

SALES GUIDE

5790B AC Measurement Standard

1. Product Positioning

The 5790B is the next generation of our very successful 5790A AC Measurement Standard. The technology behind the 5790A and the patented Fluke RMS sensor has made it the measurement standard of choice for calibration laboratories around the world. The 5790B retains the innovative technical features of its predecessor, and adds many new capabilities and functions which expand the capable workload and reliability of the product.



The 5790B doesn't compete against any other product in this category as there are no other products like this that can match its performance. The table below shows where the 5790B is positioned compared to our other Fluke products and long scale DMMs.

| Customer AC Measurement Alternatives | Performance Differences | Euro List Pricing |
|--|--|--|
| 792A & Thermal Voltage Converters (~5 – 10 ppm) | Best Accuracy, but single range, and single point calibration, complex measurement process, manual or semi-automated operation | € 67.8k |
| 5790Bs (~18 – 24 ppm) | Excellent accuracy, full amplitude and bandwidth operation, simple dmm style operation, fully automatable | € 36k for Base Model € 48.5k for WB options |
| 8.5 Digit DMMs (~60 – 75 ppm) | Moderate ac accuracy, full amplitude and bandwidth operation, simple dmm style operation, fully automatable | € 16k - 20k |

Another aspect of this product is it enables calibration laboratories to calibrate our calibrators. The 5790B is designed to meet the complete ac voltage, ac current and wideband verification requirements of the Fluke Calibration 5730A, 5720A, and 5700A Multifunction Calibrators; 5522A, 5502A, 5520A, and 5500A Multi-Product Calibrators; plus other calibrators, amplifiers like the 52120A, 5725A and 5205A/5215A, and transfer standards and ac voltmeters.

2. Value Proposition

The value proposition is “Precision AC voltage and current measurements has never been this easy”. “Easy” is based on a couple notable aspects for the product:

1. Touch-screen interface (similar to the 5730A)
2. Visual connection management terminals (similar to the 5730A)
3. On-screen measurement uncertainty (similar to the 5730A)
4. Wide working range of AC/DC Voltage Measurement (600 μ V to 1000 V, +5% over range)
5. Built-in current shunt library feature that will store the shunt errors that are used to calculate current which is shown on the display. No need to make any calculations. Up to 150 shunts can be stored along with the shunts’ serial numbers, calibration constant values (24 ac/dc, five loading error points) and calibration dates. After the shunt information is loaded, the 5790B can be set up to take a direct absolute or relative ac current measurement within seconds by hooking up the shunt and simply selecting the appropriate shunt from the main menu.

3. Key Selling Points

There are a few key selling points of this product that you should be aware of depending on your customer’s needs:

1. **Standard Class Accuracy** - Premium AC accuracy that is automatable and easy as a DMM to use – using the front panel or METCAL, the time to calibrate a high-end calibrator such as the 5730A is reduced significantly compared to other methods of calibration. Using the transfer mode, you can get up to 6 ppm better uncertainty depending on the voltage and frequency.
2. **Increased Workload** – The 5790B allows calibration labs to expand their workload to calibrate the AC voltage and current outputs of the 5700 series, 5500 series, and some common amplifiers such as the 52120, 5725A and 5205A/5215A. In addition, the wideband function allows you to verify the 30 MHz and 50 MHz WB outputs of the aforementioned products. In addition, the product can be used to help calibrate precision DMMs up to 8.5 digits.
3. **On-Screen, Real-time Direct Current Measurements** – The new 5790B is optimized for use with the A40B Series Current Shunts. The legacy “A” model used current shunts, but the current measurement had to be manually performed by the user which was tedious and prone to errors. The 5790B’s new user interface allows you to input and save current shunts to its memory. Up to 150 shunts can be stored along with the shunts’ serial numbers, calibration constant values (24 ac/dc, five loading error points) and calibration dates. After the shunt information is loaded, the 5790B can be set up to take a direct absolute or relative ac current measurement within seconds by hooking up the shunt and simply selecting the appropriate shunt from the main menu. When using a current shunt, 5790B displays both the voltage and current measurements on the display along with the shunt information. Legacy Fluke A40 and A40A current shunts as well as custom shunts can be loaded and used to make relative current measurements. Note – A40A and A40 shunts will not show the calculated current measurement on the display; only A40B or custom

shunts where the true resistance of the shunt is known. The formula used to calculate the current relies on the true resistance of the shunt and if it is unknown, "-----" will be displayed for the measurement. See the operator's manual for more information.

