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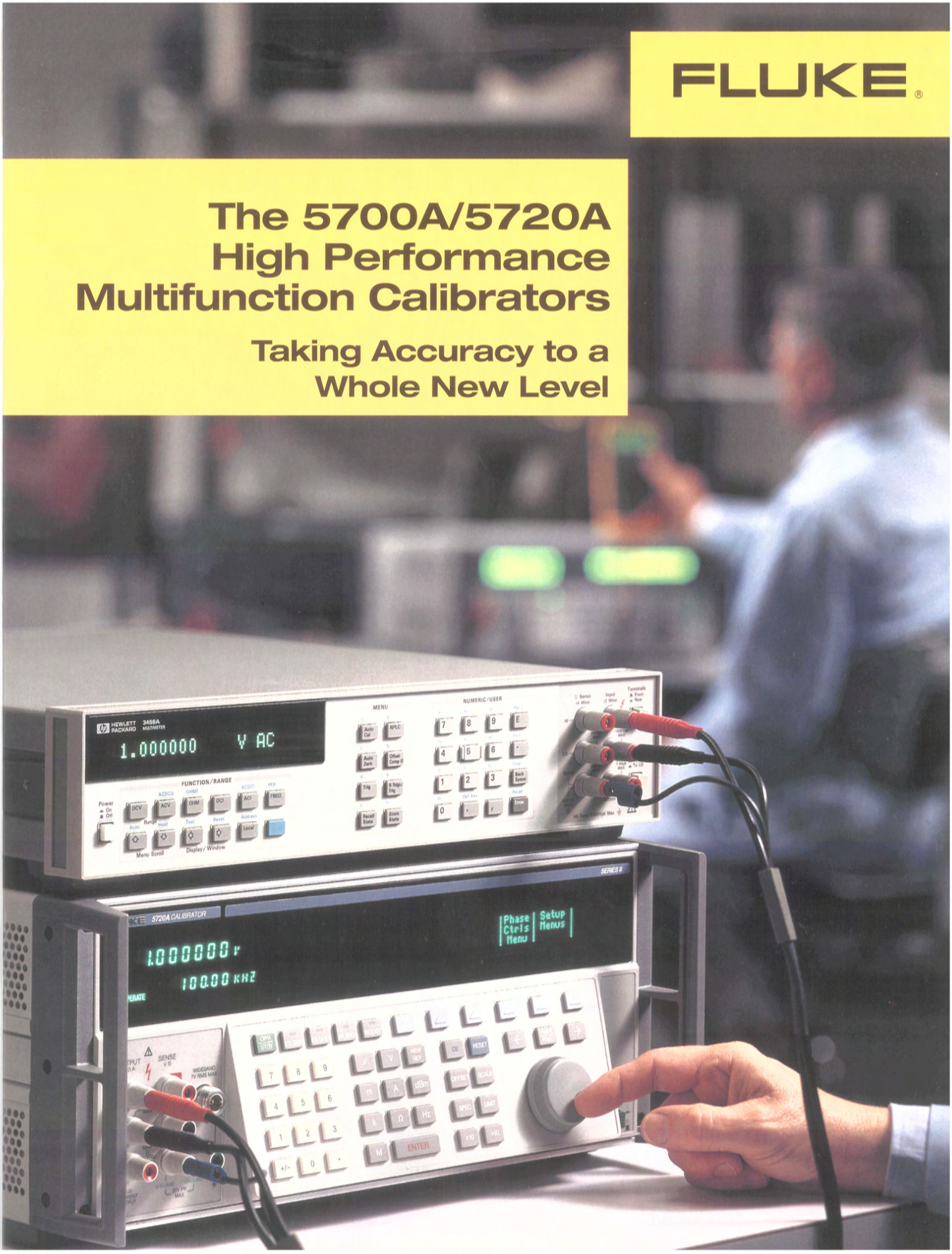
# The 5700A/5720A High Performance Multifunction Calibrators

## Taking Accuracy to a Whole New Level






# The 5700A/5720A Calibrators Set the Highest Standards for Accuracy and Performance

Growing global trade is causing manufacturers to pay close attention to controlling, improving, and measuring quality in all processes from design through manufacturing. While this is good for product quality, it also increases your calibration workload.

