5730A High Performance Multifunction Calibrator

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Highlights

The new gold standard in electrical calibration

Since 1988, the 5700A family has set the standard for multifunction calibrator performance in calibration laboratories around the world. Now the time has come to advance this best-in-class calibrator, taking advantage of twenty-first century technology and usability.

The Fluke Calibration 5730A High Performance Multifunction Calibrator is the culmination of years of engineering development, customer research and industrial design, to bring to market the new “gold standard” in electrical multifunction calibration.

High performance for the future

Like its predecessors, the 5730A calibrates a wide range of digital multimeters, up to long-scale 8.5 digit DMMs, as well as RF voltmeters when equipped with the wideband option. But this new model features improved specifications that will help you increase test uncertainty ratios (TURs) and increase test confidence. What’s more, the improved specifications will reduce your need to guardband, giving you confidence and peace of mind in your calibrations.

- Improved performance specifications for ac voltage, ac current and resistance
- 6.5 inch VGA capacitive touch screen with full color graphical user interface
- Visual Connection Management™ output terminals guide connections
- Graphical user interface in nine languages
- Compatible with 52120A and 5725A amplifiers
- Full MET/CAL® compatibility with 5700A and 5720A procedures
- Artifact Calibration using 10 V, 1 Ω and 10 kΩ external standards

Description

The calibrator for those who demand the best

The 5730A is designed for calibration professionals who require the most accurate dc/lf signals available in a multifunction calibrator, as well as those who simply want the best calibrator available. Metrologists in national laboratories, the military, third party calibration laboratories, and corporate users with high-end workload will value the performance and reliability of the 5730A. All 5730A calibrators are traceable to international standards and are produced in the factory with ISO/IEC 17025 accredited calibrations. Specifications are stated to the standard Fluke Calibration 99 % confidence level (as well as 95 % confidence level) to support easy measurement comparisons according to international quality standards. Specifications are absolute and include the uncertainty of the calibration standards used. No additional analysis is required.

Updated features provide improvements inside and out

The 5730A calibrator incorporates the latest technology and usability features. Surface mount technology and modern digital components have enabled Fluke Calibration to advance the proven design of the 5700A/5720A and create the next generation of high performance multifunction calibrators.

The 5730A keeps many of the front-panel details that characterize its predecessors, while adding a new full color touch screen display to enhance usability and help you calibrate more efficiently. Users enter values via a familiar, calculator-style keyboard, working naturally from left to right. A new graphical user interface features easy-to-read, easy-to-use menus, as well as access to common functions with just the touch of a finger. Status indicators for OPERATE, STANDBY, and HAZARDOUS VOLTAGE appear on the screen in bright letters or icons that you can easily recognize from across the calibration lab. The touch screen messages are available in your choice of nine languages, including English, French, German, Spanish, Japanese, Chinese, Portuguese, Russian, and Korean.

The redesigned front panel features many new improvements. For example, Visual Connection Management™ output terminals light up to show you which terminals are active, guiding the user to make the correct connections. The handles and knob are overmolded for comfort and feel. 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.

Increased confidence, reduced cost of ownership

The 5730A calibrator features Artifact Calibration. Only three artifact standards—a 10 V dc reference and 1 Ohm and 10 k Ohm resistance references—are required to calibrate all ranges and functions to full specifications. Front panel GUI 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 calibration methods. In addition to saving time and equipment costs, Artifact Calibration can extend time between calibrations of the 5730A to two years before a full verification check by a Fluke Service Center is required. And, because the 5730A can tolerate operating temperatures between 15 °C and 35 °C, it can be calibrated where it's used, rather than having to be shipped to a standards laboratory for calibration.

