TELEDYNE | LECROY

User Manual

ZS A-Series
High-impedance
Active Voltage Probes

ZS1000A, ZS1500A,
ZS2500A, ZS4000A

ZS A-Series High-impedance Active Voltage Probes User Manual

This document does not contain export-controlled information.

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Table of Contents

Safety Instructions

Observe generally accepted safety procedures in addition to the precautions listed here. **The overall safety of any system incorporating this accessory is the responsibility of the assembler of the system.**

Symbols

These symbols appear on the probe body or in documentation to alert you to important safety considerations.

CAUTION of potential for damage to equipment, or **WARNING** of potential for bodily injury. Attend to the information, and do not proceed until conditions are fully understood and met.

ELECTROSTATIC DISCHARGE (ESD) HAZARD. The probe is susceptible to damage if anti-static measures are not taken.

Precautions

Connect and disconnect properly. Connect the probe to the measurement instrument before connecting the test leads to a circuit/signal being tested.

Use only within operational environment listed. Do not use in wet or explosive atmospheres.

Use indoors only.

Keep product surfaces clean and dry.

Be careful with sharp tips. The tips may cause bodily injury if not handled properly.

Use only accessories designed for use with the product.

Observe all terminal ratings. To avoid electric shock or probe damage, do not use the probe above the input limits shown on the probe.

Do not bend cables excessively.

Do not operate with suspected failures. Do not use the probe if any part is damaged. Cease operation immediately and secure the probe from inadvertent use.

Operating Environment

The accessory is intended for indoor use and should be operated in a clean, dry environment. Before using this product, ensure that its operating environment is maintained within these parameters:

Temperature: 0 to 50 °C

Humidity: Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 45 °C

Altitude: Up to 10,000 ft (3,048 m)

Introduction

The ZS A-Series Probes (ZS1000A, ZS1500A, ZS2500A and ZS4000A) are small, high-impedance, active voltage probes designed to meet today's demand for measurements on a variety of test points. With low input capacitance and high input resistance, circuit loading is minimized.

The small, low-mass probe head is designed for high performance with ease of use. The probe tip socket fits easily onto 0.025-inch square pins for direct access to test points. Several available adaptors connect directly to the probe socket.

The ground socket accepts several different ground leads to provide a short ground path for optimal high-frequency performance.

With the ProBus interface, the probe becomes an integral part of the oscilloscope, controlled from the oscilloscope's front panel. The oscilloscope provides power to the probe, so there is no need for a separate power supply or batteries.

Standard Accessories

ZS A-Series probes are shipped with the following standard accessories:

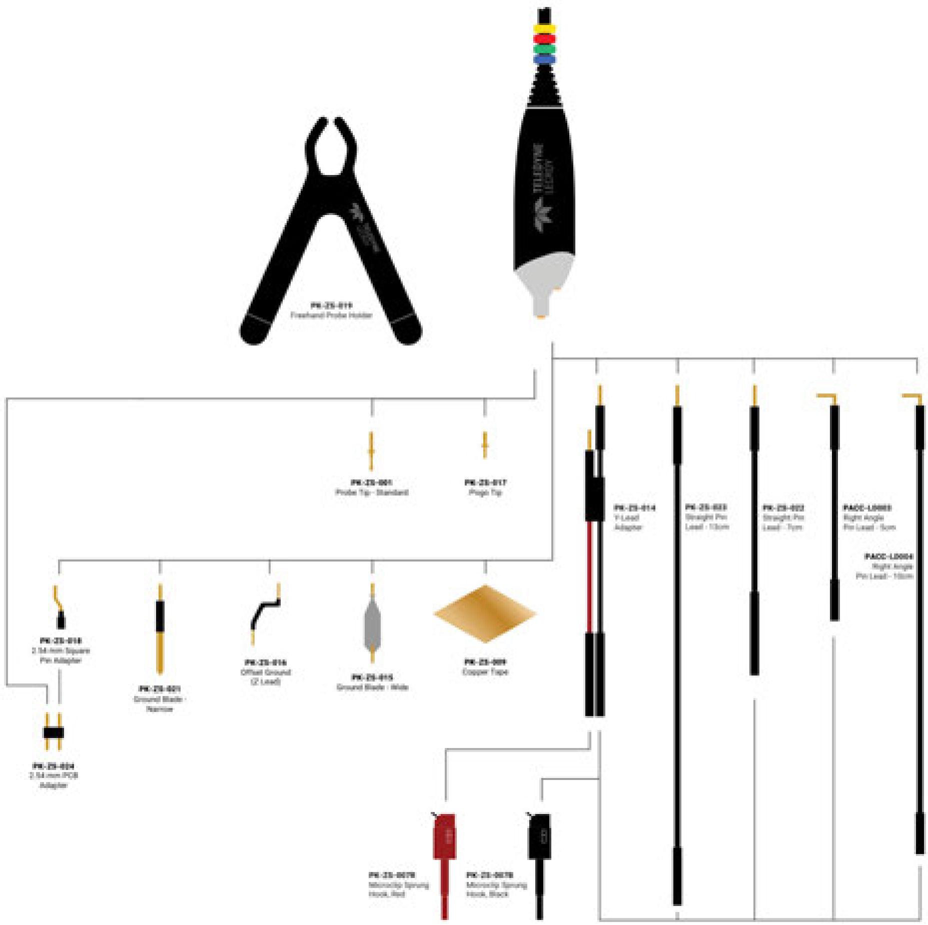


Figure 1. ZS A-Series standard probe accessories.

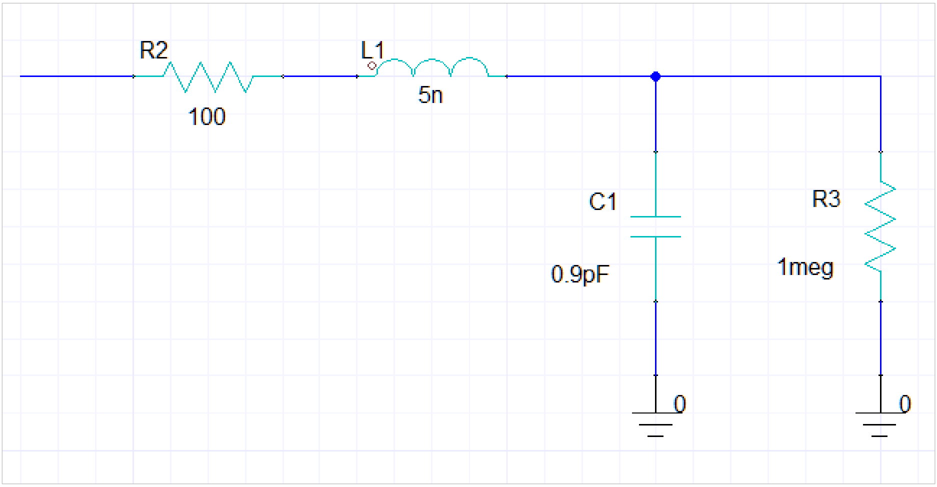
Standard Accessory	QTY	Part Number	Description
Tips			
Standard Straight Tip	2	PK-ZS-001	Rugged and designed for general probing. Fits in either probe socket.
2.54mm Square Pin Adapter	1	PK-ZS-018	Fits into the tip/ground socket or (with ZS4000A) onto leads for easy connection to 2.54 mm square pins.
Pogo Tip	1	PK-ZS-017	Provides z-axis compliance. It can fit into a socket or on an IC leg.
2.54mm PCB Adapter	2	PK-ZS-024	Fits into the tip socket or the Square Pin Adapter for easy connection to 2.54 mm square pins.
Leads			
Straight Pin Lead – Short	1	PK-ZS-022	It has a socket on one end and a square pin on the other. Connects to the input or ground socket for general purpose probing.
Straight Pin Lead – Long	1	PK-ZS-023	
Y Lead Adapter	1	PK-ZS-014	Used as both ground and input lead, it has two sockets on one end and two square pins on the other for general purpose probing.
Right Angle Lead – Short	1	PACC-LD003	It has a right-angle socket on one end and a square pin on the other. Connects to input or ground socket for general purpose probing.
Right Angle Lead – Long	1	PACC-LD004	
Ground Accessories			
Offset Ground (Z Lead)	1	PK-ZS-016	Connects to the ground socket and wraps around the probe head, making it possible to probe a signal and ground that are extremely close. The short length provides the highest quality grounding for high- frequency applications.
Ground Blade – Narrow	1	PK-ZS-021	Provides short, low-inductance ground path.
Copper Tape	2	PK-ZS-009	Adhesive backed to stick to an IC and be soldered to the IC ground.
Ground Blade – Wide	1	PK-ZS-015	For when the best quality ground is needed. The wide blade offers minimal inductance compared to the narrow ground blade.