Fluke offers a wide range of calibration solutions to help you handle that workload. Choices that fit your budget and your business.

**High performance plus a choice of confidence levels**
Since 1988, the Fluke 5700A has set the standard for multifunction calibrator performance. The Fluke 5700A Series II and 5720A set even higher standards, calibrating your high performance workload up to 8½ digit system DMMs. Both models now state specifications to the standard Fluke 99% confidence level as well as the 95% confidence level to support easy measurement comparisons according to international quality standards including ISO 9000 and ISO Guide 25. All specifications are absolute and include the uncertainty of the calibration standards used. No additional analysis is required. Relative specifications are also available.

**Dramatically improved performance specifications**
The new high performance 5720A offers an unprecedented accuracy level that delivers the lowest uncertainties available. It calibrates more of your precision meter workload, more easily and cost effectively than ever before.

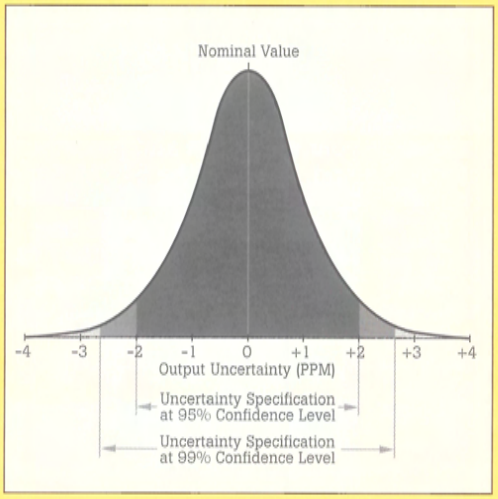
**Intuitive easy-to-use design**
The 5700A Series II and the 5720A are remarkably easy to use. All readouts appear in plain language rather than in cryptic error codes. Just enter values on the numeric keypad and press the ENTER key.




Both the 5700A Series II and the 5720A feature RS-232 and IEEE-488 interfaces, and can control Fluke 5725A, 5220A, and 5205A/5215A Amplifiers, so they are compatible with your existing equipment. Both also feature Artifact Calibration which helps keep support costs low while providing confidence that your instrument is performing as you expect it to.

The rugged 5700A/5720A Calibrators operate over a wide temperature range so they're a good choice for on-site work as well as in the lab.

## Understanding confidence intervals




A critical factor in specified calibrator performance is the difference between the actual output value and the nominal output value. The confidence interval is a statistical expression of the likelihood that any output of any instrument will deviate beyond this specified difference or uncertainty.

At Fluke we state calibrator specifications with better than 99% confidence to minimize the risk for the user. However, because international metrology standards require using a 95% confidence interval in all measurements, the 5700A Series II and 5720A now offer both 99% and 95% confidence level specifications. This makes it easier to make valid comparisons of measurements, and permits you to accept a slightly higher statistical risk in return for lower instrument uncertainty. In addition, both absolute and relative specifications are provided.




# Increase Confidence and Efficiency While Reducing Ownership Costs

The 5700A/5720A Calibrators feature Artifact Calibration. Only three artifact standards—a 10V dc reference and 1Ω and 10 kΩ resistance references—are required to calibrate all ranges and functions to full specifications. Front panel instructions prompt the operator to make connections and inputs each step of the way. The calibrator controls the process which takes only about an hour, compared to several hours using traditional methods.

In addition to saving time and equipment costs, Artifact Calibration extends the need for external verification to two years or longer as required by your standards and procedures. And, because the 5700A Series II and 5720A can tolerate operating temperatures between 15°C and 35°C they can be calibrated where they're used, rather than having to be recalled to the standards laboratory for calibration.

**Cal Check monitors performance between calibrations**

For extra confidence that 5700A/5720A Calibrators stay within specifications between calibrations, the built-in automated Cal Check function checks each range and function against internal standards to see that all functions and ranges are within specification. These Cal Check results can also be downloaded to a computer via the IEEE-488 or RS-232 port to develop control charts that predict the calibrator's long-term performance. Or you can print the results directly.