4. Target Customer

This product is ideal for NMIs and calibration laboratories. The table below outlines each segment.

| Segment | Unique Positioning Statement | Key Applications | Key Problems to Solve | Points of Differentiation from Competitors | Reasons They Will Buy |
|--|---|--|--|---|--|
| Tier 1 Electrical Metrology Labs | An simple one step replacement for AC/DC transfer standards | <ul style="list-style-type: none"> Calibrating 57XX Class calibrators and other top end AC sources | <ul style="list-style-type: none"> Complexity of AC/DC transfer measurements Measures a full range of amplitudes and frequencies within its limits of operation Automatable | <ul style="list-style-type: none"> DMM simplicity of measurement Automation with a single instrument vs. AC/DC transfer Standards | <ul style="list-style-type: none"> Approaches Fluke 792A performance with much greater simplicity A wideband RF measurement / calibration solution for 57XXAs with /03 options |
| Tier 2 & some select 3 Electrical Metrology Labs | A simplified dmm like solution for calibrating AC voltage and current functions from electrical metrology sources | <ul style="list-style-type: none"> Calibrating low to medium range calibrators and other AC sources | | | |
| USAF Primary Lab and system of PMEL Labs | A replacement for their existing 5790As with improved wideband performance | <ul style="list-style-type: none"> Calibration of AC sources and RF sources | <ul style="list-style-type: none"> Additional need to calibrate RF with 50 MHz test equipment | <ul style="list-style-type: none"> Extension of their existing 5790A applications | <ul style="list-style-type: none"> 50 MHz wideband capabilities |
| 5790A Replacement Market | A new generation of 5790A that offers improvements as well as compatibility | <ul style="list-style-type: none"> Established 5790A capabilities | <ul style="list-style-type: none"> Long term support of a 5790A device. 5 years from now there is no support | <ul style="list-style-type: none"> Same as Tier 1, 2 and 3 segments | <ul style="list-style-type: none"> Next generation of existing 5790A products they already use, insures future support |
| Tier 4-5 Electrical Metrology Labs | Not Usually Applicable | | | | |

5. Who Do I Call

In order to get traction immediately, the first customers to call would be legacy customers who have had their 5790A products for more than 5 years. The business unit can product this data to show historical sales data. These customers may be experiencing high service costs due to the products age. The laboratory manager will typically be the decision maker and would be the person to talk to about this.

For new product sales, find calibration laboratories who are not calibrating calibrators and introduce the idea of expanding their labs capabilities. For calibration labs who already calibrate calibrators, try to determine if they are at max capacity with their current 5790A and could use another.

6. Typical Applications

The typical applications are as follows:

1. Calibrating AC voltage and current aspects Fluke calibrators (5700s, 5500s, amplifiers). The product has a wide working range (600 μ V to 1000 V ac/dc).
2. Calibrating AC voltage and current aspects of 4.5 to 8.5 digit DMMs such as the Fluke 8508, 8846 and the Agilent 3458.
3. Characterization of AC voltage and current outputs of AC sources. Many labs use a 5790A in conjunction with their 57XX/55XX to gather statistical data on the product which in some cases allows them to get better uncertainty from the product.
4. Spot calibration of a 50 MHz power output of many RF meters such as the Keysight N1914A. When used for this, the product comes with a calibrated, 1 meter (3 ft.) cable which is directly connected to the 50 MHz output of the power meter. The coefficients of the cable are loaded into the firmware of the 5790B and when the option is turned on, the product is specified to provide 0.23% voltage accuracy for the 50 MHz spot calibration.



5. Additional workload for the product could be any of the following:

Keysight/Agilent:

- EPM-P E4416/17A
- EPM E4418/19B
- N1913/14A
- E4418B/E4419B
- N432A
- N1911A
- N1912A

8990B Peak Power Analyzer (has 50MHz and 1.05 GHz selectable ref out, could do the 50 MHz Ref)

HP/Agilent: 435B, 436A, 437B, 438A, 8902A E4417A,

Rohde & Schwarz: NRVD, NRP2

Anritsu: ML2437A, ML2438A RF Power Meter

Giga-tronics: 8541C, 8542C and 8650A Series Universal Power Meters

Boonton: 4540, 4530, 4240, 4300 Series

AeroFlex/Cobham/Marconi: 6960 Series

AeroFlex: CPM 20, 46 Counter Power Meter

Another use could be for calibrating Thermal Voltage Converters. TVC's need a NIST cal'd TVC from 50 kHz to 100 MHz which the NIST cal cost is based on number of data points needed. The 5790B could be used to correct the Sig/Arb Gen output up to 50 MHz and then you would only need to have NIST cal the TVC for points above 50 MHz to 100 MHz which would definitely lower cost to cal TVC's.