Standard Accessory	QTY	Part Number	Description
Grabbers			
Micro-Grabbers (pair)	1 ea.	PK-ZS-007R PK-ZS-007B	Ideal for connecting to small IC legs or very tightly spaced pins.
Other			
Freehand Probe Holder	1	PK-ZS-0019	Allows you to concentrate on the waveform instead of maintaining contact with the test point. Designed to keep most of the weight on the probe tip, it will prevent loss of contact when a bump shakes the circuit.
Certificate of Calibration	1	ZS-CC	

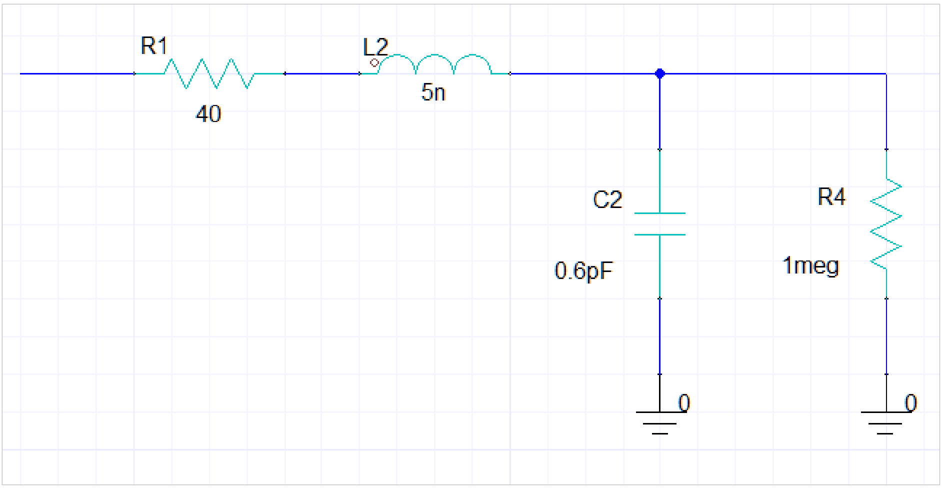
Specifications

	ZS1000A	ZS1500A	ZS2500A	ZS4000A
Electrical Characteristics				
Probe Bandwidth	1 GHz	1.5 GHz	2.5 GHz	4 GHz
Input Capacitance	0.9 pF		0.6 pF	
DC Input Resistance	1 MΩ			
Output Impedance	50 Ω			
Probe Offset Range	N/A	±15 V	±12 V	±12 V
Attenuation	÷10			
Input Dynamic Range	±15 V (DC or AC pk)		±8 V (DC or AC pk)	
Non-destruct Voltage	60 V		20 V	
System Rise Time	500 ps	350 ps	180 ps	112 ps
DC Offset Error	±2 mV			
LF Accuracy @ 70 Hz	0.50%			
Frequency Response Ripple	50 - 500 MHz: ±0.5 dB 0.5 - 1 GHz: ±1 dB			
Harmonic Distortion	5%			
Operating Temperature	0 to 50 °C			
Mechanical Characteristics				
Oscilloscope Interface	ProBus			
Weight	110 g			
Cable Length	1.2 m		1.3 m	

