

Sales Guide

5730A Multifunction Calibrator

The new GOLD standard in electrical calibration



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1. Objective

To provide a thorough overview to the key product features, learn about the target industries/customers, see how the 5730A compares with the competition, identify vintage replacement opportunities, and learn where to find available marketing materials.

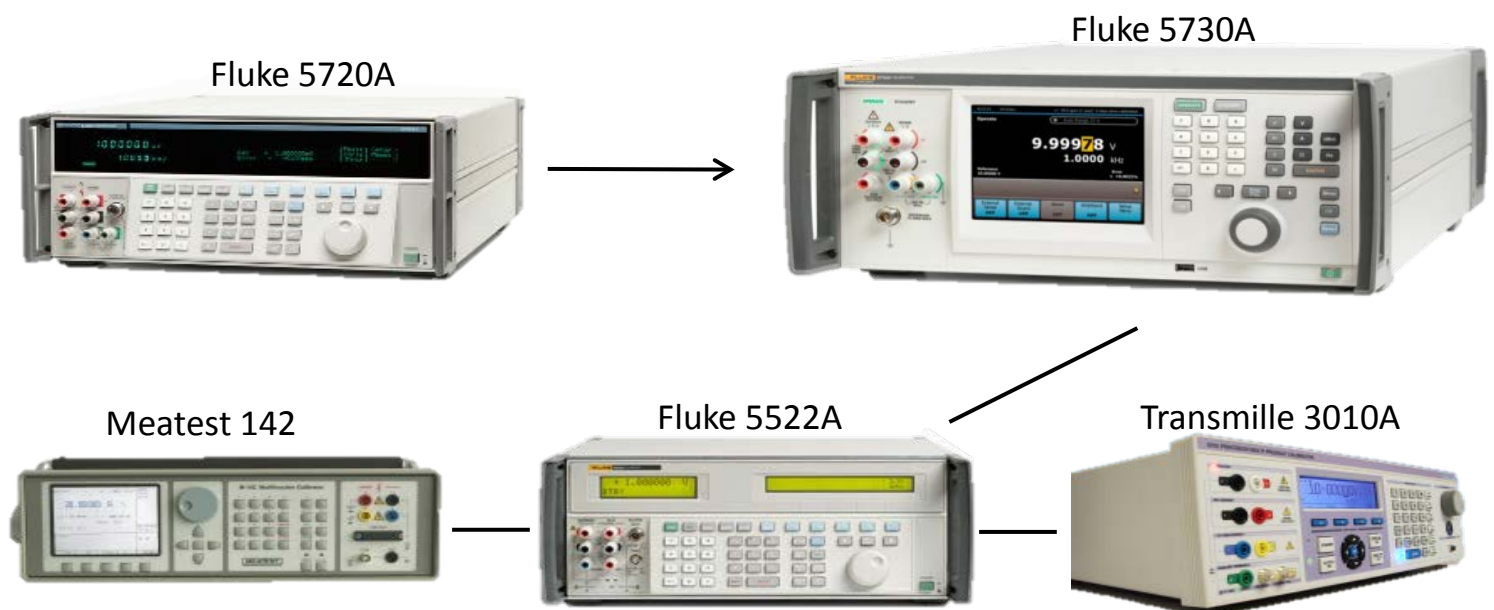
2. Introduction

The Fluke Calibration 5730A Multifunction Calibrator is a versatile benchtop calibrator designed for calibration of 3.5 to 8.5 digit DMMs, clamp meters (up to 6000Amps with 52120A), and RF Millivolt meters (with 30 MHz option). The 5730A provides improved best-in-class specifications when compared to the Fluke 5720A Multifunction Calibrator. The 5730A is the next generation of multifunction calibrators to meet the most demanding DC/LF workloads and provide customers a solution to calibrate 8.5 digit DMMs.

The 6.5 inch VGA full color touchscreen display provides an easy-to-use, dynamic user interface for increased productivity and better user experience. Other new features include Visual Connection Management (VCM)[™] output terminals, which light up to guide cable connections and provide safety for both the user and instrument.

3. Product Positioning

The 5730A is positioned in terms of price and performance above existing Fluke Calibration and competitor Multifunction Calibrators. It is capable of calibrating digital multimeters up to 8.5 digits. It sources DC/AC voltage, DC/AC current, and resistance at better accuracy specifications than the Fluke Calibration 5720A Multifunction Calibrator, which is widely regarded as the most accurate Multifunction Calibrator in the world. With the utilization of artifact calibration, the end user can enhance accuracies even further and lower yearly cost of ownership.



4. Value Proposition

The new Model 5730A calibrator delivers the best accuracy and usability of any calibrator available today. It's unique combination of best in class performance and modern features will enhance your labs workload coverage while also improving your cycle times and workflow efficiency. The 5730A also simplifies operator training and reduces learning curves through the use of familiar 5700 type keyboard/knob controls in combination with an up to date, significantly more informative touch screen interface. All of these advances come together in the 5730A to save you time and money while leveraging your existing procedure and programs through emulation of the industry standard 5700A and 5720A.

5. Features and Benefits

Feature	Benefit
Touchscreen GUI	Easy-to-use + simple status indication + flat menu navigation = Lower cost of training for employees, quicker setup time, quicker manual operation.
Specifications	Up to 40% improvement in measurement uncertainties compared to 5720A. Improvements in AC voltage, AC current, and resistance.
LED lit Output (VCM™ terminals)	Provide customer guidance in proper cable connection minimizing risk of in-proper connections, improves safety for user and instrument.
Updated digital internal technology	Improved best-in-class accuracy with newer internal digital components and technology offering better support for the future.
Artifact Calibration	Maintain better accuracy specifications for longer. This will allow you to achieve 24 hour, 90 day, or 180 day specifications for up to 2 years, thus addressing higher accuracy workload. Fluke Calibration recommends performing a full verification check at a Fluke Service Center every 2 years.
Local language support	GUI is equipped with 9 language choices
52120A Compatible	Use your 52120A to boost current output to 100 A DC or 120 A AC in closed loop operation. 5730A drives the 52120A and all outputs are displayed directly on 5730A GUI.
5725A Compatible	Fully compatible with existing 5725A amplifiers, thus extending your current and frequency coverage while protecting your investment.
MET/CAL Compatible	MET/CAL version 8.2 or newer required to use 5730A improved specs. Will work with older versions of MET/CAL, but will need to identify itself as a 5700A or 5720A and will utilize those units' spec tables.
MET/CAL Backward Compatibility	"Device Mapping" capability allows 5730A to identify itself as a 5700A or 5720A to prevent MET/CAL users from having to edit existing procedures. 5730A is a drop-in replacement for existing 57XX calibrators, saving time and cost.
USB port for flash drives	Allows simple collection of calibration constants (CSV format) onto a USB stick for easy import to Excel for stability and drift analysis. Run Cal Check and then download constants via the front panel USB port.
UUT error display	Allows user to quickly know the UUT % or ppm error.
4 Communication ports	IEEE-488 (GPIB), RS232, Ethernet, and USB allow remote control via a PC
Full-time Specification Display	Based on calibrator settings for confidence (99% or 95%) and spec interval (24 hr, 90 day, 180 day, 1 year), 5730A automatically displays the accuracy specifications for every output range and function. Toggle ON and OFF.

Wideband Option	Provides AC Voltage frequency up to 30MHz for expanded workload coverage such as RF millivolt meters.
Automatic power sensing	Power switch automatically senses the correct mains voltage and frequency, preventing incorrect settings and protecting the instrument.

6. Target Customers

The 5730A primarily targets Tier II and Tier III calibration professionals whose workload demands the best accuracy for DC/LF calibrations. Generally, the largest workload is 6.5 digit DMMs, although DMMs up to 8.5 digits can be calibrated with additional standards. The 5730A offers the best accuracy specifications of any Multifunction Calibrator, making it a necessary instrument for individuals who require the very best performance in DCLF calibration.