Other small residual items would directly being able to cal any 50 MHz function/arbitrary waveform Generator for voltage accuracy and flatness of output eliminating the use a TVC to cal those. Scope Probes to 50 MHz would be another.

7. Vintage Products

For vintage products, the 5790A is a direct replacement opportunity. The 5790B can fully emulate the 5790A without the customer needing to make adjustments to their procedures or remote SW. Also look for opportunities to replace legacy Fluke 540B Thermal Transfer Standards, and Wavetek 4920s and 4950s. These products are all listed as candidates for the standard trade-in program.



FIGURE 1 - FLUKE 5790A



FIGURE 2 - FLUKE 540B THERMAL TRANSFER STANDARD



FIGURE 3 - WAVETEK 4920/4950 (THEY LOOK SIMILAR)

8. Competitive Comparison

There are no competitors that offer this type of product. The unique advantage we have is based on the Fluke's patented RMS sensor. The 5790B has uncertainties as low as 24 ppm (measurement mode) and 18 ppm with transfer. The closest type of product would be an 8.5 digit DMM with uncertainties around 60 ppm.

9. Common Objections

The product is really only useful for AC: Yes, that is true – but the truth is that it has lower AC measurement uncertainties than any other product on the market (except the 792A). This is a calibrator that has the uncertainty to “calibrate calibrators”. With the aid of current shunts, the AC uncertainty can lend itself to make very precise current measurements. The 5790B can measure DC voltage and also has measurement uncertainties as low as 24 ppm as well but is not typically good enough to use to “calibrate a calibrator”.

My 5790A is working fine: This is a common objection of any customer when you introduce an “B” version. For this product, it is going to be a focus on replacing an aging calibrator and reducing service costs and downtime. If they bought the product in the last 5 years, the focus is going to be new functionality – UI, direct current readout with the A40Bs, and additional features such as the statistics and waveform calculator.

How can I trust the current readout: We are working on an application note to walk the customer through the calculation being performed by the 5790B. This will be available shortly after launch. In addition, we are revising the A40B Instruction Manual to incorporate 5790B information including the updated 5790A loading tables.

10. Product Demonstration

The early sales process is easily done with the printed material that is available from the sales partner portal. The brochure and related application information does an excellent job of pre-qualifying sales potentials. Once a prospect is identified then a product demonstration of the system operation could be important.

11. Ordering Information

Ordering information is shown below. Refer to your local price lists for pricing information.

| ITEM | MODEL | ITEM DESCRIPTION |
|---------|------------------|--|
| 4557925 | 5790B 115 | AC Measurement Standard |
| 4621445 | 5790B 230 | AC Measurement Standard |
| 4621450 | 5790B/3 115 | AC Measurement Standard+30MHZ Wideband Option |
| 4621461 | 5790B/3 230 | AC Measurement Standard+30MHZ Wideband Option |
| 4621477 | 5790B/5 115 | AC Measurement Standard+50MHZ Wideband Option |
| 4621489 | 5790B/5 230 | AC Measurement Standard+50MHZ Wideband Option |
| 4621492 | 5790B/AF 115 | AC Measurement Standard+50MHZ Wideband Option + Cable |
| 4684910 | 5790B/5 Demo 115 | DEMO KIT, 5790A/05, 1A A40B, WIDEBAND OPTION, WB CABLE, CASE |
| 4684922 | 5790B/5 Demo 230 | DEMO KIT, 5790A/05, 1A A40B, WIDEBAND OPTION, WB CABLE, CASE |
| 4684931 | 5790B/5 WB Cable | Cable, 50 Ohm Wideband Cable for 50 MHz Measurements |

Standard Lead time: 4 weeks ARO (6-8 weeks at launch)

Shipping contents: The 5790B comes in a corrugated box with suspension foam packing. Each product has a documentation kit with a safety sheet and a CD with the operators manual on it. There is also a CD that contains the open source SW licensing that we advertise use of (drivers). The product comes with a line cord appropriate for the ship-to region.

Gold and Silver CarePlans: GCPs and SCPs for the new 5790B are in development and will be launched in the near future.