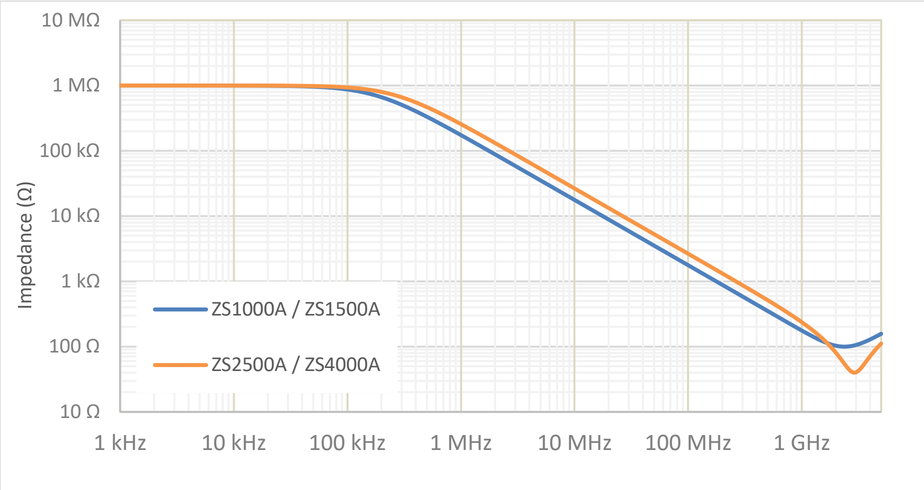
ZS1000A/ZS1500A Equivalent Circuit



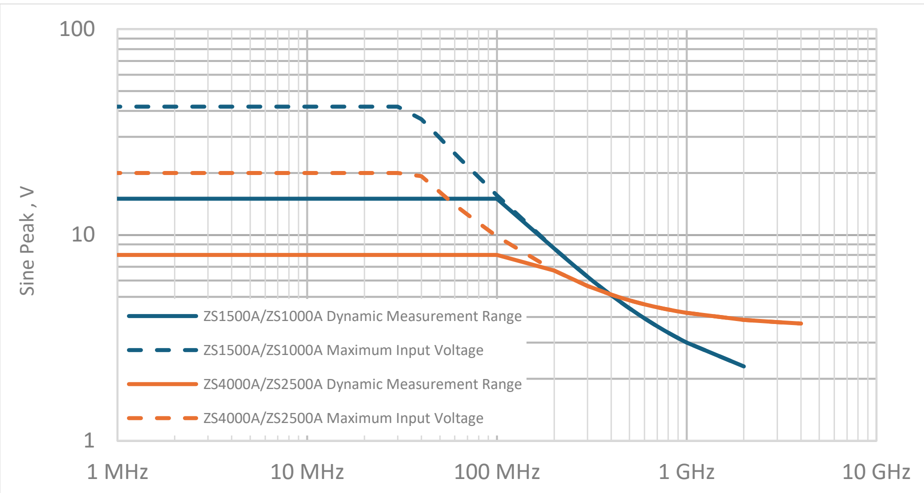
ZS2500A/ZS4000A Equivalent Circuit



Input Impedance



Frequency Derating



Probe Operation

ZS A-Series probes are designed for use with Teledyne LeCroy platforms equipped with the ProBus interface. When you attach the probe output connector to the oscilloscope's input connector, the oscilloscope recognizes the probe, provides proper termination, and activates the probe control functions in the user interface.

For correct probe operation, update your oscilloscope MAUI firmware to the latest version supported by your oscilloscope model. Contact your local Teledyne LeCroy representative or Customer Support if you are unable to download software for your oscilloscope from our website.

Handling the Probe

The ZS A-Series probes are precision test instruments. Exercise care when handling and storing the probe. Always handle the probe by the probe body or compensation box. Avoid putting excessive strain or exposing the probe cable to sharp bends.

ESD Sensitive: The tips of the probes are sensitive to Electrostatic Discharge (ESD). Avoid causing damage to the probe by always following anti-static procedures (wear wrist strap, etc.) when using or handling the probe.

Connecting the Probe to the Test Circuit

To maintain the high-performance capability of the probe in measurement applications, care must be exercised in connecting the probe to the test circuit. Increasing the parasitic capacitance or inductance in the input paths may introduce a "ring" or slow the rise time of fast signals. Input leads which form a large loop area will pick up any radiated electromagnetic field which passes through the loop and may induce noise into the probe input.

The available accessories make the ZS A-Series probe, with its small profile and low-mass head, ideally suited for applications in dense circuitry.

Operation with a Teledyne LeCroy Oscilloscope

When a ZS A-Series probe is connected to any compatible Teledyne LeCroy oscilloscope, the displayed scale factor and measurement values are automatically adjusted. A Probe dialog appears behind the corresponding Channel dialog.

The probe can be controlled through the oscilloscope front panel:

- The Volts/Div knob controls the oscilloscope's scale factor to give full available dynamic range up to 2 V/div (16 V peak to peak).
- The channel Offset knob controls the probe input offset circuit over its range of ±12 V.

High-frequency Measurements

Probe Input Loading

When you touch a probe to the circuit under test, the probe will affect your measurement because the probe's input impedance is introduced into the circuit. All probes present resistive, capacitive and inductive loading.

Inductive Loading (Lead Length)

A significant element in this circuit is the inductance shown in the input ground leads of the oscilloscope probe.

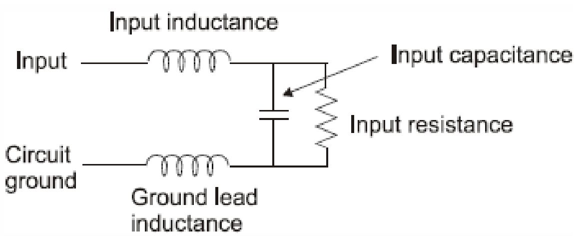


Figure 2. Generic probe input equivalent circuit.

The ground lead is the primary return path for the current resulting from the input voltage acting on the probe's input impedance. The ground lead and input lead inductances act with the probe's input capacitance to form a series LC network. The impedance of a series LC network drops dramatically at its resonant frequency. This is the cause of the "ring" often seen after the leading edge of pulses in measured waveforms.