Industry	Applications	Cal Workload
Prime Contractors, Internal Cal Labs	Calibration Program verification	3.5 – 8.5 digit DMM, Clamp Meters, RF Millivolt meters
3 rd party cal lab	Service DMMs and other workload for variety of industries and customers (varies by region)	3.5 – 8.5 digit DMM, Clamp Meters, RF Millivolt meters
Electronic equip. mfr.	Mfr. electronic devices	R&D, Type Test, Verification
Military	Calibration Program verification	3.5 – 8.5 digit DMM, Clamp Meters, RF Millivolt meters
NMI	Traceable standards, R&D, Calibration Program verification	R&D, Verification, workload as listed above

7. Who Do I call

Industry	Contact Position
Prime Contractors, Internal Cal Labs	Lab Manager, Business Mgr., Metrologist, R&D Mgr., Engineering Mgr.
3 rd party cal lab	Lab Manager, Business Mgr., Calibration Technician
Electronic equip. mfr.	Mfg. Eng., Asset Mgr., Test Eng., Production Mgr.
Military	Lab Manager, Budget Mgr., Program Mgr., Metrologist, Calibration Technician
NMI	Lab Mgr., Metrologist, Calibration Technician









8. Typical Applications

The following provides some typical and non-typical applications where the 5730A can be utilized.

- Calibration of long-scale DMMs (typical units)
 - o Fluke 8508A, 8845A, 8846A, 8842A, 8840A
 - o Tektronix DMM4040, DMM4050
 - o Agilent 3458A, 34401A, 34410A, 34411A
 - o Keithley 2000, 2001, 2002
 - o NI - PXI 4070, 4071
 - o Transmille 8080/8081/8071
- NMI Lab comparisons
- ATE Systems & Military Test Stands
- RF millivolt meters (with 30 MHz wideband option)
- Precision Source for Engineering, Manufacturing or Service environments

9. Vintage Products

The following provides competitive or legacy Fluke products that are replacement candidates.

Fluke 5700A		Fluke 5720A	
Fluke 5200A		Fluke 5440B	
Datron/Wavetek 4700 Series Multifunction Calibrators		4800 Series Multifunction Calibrators	
4200 AC Calibrator		4000 DC Calibrator	

10. Key features

10.1. Features at-a-glance (left side)

AC/DC Voltage, Resistance Output Terminals

- DC Voltage: 0 – 1100 V, 3.5 PPM
- AC Voltage: 220 mV – 1100 V, 10 Hz – 1 MHz, 42 PPM
- Resistance: 0 – 100 M Ω , 18 set values, 6.5 PPM

Status Indicators

- Operate/Standby status
- High Voltage Warning
- LED backlight on ALL output terminals

AC/DC Current Output Terminals

- DC Current: 0 to 2.2 A, 35 PPM
- AC Current: 9 μ A – 2.2 A, 10 Hz – 10 kHz, 103 PPM