Save time and support costs with Artifact Calibration

When Artifact Calibration was first introduced in the Fluke 5700A, customers asked many questions about traceability because they were surprised that you could calibrate so many ranges and functions with only three external standards. However, thanks in part to considerable testing and evaluation by three national laboratories in Europe, Artifact Calibration is fully validated by the metrology community. Today many metrologists rely on Artifact Calibration to maintain their Fluke calibrators at 90-day specifications for up to two years. Significant savings can be realized in calibration costs by only paying for a full verification and shipping to a certified Fluke Service Center every two years. The time savings are also significant, as Artifact Calibration allows the 5730A to remain in service and conducting calibrations when it would otherwise be unavailable due to shipping and service time. Speak to a Fluke Calibration representative today to learn how to embrace this tried and true method of maintaining the traceability of your 5730A.

Cal Check monitors performance between calibrations

For extra confidence that the 5730A calibrator stays within its specifications between calibrations, the built-in automated Cal Check function checks every range and function against a set of dedicated internal standards to monitor the drift of each. These Cal Check results can be downloaded to a computer via the USB port conveniently placed on the front of the unit to develop control charts predicting the calibrator's long-term performance. It may surprise many to learn that the internal standards built into every 5730A are the functional and design equivalents of a Fluke 732B 10 V reference plus two fully characterized metrology-grade resistance standards. These standards—totally separated from the output circuitry—are not used in normal operation and are provided solely to provide a check.

Improving calibration of 8.5 digit DMMs

The improved performance of the new Fluke Calibration 5730A allows calibration professionals the best ability to calibrate the most demanding workloads. The most prevalent long-scale digital multimeters in the world are the Fluke Calibration 8508A and the Agilent 3458A. Due to the high level of accuracy of these two 8.5 digit DMMs, there are several points where calibration professionals are forced to use a technique known as guardbanding. This method decreases the measurement uncertainty for a particular value in order to guarantee the calibrated value falls within the appropriate 99 % or 95 % confidence interval. In designing the new 5730A, Fluke Calibration worked diligently to bring its customers even better performance specifications to help address some of these "problem points."

Guardbanding: Helping you to sleep well at night

It has been become increasingly difficult to meet the industry-recognized test uncertainty ratio (TUR) of 4:1. To minimize the chance of approving an out-of-tolerance (OOT) condition during calibration, the practice of guardbanding is employed. As all measurements are subject to error, most measurements assume a normal distribution commonly referred to as a "bell curve." When the TUR is less than 4:1, the error band of the unit under test (UUT) is small enough that the calibrator cannot guarantee that the measurement is within specification.

To protect the metrologist, guardbanding moves the specification limit closer to the nominal value in order to "guard" against the possibility of approving an OOT condition. The measured value must now fall within a smaller offset from the nominal value, providing confidence that the actual value is within the new specified band. This gives the metrologist the confidence that the measurement is accurate. The new 5730A calibrator is the most accurate dc/lf calibrator on the market, but it still

requires the use of guardbanding for the most demanding long-scale multimeters.

High current output to 120 A

Paired with a Fluke Calibration 52120A Transconductance Amplifier, the 5730A can output up to 120 A and display the output on the 5730A touch screen display. Operating in closed-loop mode with the 52120A, the 5730A maintains the best current accuracy over the widest range of calibration workload.

Specifications

Technical Specifications		
Voltage DC	Range: Best 1 Year, 95% Specification:	0 to ±1100 V 3.5 ppm + 2.5 µV
Voltage AC	Range: Best 1 Year, 95% Specification:	22 µV to 1100V 10 Hz to 1 MHz 42 ppm + 8 µV
Resistance	Range: Best 1 Year, 95% Specification:	0 to 100 MΩ, 18 values in x1 and x1.9 6.5 ppm
Current DC	Range: Best 1 Year, 95% Specification:	0 to ±2.2A (0 to ±11A with 5725A; 0 to ±100 A with 52120A) 35 ppm + 7 nA
Current AC	Range: Best 1 Year, 95% Specification	9 µA to 2.2A, 10 Hz to 10 kHz (9 µA to ±11A with 5725A; 9 µA to ± 120 A with 52120A) 103 ppm + 8 nA
Wideband ac Voltage option	Range: Best 1 Year, 95% Specification	300 µV to 3.5V 10 Hz to 30 MHz ±0.4% of setting