This effect is referred to as ground lead corruption. Because it is impossible to eliminate either the L or C from this circuit, the method to improve waveform fidelity is to raise the resonant frequency beyond the bandwidth of interest in the measurement. The resonant frequency of a simple LC circuit can be represented by:

$$F_{resonance} = \frac{1}{2\pi\sqrt{LC}}$$

The resonant frequency of an LC circuit can be raised by decreasing the inductance, the capacitance or both. Since the input capacitance is already very low and cannot be reduced, you can only try to reduce the inductance. This can be accomplished by using the shortest possible input lead and ground lead.

For example, to obtain the shortest possible ground lead when measuring IC related signals, attach a small piece of copper clad material to the top of the IC package and connect this to the package grounding wires.
Using the shortest input lead and ground lead available makes probing signals on the package easier, and the shorter lead length makes for the best signal fidelity. Assuming an input capacitance of 0.9 pF for ZS1000A/ZS1500A or 0.6 pF for ZS2500A/ZS4000A and a total lead length (input and ground) of 2 inches (inductance of ≈ 25 nH/inch), there may be ringing with a resonant frequency (f0) of:

$$f_o = \frac{1}{2\pi\sqrt{50 * 10^{-9} * 0.9 * 10^{-12}}} = 750\ MHz$$

$$f_o = \frac{1}{2\pi\sqrt{50 * 10^{-9} * 0.6 * 10^{-12}}} = 920\ MHz$$

This frequency is well within the passband of the probe and therefore shows up as part of the measured signal at faster time/div settings.

To determine how fast of a rise time can be measured without causing ringing on a probe like this, divide the BW (ringing frequency) of the probe into 0.35:

$$t_{rise} = \frac{0.35}{BW} = \frac{0.35}{750\ MHz} = 470\ ps$$

$$t_{rise} = \frac{0.35}{BW} = \frac{0.35}{920\ MHz} = 380\ ps$$

Any input signal with a rise time faster than 470 ns on ZS1000A/ZS1500A or 380 ns on ZS2500A/ZS4000A can cause ringing.

Capacitive Loading

Capacitive loading is a troublesome loading effect, affecting rise time, bandwidth and delay time measurements. At higher frequencies, capacitive loading can affect the amplitude as well as the waveshape of the measured signal by introducing an exponential response to the waveform. For a simple RC network, the time constant of this exponential response is:

$$t_{rise} = 2.2 \times C_{total} \times R_{total}$$

Where C_{total} is the combined probe and circuit capacitance and R_{total} is combined circuit and probe resistance.

For a setup where C_{total} = 0.9 pF for ZS1000A/ZS1500A or 0.6 pF for ZS2500A/ZS4000A and source resistance of 250 Ω, the measured rise time will be 495 ps and 330 ps respectively, which will correspond to a bandwidth of 909 MHz, assuming no inductive loads:

$$t_{rise} = 2.2 \times 0.9 \times 10^{-12} \times 250\ \Omega = 495\ \text{ps}$$

$$t_{rise} = 2.2 \times 0.6 \times 10^{-12} \times 250\ \Omega = 330\ \text{ps}$$

Parallel combination of 250 Ω and 1 MΩ is still 250 Ω.

To illustrate the effect of capacitive loading at higher frequencies:

- At 750 MHz, reactance is 236 Ω for ZS1000A/ZS1500A and 354 Ω for ZS2500A/ZS4000A
- At 1.0 GHz, reactance is lowered to 177 Ω for ZS1000A/ZS1500A and 256 Ω for ZS2500A/ZS4000A

If, at a given frequency, the source impedance is large with respect to the input impedance, a measurable reduction in the output signal amplitude may occur:

$$V_{out} = \frac{Z_{probe}}{Z_{probe} + Z_{source}} \times V_{in}$$

where Z_{probe} is the probe input impedance and Z_{source} is the source impedance.

For example: at 750 MHz, where the probe input impedance is 236 Ω for ZS1000Z/ZS1500A and 354 Ω for ZS2500A/ZS4000A, with a source resistance of 250 Ω the probe output amplitude is reduced to:

$$V_{out} = \frac{236}{236 + 250} = 0.49 * V_{in}$$

$$V_{out} = \frac{354}{354 + 250} = 0.59 * V_{in}$$

Care and Maintenance

Cleaning

The exterior of the probe and cable should be cleaned using a soft cloth moistened with water. Abrasive agents, strong detergents, or other solvents may damage the probe. Always ensure that input leads are free of debris.

CAUTION. The probe case is not sealed and should never be immersed in any fluid.