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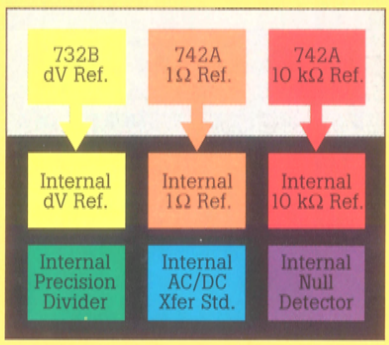
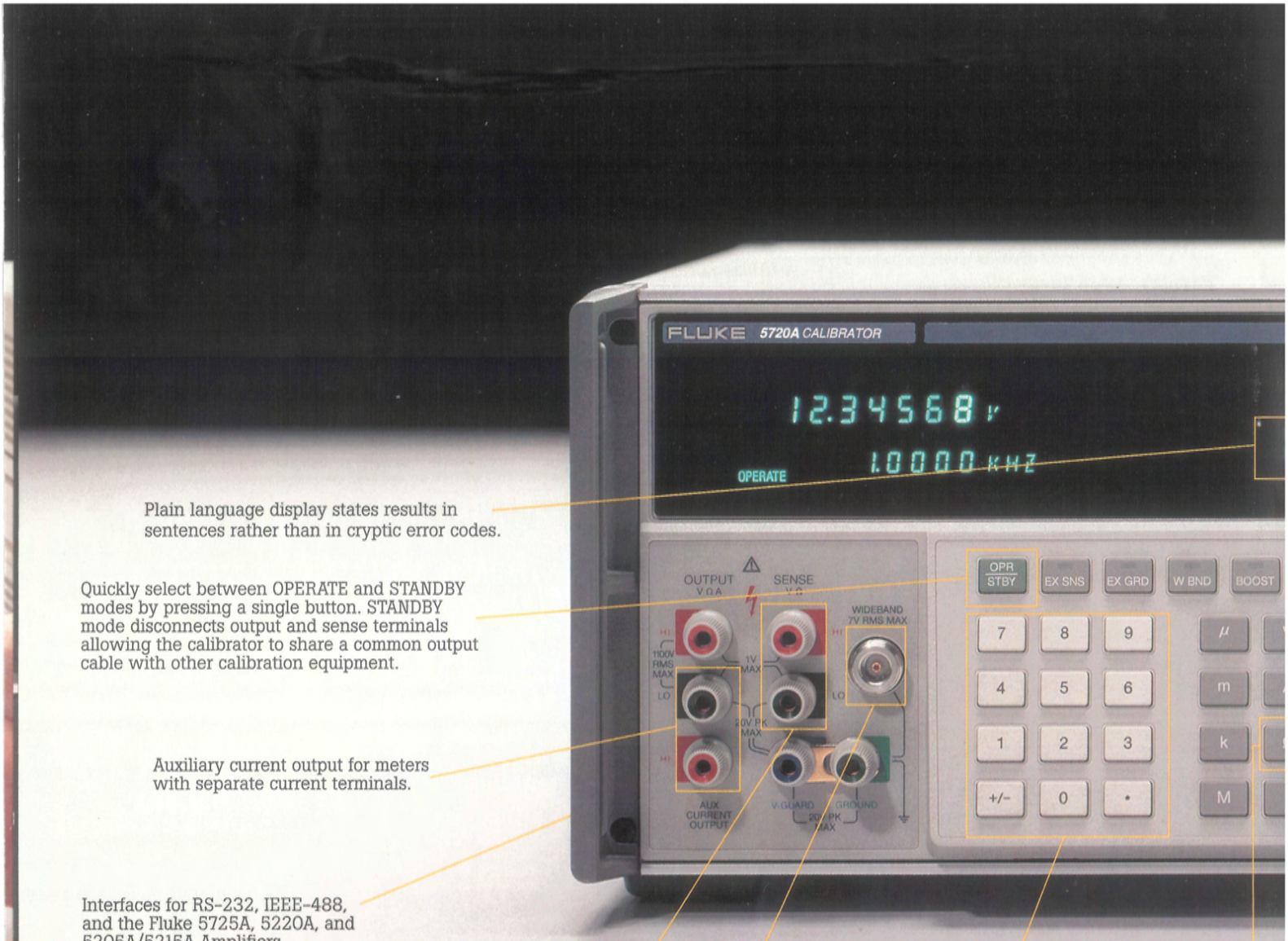
## Save time and support costs with Artifact Calibration




Artifact Calibration transfers the assigned values of an external artifact to a large array of multi-dimensional parameters within an instrument. The instrument takes over the manual metrology functions of establishing ratios and making comparisons, as well as controlling the measuring process.