Auxiliary Current Output

- Calibrate UUTs that have separate current input

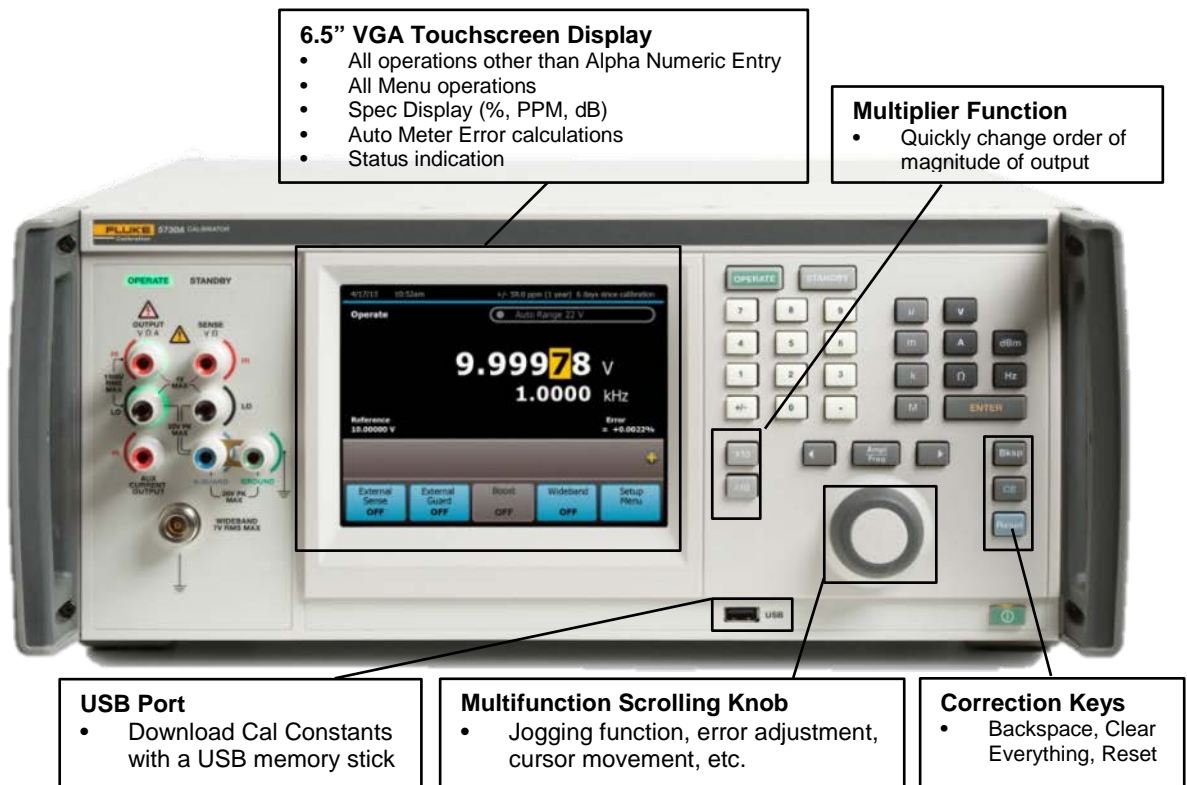
30 MHz Wideband Output

- Expand RF Workload
- Optional Feature

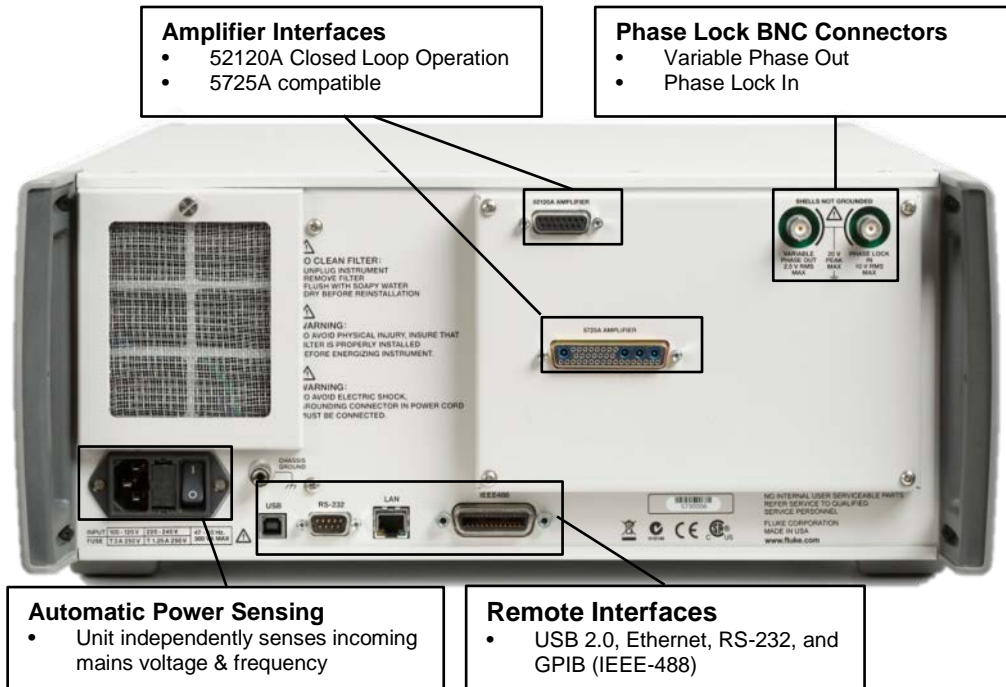
V Guard Output

- Connect to internal voltage guard for floating inputs

10.2. Features at-a-glance (right side)



10.3. Features at-a-glance (rear panel)



10.4. Touchscreen Display Operation

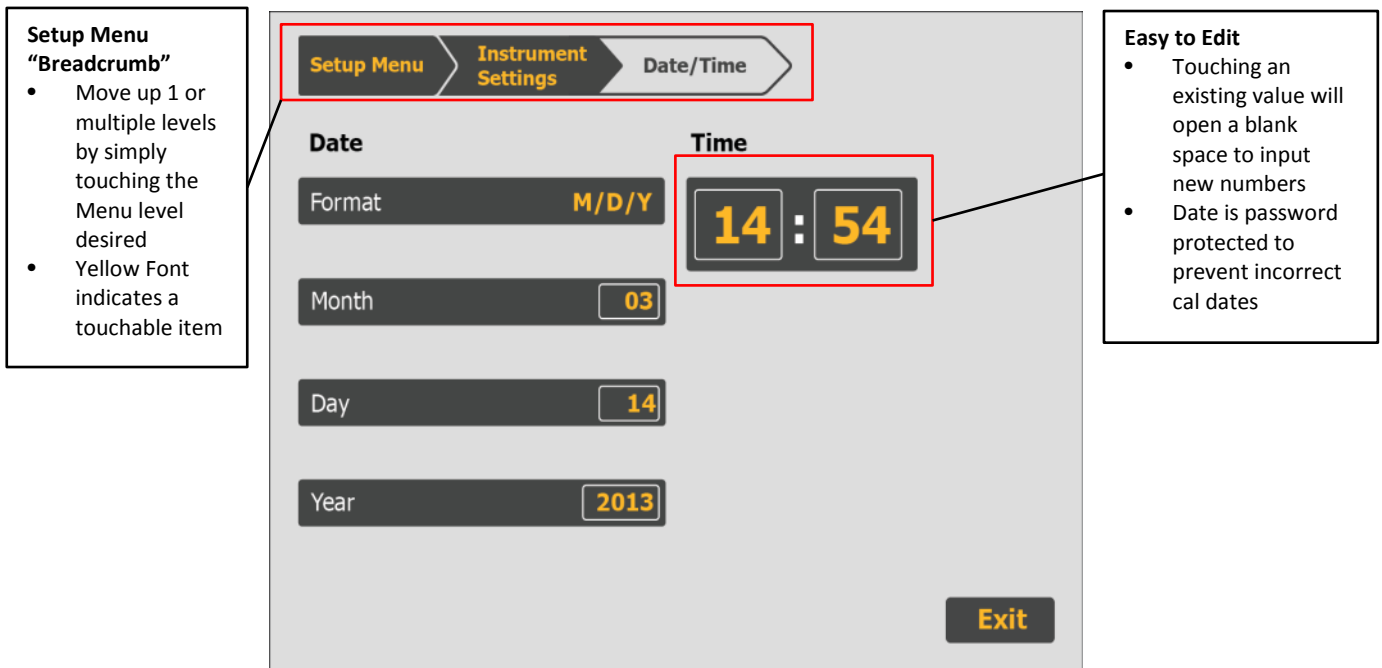
The 5730A touchscreen was designed to accommodate the legacy user of the 5700A and 5720A calibrators. Much consideration was put into modernizing the front panel operation with the touchscreen while not completely erasing 20+ years of muscle memory and familiar functional entry. To that point, the paradigm of “number-multiple-function” and hand movement from left to right to accomplish this order was chosen. All secondary functions of the calibrator were moved to the touchscreen, with only hard keys used to accomplish the calibrator’s primary functions left.



One high level rule to remember with the 5730A touchscreen is this: If it’s yellow, it’s touchable. There are a few exceptions, but for the most part, any font in yellow is a button. This holds for many of the tables and options that pop up when you hit a “+” sign or a yellow dot next to the “auto range” status. The five large button toolbar at the bottom of the screen features many of the commonly used secondary functions, such as Boost and Wideband. These buttons change color and text when touched to indicate current status.

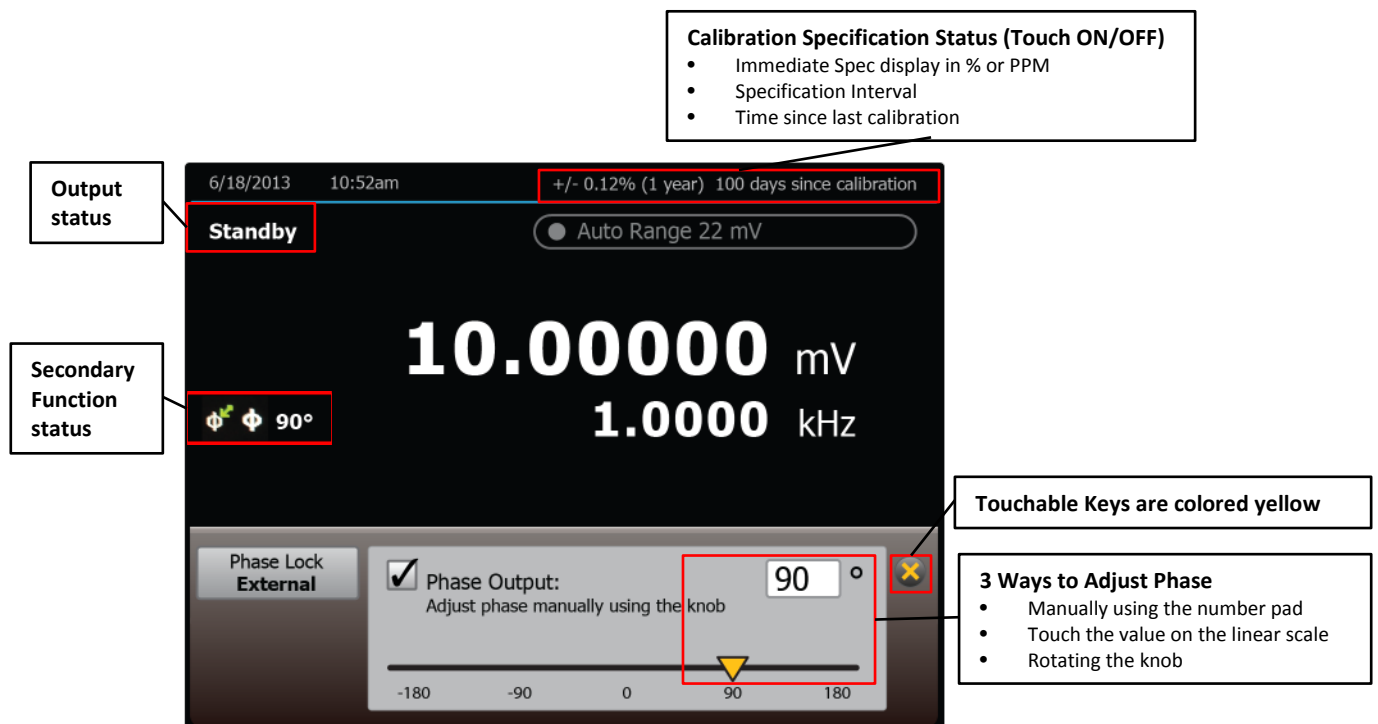
The Setup Menu took the most work from a design standpoint. The new menu structure is set up to be as “flat” as possible, meaning that a user should be able to get to any functional setup menu item with 3 or fewer touches. The 5730A features all of the same setup menu items from its predecessors, plus some additional ones, like Brightness.