Custom Systems and Upgrades: There are no custom systems available but upgrades are available. The product can be upgraded from base > /3; /3 to /5; or base to /5. The unit must come back to Fluke for the upgrade.

17025 Accredited Calibration Certificates: The product will have a 17025 accredited calibration from the Everett Primary Standards Laboratory.

12. Schedule

| Event | Date |
|--------------------------|-------------------------------|
| Open for orders | July 31 st , 2015 |
| Public Launch | August 3 rd , 2015 |
| First customer shipments | Q3 2015 |

13. Competency Training and Testing

Training is done through an individual's participation in a live the sales training webinar event or viewing its recorded version.

14. Sales and Marketing Documents

The sales tools are all centrally located on the launch page below. A product video is available that can be sent to customers as an initial overview. There are also assets available such as product pictures to create marketing literature.

Be sure to take advantage of available sales materials on the Partner Portal and 5790B launch page at:

- <http://eu.flukecal.com/5790B-Launch-EMEA> ».

15. FAQs

Question: What are the significant differences between 5790A and 5790B in term features, functions and specifications?

Answer: The significant differences between the two models are:

- (1) Updated User Interface including a touch screen display
 - (2) Visual connection terminals
 - (3) User configurable measurement statistics
 - (4) Waveform calculations (sine, square, triangle, truncated)
 - (5) Optimized A40B current shunt operation and on-screen current readout
(see operators manual)
 - (6) 50 MHz WB input for calibration of 5730A/05 WB
 - (7) 50MHz /AF version with characterized 50 ohm cable for calibrating 50 MHz RF power outputs
 - (8) Specs now list DC specs along with non-sine
(no significant changes to specs)
 - (9) USB remote communication
-

Question: Is MET/CAL procedures written for 5790A be compatible and executable with 5790B? (If no, how to make it compatible?)

Answer: Yes, the 5790B emulates the 5790A and will run all of the procedures currently available for the A model.

Question: What is product phase-out schedule (product discontinuation plan) for 5790A after 5790B is launched?

Answer: the 5790A is now obsolete due to a chip shortage. Please contact the BU if there are A versions of the product that you need to sell due to long term contract arrangements or bids. We have the ability to use used mercury chips but we will need to discuss this prior to discussing with the customer.

Question: What are the manuals (both hard and soft copy) will be available together with 5790B when it launches?

Answer: The 5790B has an Operators Manual (soft) and a safety sheet (hard). A Calibration Manual/Service Manual will be available near the end of the year.

Question: What are the standard accessories that will come with the 5790B when shipped?

Answer: The product comes with a regionalized line cord and a CD with Safety Sheet. It doesn't come with a set of leads. (With the exception of the special /AF version)

Question: What is/are the options can be installed to 5790B?

Answer: Options available are listed in Section 11 along with pricing information.

Question: What is/are the optional accessories for 5790B?

Answer: Accessories available are listed in Section 11 along with pricing information.

Question: Will the Gold care plan and silver care plan for 5790B be launched at the same time?

Answer: Yes – they will be activated at launch. Refer to Section 11 for details.

Question: Any introductory promotional discount packaging for trading in 5790A for 5790B?

Answer: Yes, standard 10 % trade-in discount for the following products: Fluke 5790A, Wavetek 4920/50, Fluke 540B. See Section 7.

Question: What is the standard calibration certificate/report that will come with the 5790B?

Answer: The product will come with a standard 17025 accredited calibration performed in the Everett Primary Electrical Laboratory.

Question: What is/are calibration certificate/report will be available for 5790B as options?

Answer: No selectable options – standard calibration cert only.

Question: Any special requirements of the AC power source to energize the Fluke 5790B?

(Is 5790B in auto voltage now?)

Answer: Like the 5730A, the product auto detects the line voltage on startup and no configuration is necessary other than using the correct line cord. Since the product is a measurement device vs. sourcing current and voltage, the product has less stringent power requirements.

Question: Any power-on self-test, diagnostic test available and required?

Answer: the product performs a self-test on startup automatically. There are also tools available in the Setup menu.

Question: Can I use the 57XX case?

Answer: Yes – the product fits well in this case.

Question: What happens if an AF customer breaks the 50 ohm cable and needs a new one?

Answer: When an AF version is calibrated, the cable coefficients are loaded into the firmware. If a new cable is supplied, they will need to re-accomplish calibration with the new cable.