As a result, Artifact Calibration requires just three standards to transfer external traceable values into the instrument. At that point, the calibrator measures, verifies, and adjusts itself, reducing an eight-hour job to about one hour. Thousands of 5700A calibrators in service around the world prove Artifact Calibration delivers fast, easy, and inexpensive calibration along with the confidence that your instrument is performing as expected between calibrations.



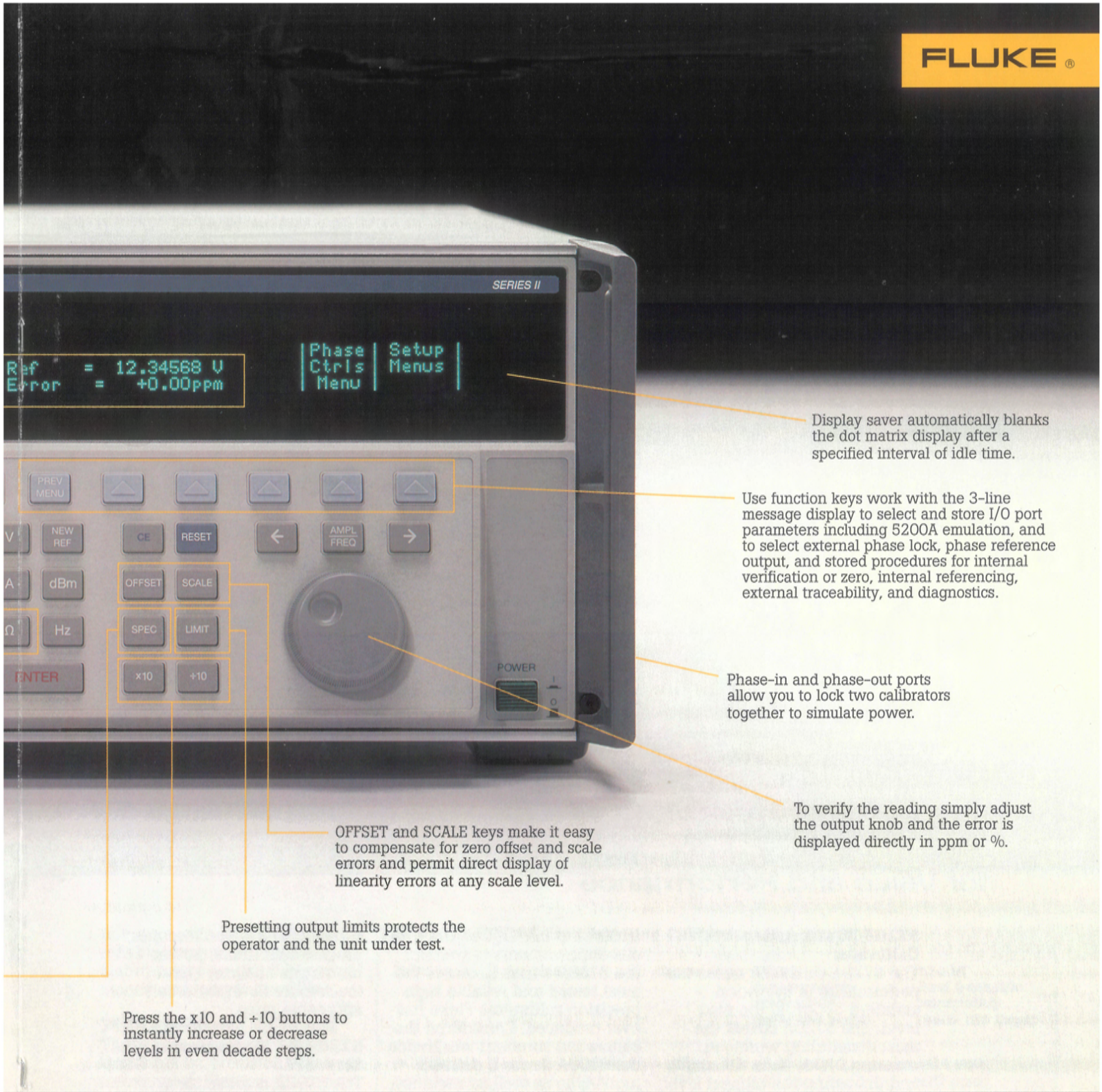



## Complete Calibration Solutions that Set New Standards for Usability

The 5720A pushes accuracy standards for multifunction calibrators to a new level, yet is designed to be remarkably easy to use.