Another new attribute of the Setup menu is the navigation toolbar, or “bread crumb,” located along the top of the Setup menu screen. This toolbar is effectively the “back” button. It allows you to jump backwards as many levels as you want. Just touch the yellow font in whichever menu level you prefer, and the 5730A will jump to that setup menu level. This provides additional flexibility in operating the instrument, increasing productivity and speed of instrument setup.



Additional features displayed on the touchscreen include: instrument uncertainty displayed in % or ppm in the top right of the screen, including the current specification interval and the last time since the unit was calibrated, date and time, Operate/Standby status, Hazardous Voltage status, Phase offset and Phase Lock status, Reference, Scale, and Offset values and error calculations, and Auto/Locked range status.

The lifetime of the touchscreen display is dependent on the brightness level. At 50% brightness



(default level), the screen is expected to last approximately 15 years and is actually quite bright. Even at 0% brightness, the output is still viewable. There currently are no "screen saver" or time out options as a blank screen could be a safety concern and the power would have to be removed from

the screen to make it go fully blank. These settings were chosen to extend the life of the screen while also accounting for safety in always showing the status of the calibrator.

10.5. Connection to 5725A & 52120A Amplifiers

The 5730A is compatible with both the Fluke Calibration 5725A Current Amplifier and the Fluke Calibration 52120A Transconductance Amplifier. The amplifiers offer end users the capability of increasing the calibrator's current output to 11 A or 120 A for the 5725A and 52120A, respectively.

When connected to the 52120A or 5725A, the output screen on the 5730A displays the current level output from the amplifier (i.e. you can program in 120 A into 5730A and the output will go to 120 A). The 52120A-specific cable connecting the amplifier to the calibrator allows for two way, or "closed loop," communication between the devices. This provides for the ability of the 5730A to "drive" the attached amplifier, while utilizing the best case specifications for each configuration. All necessary data and output information is displayed on the 5730A color touchscreen panel. Up to three 52120A amplifiers may be connected to one 5730A, offering the capability to output currents as high as 360 A AC. Refer to the Extended Specifications for 52120A accuracies; 5725A accuracies are included in the 5700A/5720A manuals or available online.

10.6. Artifact Calibration

Artifact Calibration is an existing feature of the 5700A and 5720A Multifunction calibrators which has been proven over the last 20 years. It is a means of completing a fully traceable calibrator adjustment with only three external standards: 10 V, 1 Ω , and 10 k Ω . Artifact Calibration transfers the assigned values of an external artifact to a large array of multidimensional parameters within the instrument. The instrument takes over the manual metrology functions of establishing ratios and making comparisons, as well as controlling the measuring process. Once completed, 24 hour or 90 day uncertainty specifications can be utilized when determining test uncertainty ratios compared to the Unit Under Test (UUT). Artifact Calibration is not offered by competing multifunction calibrators and has been fully verified by NIST and other regulating bodies. Artifact Calibration allows end users to perform fully accredited calibrations themselves, thus extending the period of time between sending the unit to a Fluke Service Center for a full verification to two years. This reduces the need for additional shipping costs and downtime when the calibrator is returned to Fluke Service for calibration. Customers can save significant costs in the form of shipping costs, shipping time, service time, and calibration costs by performing Artifact Calibrations themselves. Also, if a customer does not own the required external standards (Fluke 732B, A40B-1, and A40B-10K), US customers can order a set of standards to be shipped directly to them. Currently, this service is not available outside the US since the 732B must be energized at all times, and Fluke cannot guarantee the battery will last during international shipments.

10.7. Wideband RF option

The 30 MHz Wideband option can be purchased to expand the AC Frequency and RF calibration capability of the 5730A. The Wideband option increases the addressable workload of the calibrator. Most customers interested in the Wideband option are the Military, Prime Contractors who work with Military systems, and large 3rd Party Calibration labs that own Military contracts. Wideband capability is activated through a button on the toolbar at the bottom of the touchscreen. When active, the Visual Connection Management terminals illuminate the wideband connector.

11. Competitive comparison






Key specs/feature comparison

	5700A	5720A	5730A
Functionality			
DC Voltage	●	●	●
Range:	0 to ± 1100 V		
Best 1 Year, 95% Specification:	7 ppm + 3.5 μ V	3.5 ppm + 2.5 μ V	3.5 ppm + 2.5 μ V
AC Voltage	●	●	●
Range:	220 mV to 1100 V 10 Hz to 1 MHz		
Best 1 Year, 95% Specification:	75 ppm + 6 μ V	45 ppm + 8 μ V	42 ppm + 8 μ V
DC Current	●	●	●
Range:	0 to ± 2.2 A Fluke 5725A: 0 to ± 11 A Fluke 52120A: 0 to ± 100 A		
Best 1 Year, 95% Specification:	50 ppm + 8 nA	35 ppm + 7 nA	35 ppm + 7 nA
AC Current	●	●	●
Range:	9 μ A to 2.2 A, 10 Hz to 10 kHz Fluke 5725A: 9 μ A to 11 A Fluke 52120A: 9 μ A to 120 A		
Best 1 Year, 95% Specification:	140 ppm + 16 nA	120 ppm + 8 nA	103 ppm + 8 nA
Resistance	●	●	●
Range:	0 to 100 M Ω , 18 values in x1 and x1.9		
Best 1 Year, 95% Specification:	12 ppm	8.5 ppm	6.5 ppm
Wideband option	●	●	●
Range:	300 μ V to 3.5 V, 10 Hz to 30 MHz		
Best 1 Year, 95% Specification:	$\pm 0.4\%$ of setting	$\pm 0.4\%$ of setting	$\pm 0.4\%$ of setting






	5700A	5720A	5730A
User Interface / Display / Ergonomics			
6.5" Touchscreen Display			●
Visual Connection Management (VCM) Terminals			●
Soft Touch Ergonomical Handles			●
Local Language Support			●
Connectivity			
Copper Alloy Terminals	●	●	●
USB Cal Check Data Storage			●
Phase Lock In and output	●	●	●
IEEE Interface	●	●	●
RS232 Interface	●	●	●
USB Bus			●
Ethernet Port			●
Hardware			
Soft Power (Mains Power Sensing)			●
Redesigned PCAs			●
Amplifier Support / Ports			
52120A			●
5725A	●	●	●
Options			
Wideband Option	●	●	●
Rear Output Option	●	●	
Support			
Artifact Cal	●	●	●
Cal Check	●	●	●

5730A 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 function 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
Relative humidity	Operating: < 80% to 30 °C, < 70% to 40 °C, < 40% to 50 °C Storage: < 95%, non-condensing
Operating Altitude	2000 m maximum
Safety	IEC 61010-1: 300 V CAT II, Pollution Degree 2
Guard Isolation	20 V
EMC	IEC 61326-1: Controlled
Line power	Line Frequency: 47 to 63 Hz; $\pm 10\%$ 100V, 110V, 115V, 120V, 200V, 220V, 230V, 240V
Power consumption	300 VA
Calibration Documentation	17025 accredited report of calibration included
Dimensions	Height: 17.8 cm (7 in), standard rack increment, plus 1.5 cm (0.6 in) 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 (w/o options)	27 kg (62 lb)
Absolute accuracy definition	5730A accuracy specifications include stability, temperature coefficient, linearity, line and load regulation, and the traceability of the external standards used for calibration. You do not need to add anything to determine the total accuracy of your calibrator for the temperature range indicated.
Specification confidence interval	99%, 95%