Calibration Interval

The recommended calibration interval is one year from the time the probe is put into service. The complete performance verification procedure should be performed as the first step of annual calibration.

Service Strategy

The ZS A-Series probes utilize fine pitch surface mount devices. It is therefore impractical to attempt to repair in the field. Defective probes must be returned to a Teledyne LeCroy service facility for diagnosis and exchange. Defective probes under warranty are repaired or replaced. A probe that is not under warranty can be exchanged for a factory refurbished probe for a modest fee. You must return the defective probe in order to receive credit for the probe core.

Replacement Parts

The probe connection accessories and other common parts can be ordered through the North America Customer Care Centers. Refer to the Standard Accessories (p.4).

Performance Verification

This procedure can be used to verify the warranted characteristics of a ZS A-Series High Impedance Active Voltage Probe. It tests:

- Output Zero Voltage
- LF Attenuation Accuracy

Performance verification can be completed without removing the probe covers or exposing the user to hazardous voltages.

Required Test Equipment

This procedure has been developed to minimize the number of calibrated test instruments required. Only equipment listed in boldface must be calibrated to the accuracy indicated. Because the input and output connector types may vary on different brands and models of test instruments, additional adaptors or cables may be required.

The warranted characteristics of the probe are valid at any temperature within the Operating Environment (p.3) listed in this manual. However, some of the other test equipment used to verify the performance may have environmental limitations required to meet the accuracy needed for the procedure. Be sure that the ambient conditions meet the requirements of all the test equipment used in this procedure.

NOTE: The function generator used in this Performance Verification Procedure is used for making relative measurements. Because the output of the generator is measured with an oscilloscope in this procedure, it is not required to calibrate the generator.

Description	Minimum Requirement	Example Equipment
Oscilloscope	Probus Interface; Windows-based	Teledyne LeCroy WaveRunner 8000 or HDO 6000
Digital Multimeter (DMM) with test probe leads	4.5 digit DC: 0.1% Accuracy AC: 0.1% Accuracy	Keysight 34401A Fluke 8842A-09
Function Generator	Sine Wave output Amplitude adjustable to 14.14 Vp-p (5 Vrms) into 1 MΩ at 70 Hz	Keysight 33120A Stanford Research DS340
Power Supply	0-12 V, settable to 10 mV	HP E3611A
BNC Coaxial Cable (2 ea.)	Male to Male, 50 Ω, 36" Cable	Pomona 2249-C-36 Pomona 5697-36
BNC Tee Connector	Male to Dual Female	Pomona 3285
Calibration Fixture	ProBus Extender Cable	Teledyne LeCroy PROBUS-CF01
Terminator, Precision, BNC	50 Ω ± 0.05%	Teledyne LeCroy TERM-CF01
Banana Plug Adapter (2 ea.)	Female BNC to Dual Banana Plug	Pomona 1269
BNC to Mini-grabber	BNC Mail to Mini-grabber Cable, 36”	Pomona 5187-C-36

Test Setup and Preliminary Procedure

1. Connect the probe to the female end of the ProBus Extension Cable. Connect the male end of the ProBus Extension Cable to channel 1 of the oscilloscope.
2. Turn on the oscilloscope and allow at least 20 minutes warm-up time for the probe and oscilloscope before performing the Verification Procedure.
3. Turn on the other test equipment and allow them to warm up for the manufacturer’s recommended time.
4. While the instruments are reaching operating temperature, make a photocopy of the Performance Verification Test Record and fill in the necessary data.

Functional Check

The functional check verifies the basic operation of the probe functions. Perform the Functional Check prior to the Performance Verification.

1. Return to the factory default settings:
    - Choose File > Recall Setup from the menu bar.
    - Touch the Recall Default button.
2. Touch the C1 descriptor box to open the C1 dialog.
3. Verify that the probe is sensed and the correct model displayed on the probe dialog tab behind the C1 dialog.