**Works with what you have**
Both the 5700A Series II and 5720A are designed to protect your investment in existing Fluke instruments and procedures. For example, you can connect a Fluke 5220A Transconductance Amplifier or 5205A/5215A Voltage Amplifiers directly to dedicated ports on either calibrator. In automated systems, you can configure both the 5700A Series II and 5720A to emulate the popular 5100B Calibrator, minimizing the need to rewrite your procedures. In addition, the 5700A Series II and 5720A can emulate the Fluke 5200A AC Voltage Calibrator, and their remote programming interface remains fully compatible with previous versions of the 5700A.

**Designed to go the distance**
The 5700A/5720A Calibrators are designed for long, reliable,




trouble-free operation. Statistical process control techniques assure that quality is continuously maintained and improved from component test through final assembly. Every instrument is subjected to 2g of random vibration to prevent subtle imperfections from causing failures later.

Both the 5700A Series II and the 5720A feature a rugged, modular design that minimizes failures and makes it easy to find and repair any faults that may occur. Internal diagnostics exercise both digital and analog functions and can isolate problems to the board level, so repair often requires nothing more than replacing a plug-in module. And their rugged chassis are built to go to the workload with minimal risk of damage. DIN connectors seal out potential contaminants while keeping circuit boards firmly connected.

You can also count on Fluke's worldwide network of service and calibration centers which offer quality work and fast turnaround at competitive prices.




# The Fluke Calibration Family Sets the Standard for Value and Performance

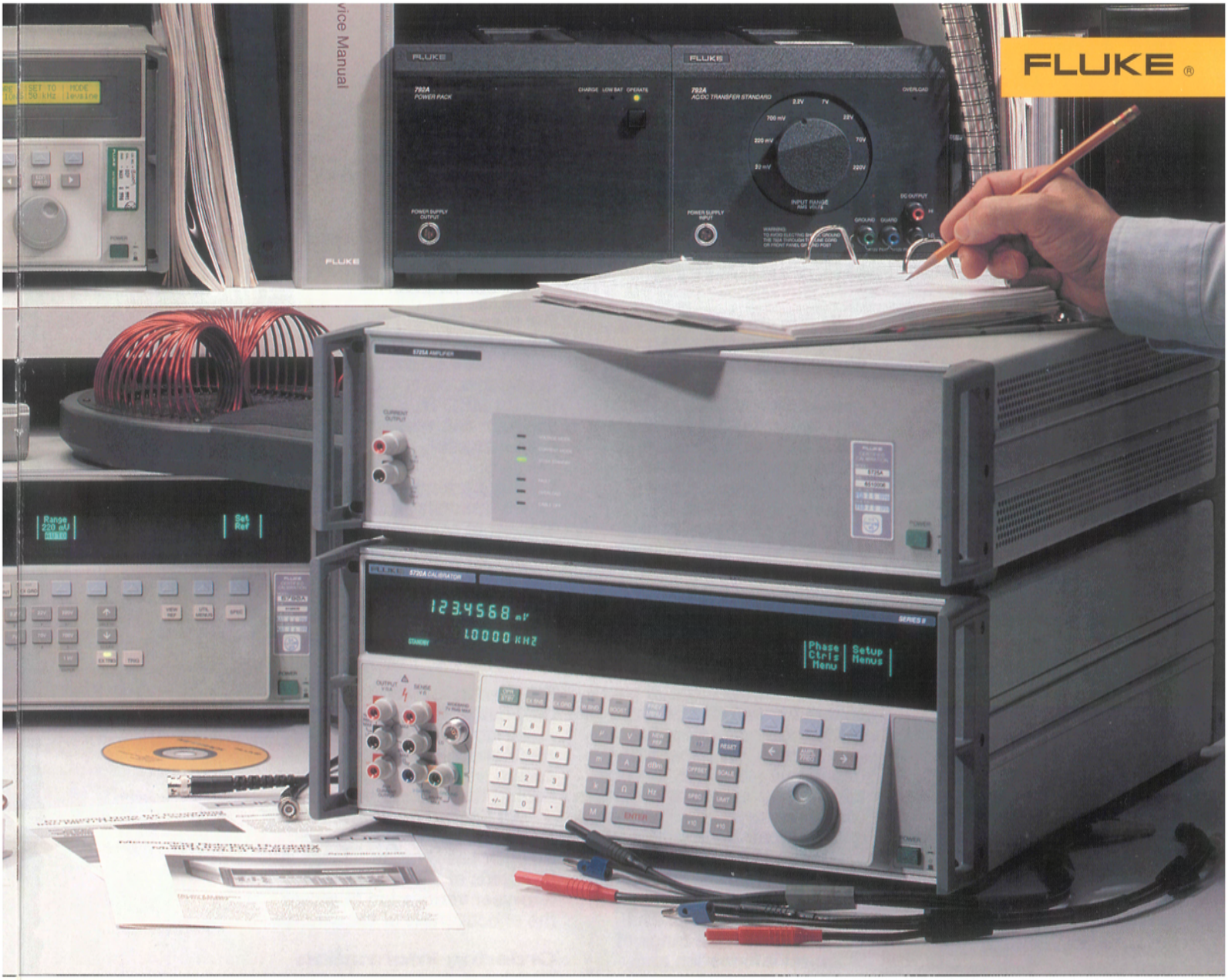
**5720A Multifunction Calibrator**
The 5720A calibrator raises the performance of the world standard 5700A to the next level. The 5720A covers the most demanding workload, covering DMMs up to $8^1/_2$ digits and delivering the highest level of performance of any calibrator on the market. It states specifications to both 99% and 95% confidence levels and includes powerful internal features, such as Artifact Calibration and Cal Check, to simplify support and dramatically reduce your cost of ownership.