Competitive Comparisons

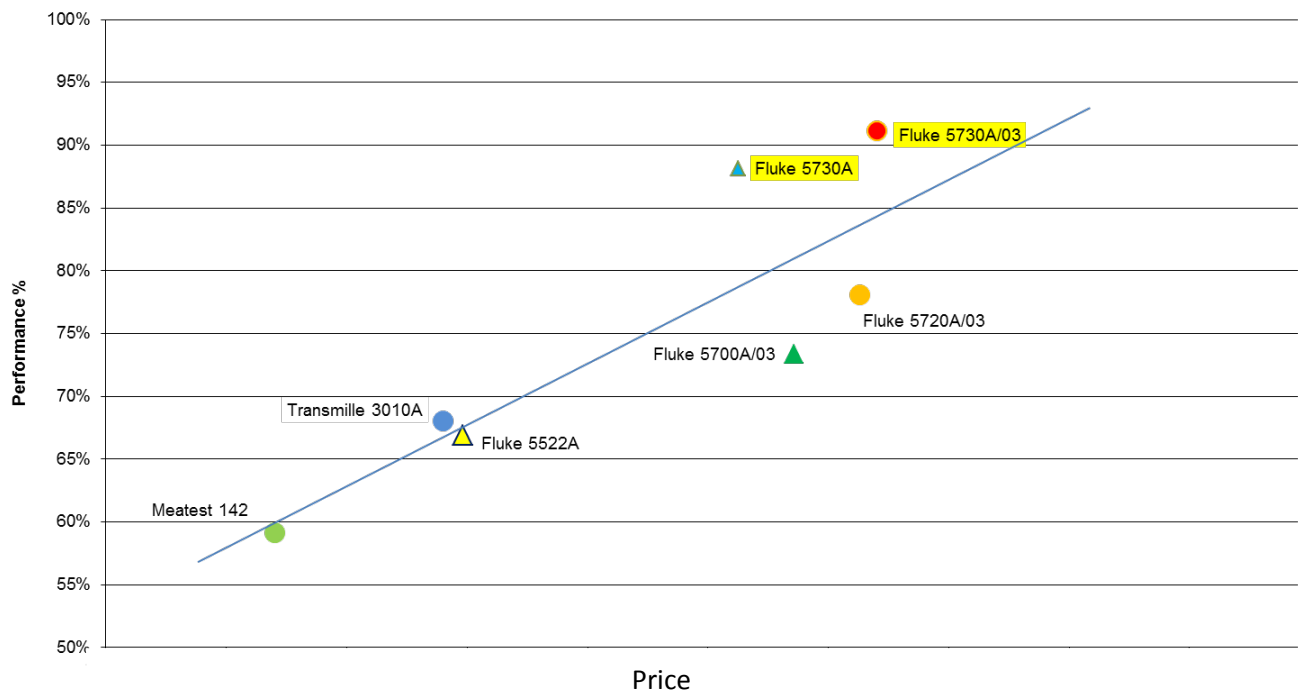
Make/Model		ACV, output range	ACV, output accuracy	DCV, output range	DCV, output accuracy	ACI, output range	ACI, output accuracy	DCI, output range	DCI, output accuracy	Resistance, output range	Resistance, output accuracy
Fluke 5730A/03		220 mV - 1100 V, 10 Hz - 1 MHz	42 PPM	0 - 1100 V	3.5 PPM	9 μ A - 2.2 A, 10 Hz - 10 kHz	103 PPM	0 - 2.2 A	35 PPM	0 to 100 M Ω , 18 discrete	6.5 PPM
Fluke 5720A/03		220 mV - 1100 V, 10 Hz - 1 MHz	45 PPM	0 - 1100 V	3.5 PPM	9 μ A - 2.2 A, 10 Hz - 10 kHz	120 PPM	0 - 2.2 A	35 PPM	0 to 100 M Ω , 18 discrete	8.5 PPM
Transmille 3010A		0 - 1020 V, 10 Hz - 500 kHz	150 PPM	0 - 1025 V	8 PPM	20 μ A - 30 A, 10 Hz - 10 kHz	400 PPM	0 - 30 A (time limit)	50 PPM	0 Ω - 1000 M Ω	8 PPM
Meatest 142		0 - 1000 V, 20 Hz - 100 kHz	180 PPM	0 - 1000 V	10 PPM	1 μ A - 30 A, 20 Hz - 10 kHz	500 PPM	0 - 30 A	100 PPM	0 Ω - 1000 M Ω	100 PPM
Fluke 5522A		1 mV - 1020 V, 10 Hz - 500 kHz	120 PPM	0 - 1020 V	9 PPM	29 μ A - 20.5 A, 10 Hz - 30 kHz	350 PPM	0 - 20.5 A	80 PPM	0 M Ω - 1100 M Ω	22 PPM

Competitive Comparisons

Make/Model		Display	Wideband Specs	Artifact Calibration	USB control port	RS232 control port	IEEE488	Ethernet port	Boost Current	Front Panel Protection	Price
Fluke 5730A/03		6.5" VGA Touchscreen	300 μ V - 3.5 V, 10 Hz - 30 MHz	YES	YES	YES	YES	YES	5725: 11 A 52120: 120 A	NO	\$65,000
Fluke 5720A/03		Dual VFD	300 μ V - 3.5 V, 10 Hz - 30 MHz	YES	NO	YES	YES	NO	5725: 11 A 52120: 120 A	NO	\$63,605
Transmille 3010A		VFD	Optional	NO	Optional	YES	Optional	NO	N/A	YES - to 150 V	\$29,000
Meatest 142		VFD	NO	NO	NO	YES	YES	NO	N/A	NO	\$15,000
Fluke 5522A		Dual VFD	Optional	NO	NO	YES	YES	NO	N/A	YES - to 300 V	\$30,645

Price vs. Performance

Multifunction Calibrator Product Positioning



NOTE: Accuracy is weighted higher than feature set.

5730A vs. 5720A

The 5730A adds the functional improvements over its predecessor listed in the table below. The 5700A and 5720A will remain available to customers for a limited time (5720A production until 8/2014; 5700A production planned until 8/2015). After the 5700A & 5720A are discontinued, Fluke Calibration will only be able to service existing 5700A and 5720A calibrators as long as replacement parts are available (unknown at this time). The target support period is five years, but make customers aware that Fluke Calibration has a limited number of remaining components and they should make plans to upgrade to the 5730A at their earliest convenience. By upgrading now, they can begin to track and characterize the new 5730A for superior performance.

New 5730A Features
Improved specifications for AC Voltage, AC Current, and resistance
6.5" VGA Touchscreen User Interface
Compatible with Fluke 52120A Amplifier in closed loop mode.
Ethernet and USB ports
GUI in 9 languages
LED lit outputs for cable connection guidance
Automatic power mains sensing
Surface Mount internal PCA technology

12. Common Objections

Objection	Response
My 5700A/5720A is working just fine, why should I replace it?	That is great. How long have you used your 57xx?
	<u>0-8 Years (secondary target):</u> <ul style="list-style-type: none"> • Ask about capacity (potential additional units) • Discuss trade-in • Discuss Features and Benefits • What is your current range requirements (possible 5730A/52120 closed loop solution)
	<u>8+ Years (primary target):</u> <ul style="list-style-type: none"> • Discuss End-of-Life • Probe service/repair history • Discuss Features and Benefits • Discuss trade-in • What is your current range requirements (possible 5730A/52120 closed loop solution) • Utilize Service Report (i.e. number of repairs)
I just purchased 5700A/5720A and now this will be obsolete.	A. Fluke will provide repair/cal for ~5 years years from the date of obsolescence (dependent upon parts supplies).

I have a budget for upgrades but not capital expenditures.	A. Unfortunately, we cannot classify the 5730A as an upgrade to an existing calibrator due to legal issues and requirement to give unique serial numbers.
What does the 5730A bring me more, except for a new look and feel?	See key features and benefits

13. Product demonstration

This demo sequence will help you deliver a quick yet thorough demonstration of the capabilities of the 5730A Multifunction Calibrator. You may wish to point out that the feature set and operation of the 5730A is very similar to the 5700A and 5720A calibrators.