General Specifications	
Warm up time	Twice the time since last warmed up, to a maximum of 30 minutes
Settling time	Less than 5 seconds for all functions and ranges except as noted
Standard interfaces	IEEE-488 (GPIB), RS-232, USB 2.0 Device, Ethernet, 5725A, 52120A, phase lock in (BNC), phase reference out (BNC)
Temperature performance	Operating: 0 °C to 50 °C Calibration: 15 °C to 35 °C Storage: -40 °C to 75 °C
Operating altitude	2000 m maximum
Relative humidity	Operating: < 80% to 30 °C, < 70% to 40 °C, < 40% to 50 °C Storage: < 95%, non-condensing.
Safety	IEC 61010-1: 300 V CAT II, Pollution Degree 2
Analog low isolation	20 V
Electromagnetic environment	IEC 61326-1: Controlled
Line power	47 Hz to 63 Hz; ±10% 100 V, 110 V, 115 V, 120 V, 200 V, 220 V, 230 V, 240 V
Power consumption	300 VA
	Height:: 17.8 cm (7 in), standard rack increment, plus 1.5 cm (0.6 in) for feet

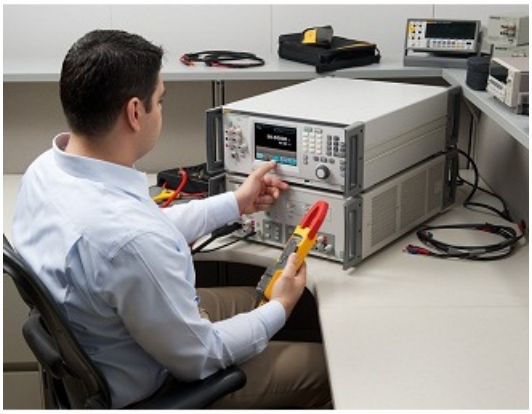
Dimensions	for feet Width:: 43.2 cm (17 in), standard rack width Depth: 64.8 cm (25.5 in), overall; 59.4 cm (23.4 in), rack depth
Weight	27 kg: (62 lbs.)
Absolute uncertainty definition	5730A uncertainty specifications include stability, temperature coefficient, linearity, load regulation, and the traceability of the external standars used for calibration. You do not need to add anything to determine the total uncertainty of your calibrator for the temperature range indicated
Specification confidence interval	99% and 95%

Models and Accessories

Model Name	Description
5730A	Multifunction Calibrator
5730A/03	Multifunction Calibrator with Wideband AC Voltage Option
5730A/S	Multifunction Calibrator with No Front Panel USB Port
52120A	Transconductance Amplifier
5725A	Amplifier
MET/CAL/TEAM	Software, MET/CAL w/MET/TEAM

Accessories common to all models:

Accessory	Description
5730A-7002	Low Thermal EMF Cables with Banana Plugs
5730A-7003	Low Thermal EMF Cables with Spade Connectors
Y5737	5790B and 5700A/5720A Rack Mount Kit. Includes 24 in. slides that allow for side ventilation
Y5738	5730A Rack Ear Kit
57XX/CASE	Transit Case for 57XXA Series
Priority Gold Instrument CarePlan	Fluke Calibration Priority Gold Instrument CarePlans are available for most calibration products. Please contact your local Fluke Calibration sales representative for details or to request a quote. You may also call the Customer Care Center at 877-355-3225 or send email to careplans@flukecal.com.
Silver CarePlan	Fluke Calibration Silver CarePlans are available for most calibration products. Please contact your local Fluke Calibration sales representative for details or to request a quote. You may also call the Customer Care Center at 877-355-3225 or send email to careplans@flukecal.com.



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