**5700A Series II Multifunction Calibrator**
In service since 1988, the 5700A has undergone continuous improvements to become the 5700A Series II, one of the most tested and reliable high precision calibrators Fluke has ever produced. Considered the calibration standard worldwide, the 5700A Series II delivers high value as well as accuracy, covering $5^1/_2$ to $7^1/_2$ digit DMMs. Plus it offers the same ease of use, low cost of ownership, rugged design, simplified support, and confidence building features as the 5720A.

**5500A Multi-Product Calibrator**
The 5500A covers an unprecedented range of dc and low-frequency electrical calibration workload, including digital and analog multimeters, thermometers, handheld wattmeters, current clamps, oscilloscopes, process calibrators, power harmonics analyzers, and much more at an extremely affordable price.

**5790A AC Measurement Standard**
The 5790A is a complete automated ac measurement standard designed for the most demanding calibration applications. It provides a 24 ppm total uncertainty and covers a wide 700 µV to 1000V voltage range and a 10 Hz to 1 MHz frequency range with the option to extend it to 30 MHz.

**732B Direct Voltage Reference Standard**
The 732B is a small, rugged, solid-state, direct voltage




reference standard. Designed for reliable convenient transfers, it features very predictable performance and long battery life.

### 742A Resistance Standards

These high-accuracy working standards for precision on-site resistance calibration feature a rugged design and can be used over a wide temperature range.

### 792A AC/DC Transfer Standard

The 792A offers extraordinary transfer accuracy with total uncertainties to ± 10 ppm traceable through Fluke. Its robust input protection and fast settling times enable you to make measurements covering voltages from 2 mV to 1000V, and frequencies from 10 Hz to 1 MHz—in just 30 seconds.

### 5725A Amplifier

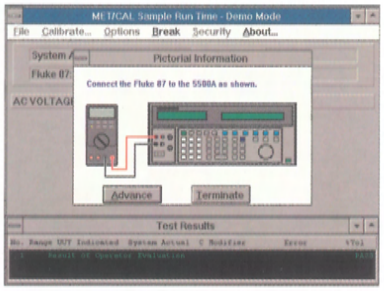
The 5725A Amplifier increases maximum direct and alternating current to 11A for calibrating the high current ranges of popular low-cost, handheld DMMs. It also extends the calibrator's alternating Volt-Hertz product to 1100V at 30 kHz and 750V at 100 kHz to cover the calibration requirements of high-accuracy bench and system meters. It is compatible with the 5700A, 5720A, and 5500A.