Verification Procedure

A. Output Zero Voltage

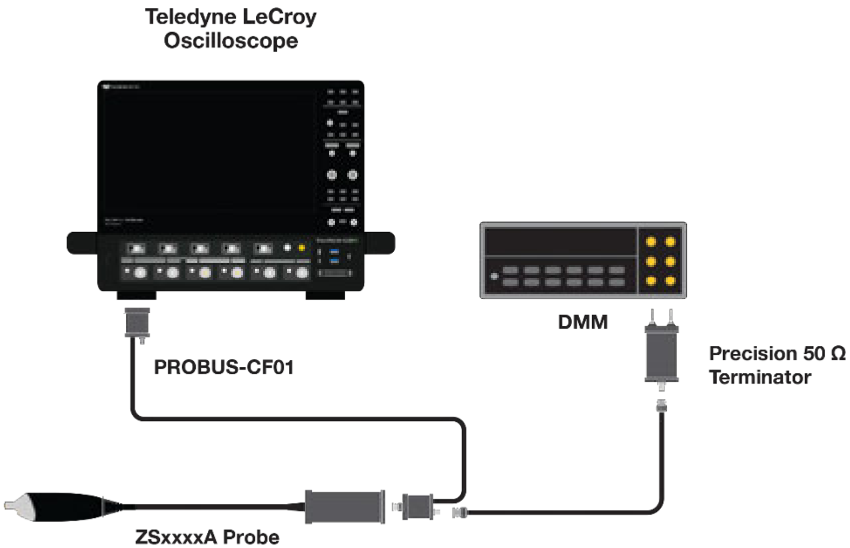


Figure 3. Output Zero Voltage Test Setup.

1. Connect one end of a BNC cable to the female BNC connector on the probe end of the ProBus extender cable. Connect the precision 50 Ω terminator to the other end of the BNC cable.
2. Connect the banana plugs of the Precision terminator to the input of the DMM. Make sure that the plug corresponding to the BNC shield (marked "Ground") is connected to the LOW or COMMON input of the DMM.
3. Set the OFFSET on the oscilloscope to zero.
4. Set the DMM to read DC Volt on the most sensitive range.
5. Record the voltage measured on the DMM to 100 µV resolution as "Output Zero Voltage" in the Test record.
6. Check that the voltage indicated by the DMM is between ±1.0 mV.
7. Disconnect the DMM from the precision 50 Ω terminator. Leave the remaining setup in place for the next test.

B. LF Attenuation Accuracy

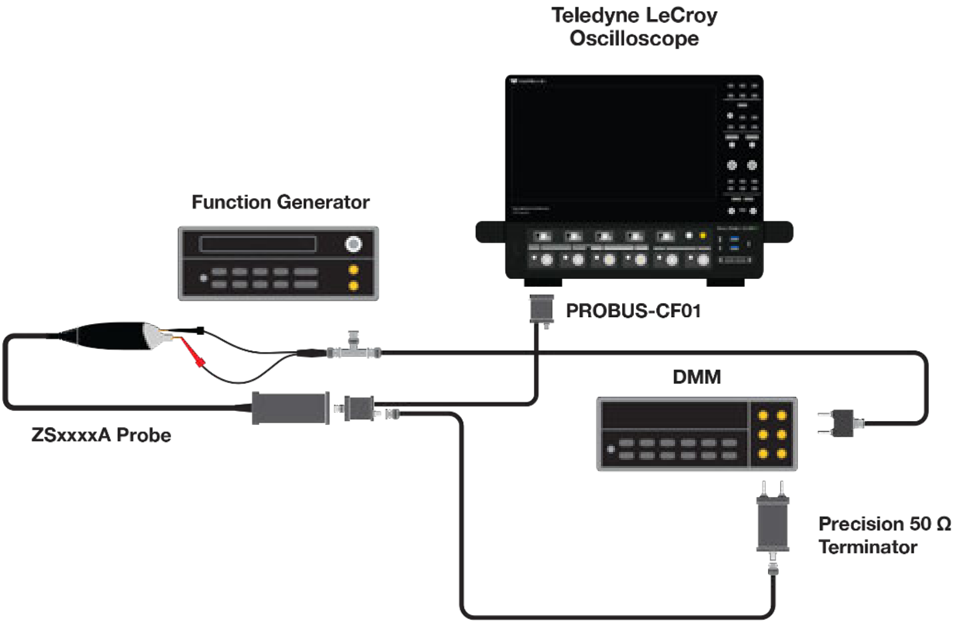


Figure 4. LF Attenuation Accuracy Setup.

1. Disconnect the BNC tee at the power supply from the dual banana plug adapter. Connect the BNC tee to the output of the function generator. (Use a 50 Ω termination if the function generator requires such a load.)
2. Carefully insert the Straight Tips (supplied in accessory kit) into the sockets of the probe head. Attach the red lead of the mini-grabber to the signal input and the black lead to the ground input of the probe head.
3. Connect the BNC tee to the output of the function generator. (Use a 50 Ω termination if the function generator requires such a load).
4. Attach a BNC cable to the unused female port of the BNC tee and connect a dual banana plug adapter to the other end of the cable and plug the dual banana plug adapter into the DMM input. Be sure the side of the banana plug adapter corresponding to the BNC shield (marked "GROUND") is connected to the LOW or COMMON input of the DMM.
5. Set the DMM to read AC volt and set the range to measure 5.0 Vrms.