Equipment required

8846A DMM

5730A Multifunction Calibrator

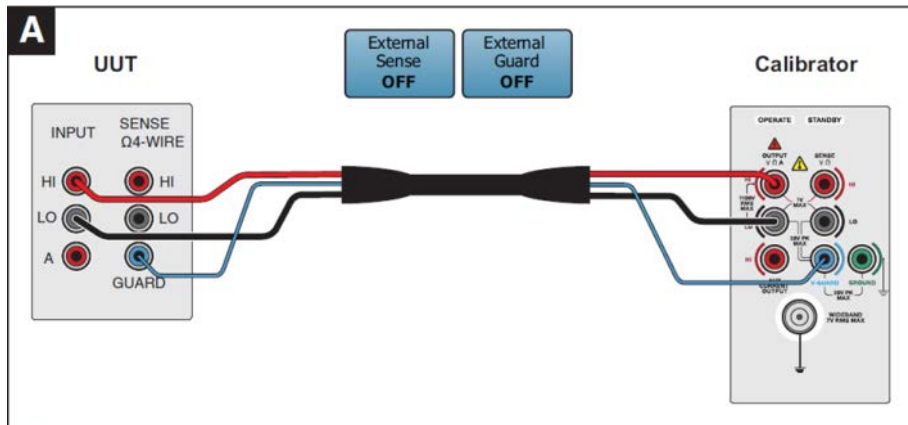
Low Thermal EMF Cable with Banana Connectors

Instrument Setup

- 1) Power up the 5730A by first turning on the rear power switch followed by the front panel power switch.
- 2) The default screen is the output screen with 0.0000 mV displayed. Press the "Setup Menu" key in the lower right corner of the touchscreen.
- 3) A list of all the editable features of the 5730A appears, grouped by feature type. Each of the 5 feature types are essentially huge buttons to access each of the features in the list on the next lower menu level. Press anywhere in the "Instrument Setup" menu.
- 4) Next touch the "Accuracy Information" button. Two menu items appear: Calibration Interval and Confidence Interval. For this Demo, set the 5730A to "1 Year" Calibration Interval and a Confidence Level of "99%." The Calibration Interval menu brings up a list of selectable intervals while the Confidence Interval menu toggles between the 2 available choices.
- 5) Prior to exiting the Setup Menu, use the Breadcrumb navigation at the top of the touchscreen to jump backwards 1 or 2 levels. Press the arrow marked "Instrument Setup" to return to the previous screen or the arrow marked "Setup Menu" to jump back 2 screens with a single button press. This feature was incorporated to give the user better control and usability of the 5730A.
- 6) Take some time to explore the new menus of the 5730A. The goal of the Setup Menu is simplicity and flatness. We put in great effort to design the menus so you can access any function within 3 presses of a button. For time's sake, please don't execute an Artifact Calibration or Cal Check routine as they take approximately an hour to finish. If you hit the wrong key, simply press the  key to return the calibrator to its default state.

- 7) Once you are done exploring the Setup Menu layout and operation, press the “Exit” key to return to the main output screen.

DC Voltage



- 1) Connect the 8846A to the 5730A output terminals as shown in Figure A. The 8846A does not have a Guard input terminal. You may leave the Guard cable disconnected.
- 2) Press the [DC V] key on the 8846A.
- 3) Enter 10 millivolts on the 5730A and output the voltage. **1 0 m V ENTER OPERATE**
- 4) The 8846A should read approximately 10 mV.
- 5) Adjust the 5730A by rotating the knob until the 8846A displays exactly 10 mV. Notice which digit is highlighted in yellow on the 5730A output. Change the output by larger or smaller increments by using the **◀ ▶** keys to move to a different digit.
- 6) As you adjust the output, the touchscreen displays shows meter error in % or parts per million (PPM). The reference value (10 mV) is shown on the left side of the output screen and the error calculation is shown on the right. Compare the Error level to the Performance Specification displayed in the top right of the touchscreen. (It may be in different units).
- 7) Notice that the 5730A is in the 220 mV range and in “Auto Range” as shown by the oval located directly above the output voltage on the touchscreen. To lock the 5730A in the current range, press the yellow dot to the left of “Auto Range.” Now if you attempt to enter an output value greater than 220 mV, an error message appears to inform you that the calibrator is in a locked range. To change back to “Auto Range,” simply press the yellow button again.




Only DC voltage and DC current ranges can be locked. This ability allows the user to maintain a constant zero value. This is needed for precision linearity testing of the high performance DMMs.

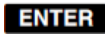






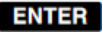


Linearity Error

- 1) Press the 8846A's "Range" button to lock its 100 mV range. A small "MAN" indicator will light up on the left side of the display. If not in the 100 mV range, press the up and down arrow keys on the 8846A until "RANGE=DC100mV" is displayed.
- 2) Press the "Auto Range" button on the 5730A to lock the calibrator in the 220 mV range.
- 3) On the 5730A, enter 0 mV. **0** **m** **V** **ENTER** **OPERATE**
- 4) Adjust the 5730A by rotating the knob until the 8846A displays 0 mV.
- 5) Press the **+** key above the 5 button toolbar to access the Linearity Error menu. Press the "Offset" button. The zero offset of the 8846A is now displayed at the bottom of the output screen.
- 6) Enter 10 mV on the 5730A. **1** **0** **m** **V** **ENTER** **OPERATE**. Instead of 10 mV, the offset voltage is displayed on the 5730A output.
- 7) Use the knob on the 5730A to adjust the output so the display of the 8846A is exactly 10 mV.
- 8) Press the "Scale" button. The 8846A Scale Error is now displayed in the lower right of the output screen.
- 9) Now enter another value that falls in the locked ranges of the 2 instruments. (In this case, the 8846A range limits you to 100 mV.) Make sure to hit the **OPERATE** button after entering the voltage.
- 10) The display of the 8846A should be exactly (or very close to) the value you entered on the 5730A since you have now accounted for the linearity error of the DMM. It is important to check the linearity of DMMs. The 5730A display and error calculations eliminate the need for manual calculations. In a closed-loop application, this can all be done over the IEEE-488 interface between the calibrator and UUT.
- 11) Press the **Reset** key to place the 5730A calibrator in Standby and 0 mV output. Alternately, you can play with the Scale and Offset keys to adjust the output or change voltages as you desire.

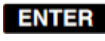

AC Voltage







- 1) Press the 8846A [AC V] key to select AC Voltage.
- 2) Enter 1 V at 1 kHz on the 5730A. Notice both the voltage and frequency are displayed on the 5730A output screen. The output of the 5730A is always displayed on the touchscreen unless you are in Setup. This is to provide for user safety.
- 3) To quickly change to DC voltage, simply enter "0 Hz **ENTER**" on the 5730A. Conversely, to quickly change to AC voltage, simply enter a frequency value and hit **ENTER**.
- 4) Adjusting for Offset and Scale Error is the same as for DC Voltage. Notice that the dot to the left of the "Auto Range" button is no longer yellow. Nothing happens when you touch the button this time. This is because there are no locked ranges in AC Voltage, AC Current, or Resistance.
- 5) Press the **Ampl Freq** key on the 5730A located above the knob. Now the frequency output is highlighted and you can edit the frequency value in the same way you changed the voltage

value before. Using the   and the knob, any frequency digit can be adjusted. To switch to edit the voltage, press the  key once more.