### The 5700A/5720A Multifunction Calibrators at a glance

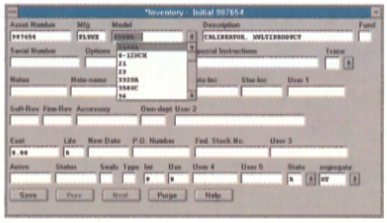
| Functions | Ranges | Output | 5720A Best traceable uncertainty (95% 180 Days) | 5700A Best traceable uncertainly (95% 180 Days) |
|---|---|---|---|---|
| DC Voltage | 0 - ±1100V | 10V | ±3.25 ppm | ±6.4 ppm |
| AC Voltage | 220 µV - 1100V | 1V | ±55 ppm | ±87 ppm |
| Resistance | 0 - 100 MΩ | 10 kΩ | ±9 ppm | ±12 ppm |
| DC Current | 0 - ±2.2A | 10 mA | ±37 ppm | ±65 ppm |
| AC Current | 9 µA - 2.2A | 100 mA | ±140 ppm | ±190 ppm |

# Automate Your Calibration and Documentation Management with MET/CAL® and MET/TRACK® for Microsoft Windows®

Today's quality standards are imposing more and more stringent requirements for documentation and reporting. Fluke calibration software provides an easy, affordable solution.




MET/CAL is a powerful environment for creating, editing, testing, and documenting calibration procedures, and for performing automated calibrations. It supports a wide variety of standards and includes more than 300 procedures.



MET/TRACK is a powerful metrology property management package designed to help you document and report on all aspects of your measurement assets, including inventory, calibration history, results, location and repair.

Its powerful client-server design makes it ideal for applications from single-user installations up to enterprise-wide networks. Plus its industry-standard SQL database offers easy data access from a variety of applications and operating systems. Crystal Reports™ Professional is included with every server package to provide virtually unlimited reporting capabilities.

**Calibration service, repair, and support**

Fluke provides extensive calibration support and service to maximize the value of your calibration investment. Our worldwide network of Calibration Centers has traceability to national standards. Service and support are just a telephone call or fax away. We offer fast, quality repair and calibration services including a module exchange program, comprehensive training, and full support in setting up your lab. And we provide a wide range of technical information and training, even a Software User's Support Group.

**Fluke Calibration: the power and flexibility you need to measure up**

When you examine our calibrators, standards, software, service, and support, you'll see why Fluke Calibration products are the worldwide leaders. Fluke can help you meet just about any electrical calibration challenge, including meeting ISO 9000 or other safety, nuclear regulatory or environmental quality standards. We also offer a wide variety of other instruments to help meet your specific application requirements. Just contact your local Fluke representative for expert advice.

**For more information**

For more information on the 5700A Series II and 5720A Calibrators, other Fluke calibrators, or MET/TRACK or MET/CAL software call your local Fluke representative.

For more information on confidence intervals and the development of calibrator specifications, see:

-*Calibration: Philosophy and Practice*

-Application note B0254, *Understanding and Comparing Instrument Specifications.*

For more information on Artifact Calibration ask for:

-*Artifact Calibration: Theory and Application* – outlines the design, verification and testing behind the concept.

-*An Evaluation of Artifact Calibration* by respected metrologist Les Huntley – looks at hundreds of 5700As at their two-year verification to assess the effectiveness of the concept.

## Ordering Information

**Model**

5720A Calibrator
5700A Series II Calibrator
5500A Calibrator

**Options**

| | |
|---|---|
| 5700A-03 | Wideband AC Voltage (compatible with both the 5700A and the 5720A) |
| 5500A-SC | 300 MHz Oscilloscope Calibration option for the 5500A |

**Accessories**

| | |
|---|---|
| 5725A | Amplifier |
| 5220A | Transconductance Amplifier |
| 5790A | AC Measurement Standard |
| 734A | DC Reference Standard |
| 732B | DC Standard |
| 742A | Resistance Standards |
| 792A | AC/DC Transfer Standard |
| MET/CAL - 4 | Calibration Software |
| MET/TRACK - 4 | Metrology Property Management Software |
| MET/TRACK - 4+ | 5-user Version |
| MET/TRACK - ND4 | Workstation Node |

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