL Adapter
55XXA/ PORTKIT	5560A Portability Kit for On-Site Calibrations
55XX/CASE	Extra case. 5560A, 5550A and 5540A include hard case
Priority Gold Instrument CarePlan	Premium Instrument Service Plan (where available)

## Ordering information

Software	Description
MET/CAL/ TEAM	Software, MET/CAL w/MET/TEAM
MET/CAL-TL	License, Additional MET/CAL (TEAM)
MET/TEAM-L	License, Additional MET/TEAM
MET/CAL/ TEAMXP	Software, MET/CAL with MET/TEAM Express
MET/TEAMXP-L	License, Additional MET/TEAM Express
MET/TEAM Mobile	Module, MET/TEAM Mobile
MET/TEAM MOBILE-L	License, Additional MET/TEAM Mobile
MET/TEAM PORTAL	Module, MET/TEAM Customer Portal
MET/TEAM PORT-L100	License, additional MET/TEAM Customer Portal (pack of 100)
MET/TEAM COMMERCE	Module, MET/TEAM Commerce
MET/ CAL-METCON	MET/CAL w MET/CONNECT
MET/CAL-MCL	License, Additional MET/CAL (MET/CONNECT)
MET/CONNECT	Calibration Integration Software

**Fluke Calibration.** *Precision, performance, confidence.™*

Electrical

RF

Temperature

Humidity

Pressure

Flow

Software

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