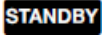
- 6) Adjust both the voltage and frequency to new values. Hit the  key. Notice that the voltage returns to the original value of 1 V, but the frequency stays at the new, adjust value. This functionality reduces the number of keys strokes when testing frequency response.
- 7) Use the knob and   keys to set the 5730A output voltage to 1.001000 V. Make this the new reference voltage by pressing the  key and pressing the “New Reference” button. Now all adjustments and errors will be displayed with respect to 1.001000 V.
- 8) Output in AC Voltage can also be entered in dBm. Enter 0 dBm at 1 kHz. The only difference is using the  key instead of the  key. Adjust the output and notice the units of the Error calculation displayed.
- 9) If the Phase Control button is not displayed on the touchscreen, press the  key. Press the “Phase Control” button.
- 10) The “Phase Lock” key allows you to lock 5730A output to an external signal applied to a BNC connector on the rear panel. The Phase Lock will toggle between “Internal” and “External” when pressed. To activate the Phase Lock, press the square check box next to the Phase Output scale. If the Phase Lock is set to “External” and the 5730A is in Operate, it will attempt to lock onto the external signal. In this case, there is no external AC signal, so an error message appears.
- 11) The Phase Output menu allows you to control the rear phase shift output. You can adjust the Phase Shift in 3 ways:
 - a. Rotate the knob to the desired degree value
 - b. Enter the desired value using the numeric keypad and press the  key
 - c. Touch your finger to the linear scale to move the triangle pointer. (Sliding your finger does not work)
- 12) Once finished exploring the Phase Control features, you can return to the output screen by hitting the  key or the  key.

Resistance

- 1) Press the [Ω] key on the 8846A to select resistance.
- 2) Enter 100 Ohms on the 5730A, , and then . Press the “2-Wire Comp” button at the bottom of the touchscreen to account for the lead and contact resistance. With “2-wire Comp ON,” the resistance value should get closer to the nominal value. However, the lead resistance between the 5730A output terminals and the 8846A input terminals has not been accounted for.
- 3) Although not provided in the Demo kit, if you hook up a 4-wire Sense cable between the instruments and press the “4-Wire Sense” button, the 5730A will compensate for lead resistance right up to the input of the 8846A DMM. If you hook up 4-Wire Sense, make sure to press the [4 WIRE] key on the 8846A. All resistance values except 100 M Ω can be 2-Wire or 4-Wire sensed.

- 4) There are 18 discrete resistance values available in the 5730A, from 1 Ω to 100 M Ω in decade values of 1 and 1.9. The 1.9X values allow you to calibrate most DMMs at near full scale.
- 5) To see all available resistance values, press the  key and then the “ Ω Value Table” key. A list of all selectable values appears. All you have to do is touch the desired value with your finger!
- 6) Select “10 k Ω ” from the table and hit .
- 7) Now when you adjust the knob, something different happens. Since the resistance values in the 5730A are discrete, the resistance value cannot be changed in the 5730A. Instead, use the knob and   keys to adjust the Reading value in the lower left corner of the output screen to match the display of the 8846A. Once matched, the corresponding Error value is shown in the lower right.
- 8) Press the   keys to increase or decrease the resistance value by 1 decade. These keys also work for other output functions at any value within the range of the calibrator. This saves keystrokes when testing DMM ranges at full scale.

DC Current

- 1) Set the 8846A to measure DC current by pressing the [DC I] key. We will use the Auxiliary current terminals for this exercise, so move the red (High) cable connected to the 8846A to the “400 mA” input and move the red (High) cable connected to the 5730A to the “AUX Current Output” terminal.
- 2) Enter 100 mA on the 5730A and press . Press the “Current Output” button at the bottom of the touchscreen display so it lights up and displays “Current Output AUX.” The auxiliary current output terminal on the 5730A should now be lit up to verify that you have made the correct connection. Hit . The 8846A should display 100 mA.
- 3) Hit  to internally disconnect the 5730A output terminals. The Auxiliary current terminals allow you to set up a procedure for meters with separate current input terminals without moving the cables mid-procedure. This is particularly useful when performing automated procedures in closed-loop operation.

AC Current

- 1) Press the [AC I] key on the 8846A to select AC current.
- 2) All of the operation of AC Current functions are very similar to AC voltage functions and therefore do require a separate demonstration. Feel free to experiment with different AC current values (9 μ A to 2.2 A) between the 2 instruments.

14. Ordering Information

Each 5730A includes the calibrator, User's Manual (CD ROM, i.e. softcopy), Getting Started Guide (hard copy), AC mains cord, Accredited Calibration Certificate Traceable to International Standards with Data.

Item Number	Item Model	Description
4200829	5730A 115	5730A Multifunction Calibrator, 115 V
4334872	5730A 230	5730A Multifunction Calibrator, 230 V
4334872	5730A/03 115	5730A Multifunction Calibrator, 30 MHz Wideband, 115 V
4334897	5730A/03 230	5730A Multifunction Calibrator, 30 MHz Wideband, 230 V
4388364	5730A/S 115	5730A Multifunction Calibrator, NO FRONT PANEL USB port, 115 V
4388373	5730A/S 230	5730A Multifunction Calibrator, NO FRONT PANEL USB port, 230 V
3800663	57XX/CASE	5730A Carrying Case
827105	Y5737	5730A Rack Mount Kit
4355601	Y5738	5730A Rack Ear Kit
4376007	5730A-7002	Low Thermal Copper EMF Plug-In Cables, Banana (2) 4 ft. cables ONLY; doesn't include the short cable like the 5440A-7002 cable set. 5440-7002 still available for order.
4376018	5730A-7003	Low Thermal Copper EMF Plug-In Cables, Spade (2) 4 ft. cables ONLY; doesn't include the short cable like the 5440-7003 cable set. 5440-7003 still available for order.

15. Schedule

Product Announcement – September 18, 2013

Orders Accepted – September 18, 2013

First Product Shipments -- October 2013

16. Sales and Marketing Materials

The following sales and marketing materials are accessible from the 5730A Launch Page found at:

<http://eu.flukecal.com/5730A-Launch-EU>

17. FAQ

Ref#	Question	Answer
Current unit/replacement/upgrade		
1	How much longer can I purchase the 5700A or 5720A?	The 5720A will be available one year after introduction of the 5730A. The 5700A will remain in production longer, based on availability of components
2	How much longer will you support the 5700A and 5720A Series?	The 5700A and 5720A will be supported 5 years after date of last production or until Fluke Calibration can no longer support due to limited components, whichever is shorter.
3	Can I upgrade my 5700A or 5720A to a 5730A?	Not at this time.
4	Do you still offer the 5700-EP UG for upgrading my 5700A?	The upgrade for a 5700A to a 5720A will only be available until end of 2013.
5	Can I trade-in my 5700A or 5720A for a new 5730A?	Yes, please contact your local sale representative to get details.
6	Will a 5730A work in place of a 5700A or 5720A in an automated system?	Yes. The 5730A has "Device Mapping" capability, meaning it can emulate a 5700A or 5720A in an automated system running MET/CAL. This means you don't have to change any of your 5700A/5720A procedures. However, the improved specifications can only be used with the newest version of MET/CAL (version 8.2 at release).
Product		
6	What spec changes are with the 5730A?	Specifications have been improved in AC Voltage, AC Current, and Resistance. See Appendix A for individual ranges and functions that were changed. 40% improvement in ACV. Still require guardbanding for 3458A and 8508A, but TURs are improved on specific "problem points."
7	Which type of certification is provided with unit?	An ISO/IEC 17025 Accredited Calibration Certificate Traceable to International Standards with Data
8	Does the 5730A also provide 95% and 99% confidence level specifications?	Yes it does. Fluke guarantees a new unit to the 99% Confidence Interval.
9	Can I use the 5730A under my scope of accreditation when it is a replacement for the 5700A or 5720A?	Yes, you can continue under your current scope utilizing the specifications from the 5700A/5720A. If you are using the new 5730 uncertainties, then you will need to adjust your scope during your next audit.
10	Why does the 5730A have two USB ports?	One USB port on the back is for instrument control by a host PC while the port on the front is available for Artifact Cal and Cal Check calibration data storage on a USB storage device in .CSV format.
11	Will the 5730A have similar reverse output protection as per 5522A/ 5502A?	No the 5730A does not have such protection. Such rigid output protection would decrease the calibrator's accuracies.
12	What options are available with the 5730A?	The /03 Wideband option is the only option available which is utilized to calibrate RF mV meters. The 5730A/S comes without a Front Panel USB Port if security is an issue for customer.

13	Is there a 5730A version without USB thumb drive port?	Yes, there will be a version available without the USB port on the front. It is called the 5730A/S.
14	Which lead kit should I use with the 5730A?	Both the 5730A-7002 and the 5730A-7003 Low Thermal Leads can be used with the 5730A. They are physically the same cabling as the old 5440A models, but come with (2) 4 ft. cables only instead of (1) 4 ft. cable and (2) 2 ft. cables. The 5440A cables are nice to have for connecting standards when performing Artifact Calibration. The 5730A models are meant for performing calibrations with the longer cables.
15	Does the 5730A use Copper-Beryllium output terminals?	Yes, the 5730A does use Copper-Beryllium output terminals to minimize the thermal EMFs.
16	Do I have to retrain my operators to "drive" the 5730A?	No, there is no need to re-train the operators. The 5730A front panel utilizes the same calculator-style control input keyboard, unit keys, multiplier keys, and adjustment knob.
17	What are the benefits of the VGA Touch Screen?	The VGA Touch Screen allows you to quickly access Setup Menus and device settings, yielding quicker setup times and easier operation of the unit. The output status and other indicators on the front panel are easily identified from across the lab.
18	Is the Touch Screen robust?	At 50% brightness, the supplier estimates a screen lifetime of approximately 15 years. Lower brightness settings will extend the life. The outer glass layer is an overlay on the screen, providing for durability and better touch sense. The mechanical supports also allow for minimal flexibility when pressing the touch screen.
19	Does the 5730A have rear outputs?	No, the 5730A does not have rear outputs as an option at this time.
20	Does the 5730 provide control of the 5725A and 52120A Amplifiers?	Yes, the 5730A provides interfaces for a closed loop (2-way communication) control of the 52120A and the 5725A through the 5730A front panel. The 5730A is equipped with interfaces for each of the amplifiers. However, the 5220A and 5205A amplifiers are no longer supported by the 5730A.
21	Is the unit GOST Certified (CIS FAQ Only)?	Yes, the unit will be GOST certified as soon as the Pattern Approval is completed by the GOST certification body. It is expected by early 2014.
22	Any special requirements for AC Power for the 5730A?	Incoming mains voltage and frequency are automatically sensed by the 5730A, and switching fuses in no longer required (chooses/switches fuses automatically). Frequency range: 47-63 Hz Mains Voltages: ($\pm 10\%$) 100 V, 110 V, 115 V, 120 V, 200 V, 220 V, 230 V, 240 V
23	Why are there 2 power switches on the 5730A?	The feature is known as "Soft Power." The power switch on the rear panel completely disconnects the unit from all mains power. The power switch on the front is related to the automatic power sensing capability of the unit. When the rear switch is ON and the front is OFF, the power sensing feature is active and provides the correct voltage and frequency settings when the front switch is turned ON.

MET/CAL, Remote Control		
23	What version MET/CAL is required to run?	Met/CAL V8.2 is required to utilize all 5730A capabilities and functions.
24	Will the 5730A run with 57XX MET/CAL procedures?	Yes, the 5730 will run with existing MET/CAL procedures (by setting the unit to emulate 5700A or 5720A either through the front panel or remotely). When using the new features (and performance specifications) of the 5730A, MET/CAL needs to be upgraded to V8.2 or newer and procedures will need to be modified to utilize the new features.
25	Is there a NI Lab view driver for the 5730A?	No, not at the moment.
26	Do I need an IEEE card to control the 5730A with my PC?	No, the 5730A has four industry accepted interfaces: IEEE, Ethernet, RS-232 and USB. IEEE is required for use with MET/CAL.
Service		
27	Where do I send back my 5730A for calibration?	To a Fluke Calibration Service Center. All options are available online at www.flukecal.eu . However, if using Artifact Calibration, Fluke Calibration recommends sending the unit in every two years for a full verification. Normal calibration period is one year.
28	Can I get a Gold / Silver Care Plan for my 5730A?	Yes. All standard Gold/Silver Care Plans are available for the 5730A.
29	Do you still offer a Gold / Silver Care Plan for my 5700A and 5720A?	Yes, 1 Yr and 3 Yr CarePlans will be available, but length of Care plan will be determined by period until obsolescence date of 5700A / 5720A calibrator.
30	What manuals, data, information come with the 5730A?	The unit ships with a printed Getting Started Guide in 1 of 9 languages. The CD includes the full Operators Manual in English and the Calibration Manual in English. It also includes the required USB driver. Chinese, Japanese, and Russian Operators Manuals will be coming soon. There will also be a DVD included which contains the Linux Source Code for the 5730A firmware.
31	What accessories does the 5730A ship with?	The 5730A ships with an AC power cord, Calibration Certificate, Operators Manual CD, and Printed Getting Started Guide.
Artifact Cal and Cal Check		
30	Does the 5730A use the same "Artifact Cal process" as the 5700A/ 5720A?	Yes, it utilizes the same proven Artifact Cal methodology that has been used over the last 25 years in the 5700A and 5720A.
31	How does Artifact Cal give me better specs?	Artifact Cal allows you to calibrate your instrument against the required standards in less than an hour. Through this, the 5730A can be used against 90 day or even 24 hour specs, depending on how often Artifact Cal is performed.
32	What equipment is needed to artifact calibrate the 5730A?	The only instruments required to calibrate the 5730A are a 732B , 742A-1, 742A-10K plus one of the recommended 5730A Lead kits (5440A-7003 Spade Lugs recommended for Art Cal).

33	When I perform an Artifact Cal, how will this affect my scope of accreditation?	If you are accredited using the 1-year specifications for your scope and then perform the Artifact Cal, you are OK. If you are accredited using the 90-day specification, then you will be required to run the Artifact Cal or utilize some other type of metrology to achieve the 90 day specifications.
34	What is Cal Check?	Cal Check is an internal calibration method which utilizes the internal reference to verify the performance of the internal circuitry. This then provides internal drift data to the USB memory device which may be used for drift/uncertainty analysis and charting. It does not allow the user to change any of the calibration constants; it is simply a check.

Appendix A: Performance Specification Improvements

5730A vs. 5720A

Summary Specification Improvements, 1 year, 99%

Resistance

Nominal Value (Ω)	Present Spec (ppm)	New Spec (ppm)	Improvement (%)
1 k	10	8	20
10 k	10	8	20
100 k	13	10	23
1 M	23	15	35

AC Current

Range	Frequency (Hz)	Present Spec (ppm + nA)	New Spec (ppm + nA)	Improvement (%)
220 μ A	40 – 1 k	140 + 10	120 + 10	14
2.2 mA	40 – 1k	140 + 40	120 + 40	14
22 mA	40 – 1 k	140 + 400	120 + 400	14
220 mA	40 - 1 k	140 + 3 μ A	120 + 3 μ A	14
2.2 A	20 – 1 k	320 + 40 μ A	300 + 40 μ A	6

AC Voltage

Range	Frequency (Hz)	Present Spec (ppm + μ V)	New Spec (ppm + μ V)	Improvement (%)
220 mV	40 – 20 k	100 + 8	70 + 8	30
	20 k – 50 k	250 + 8	150 + 8	40
	50 k – 100 k	600 + 20	400 + 20	33
	100 k – 300 k	1100 + 25	800 + 25	27
2.2 V	40 – 20 k	52 + 10	48 + 10	7
	20 k – 50 k	90 + 12	80 + 10	11
	50 k – 100 k	130 + 40	100 + 40	23
	100 k – 300 k	500 + 100	400 + 100	20
22 v	40 – 20 k	52 + 70	48 + 70	7
	20 k – 50 k	90 + 120	80 + 120	11
	50 k – 100 k	120 + 250	100 + 250	17
	100 k – 300 k	325 + 800	300 + 800	8