6. Set the mode of the function generator to sine wave, the frequency to 70 Hz and the output amplitude to 5 Vrms ±10 mV as measured on the DMM.
7. Record the output voltage to 1 mV resolution as "Generator Output Voltage" in the Test Record. Be careful not to alter the output amplitude after the reading is recorded.
8. Divide the reading recorded in step B-7 by 10 and record the result with 100 µV resolution as "Expected Output Voltage, top range" in the Test Record.
9. Remove the banana plug adapter, connected to the function generator, from the DMM and connect the precision 50 Ω terminator to the DMM, making sure that the banana plug side marked "GROUND" is connected to the LOW or COMMON input of the DMM.
10. After the DMM reading has stabilized, record the reading to 100 µV resolution as "Measured Output Voltage, top range" in the Test Record.
11. Calculate the error by dividing the measured top range output voltage recorded in step B10 by the expected top range output voltage recorded in step B-8. Subtract 1 from this ratio and multiply by 100% to get the error in percent.
12. Record the calculated error to two decimal places (±0.xx%) as "Gain Error, top range" in the test record.
13. Verify that the error is less than ±1.0 %.
14. Disconnect the precision 50 Ω terminator from the DMM.
15. Connect the banana plug adapter connected via a BNC cable to the BNC tee at the function generator to the DMM. Verify that the side of the plug marked 'Ground' is connected to the LOW or COMMON input of the DMM.
16. Adjust the sine wave generator output amplitude to approximately 2.5 Vrms as measured on the DMM.
17. Record the reading to 1 mV resolution as "Generator Output Voltage, mid range" in the Test Record. Be careful not to alter the output amplitude after the reading is recorded.
18. Divide the reading recorded in step B-17 by 10.
19. Record the result to 100 µV resolution as "Expected Output Voltage, mid range" in the test record.

20. Remove the banana plug adapter from the DMM and connect the precision 50 Ω terminator to the DMM, making sure that the banana plug side marked "GROUND" is connected to the LOW or COMMON input of the DMM.
21. After the DMM has stabilized, record the reading to 100 µV resolution as "Measured Output Voltage, mid range" in the Test record.
22. Calculate the error by dividing the measured mid range output voltage recorded in step B-21 by the expected mid range output voltage recorded in step B-19. Subtract 1 from this ratio and multiply by 100% to get the error in percent.
23. Record the calculated error to two decimal places (±0.xx %) as "Gain Error, mid range" in the Test record.
24. Verify that the mid range gain error is less than ±1.0%

This completes the Performance Verification of the ZS A-Series probe. Complete and file the Test Record, as required to support your internal calibration procedure.

Apply suitable calibration label to the probe housing as required.

ZS______A Probe Test Record

Technician:____

Date:______________________________

Equipment Used

Equipment	Model	Serial Number	Cal Due Date
Oscilloscope			
Digital Multimeter			
Function Generator			
Probe			
Lead			
Tip			

Test Record

OUTPUT ZERO VOLTAGE

Step	Description	Results
A-4	**Output Zero** (Test limit ≤ ±1.0 mV)	mV

LF ATTENUATION ACCURACY

Step	Description	Results
B-7	Generator Output Voltage	V
B-8	Expected Output Voltage, top range	V
B-10	Measured Output Voltage, top range	V
B-12	**Gain Error**, top range (Test Limit ≤ ± 1.0%)	%
B-17	Generator Output Voltage	V
B-19	Expected Output Voltage, mid range	V
B-21	Measured Output Voltage, mid range	V
B-23	**Gain Error**, mid range (Test Limit ≤ ± 1.0%)	%

Permission is granted to photocopy this page to record the results of the Performance Verification procedure. The test limits are included in each step. Create a new record for each probe, lead, and tip combination.

Certifications

Teledyne LeCroy certifies compliance to the following standards as of the time of publication.

European Council

CE The probe bears this mark to indicate it conforms to all applicable European Council standards. Please see the EC Declaration of Conformity document shipped with your product for current certifications.

EC Declaration of Conformity - EMC

The probe meets the intent of EC Directive 2014/30/EU for Electromagnetic Compatibility.

EN IEC 61326-1:2021 EMC requirements for electrical equipment for measurement, control, and laboratory use. [1, 2]

EN IEC 61326-2-1:2021 Particular requirements for sensitive test and measurement equipment for EMC unprotected applications.

1 Emissions which exceed the levels required by this standard may occur when the instrument is connected to a test object.

2 This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

EC Declaration of Conformity – Safety

The probe meets the intent of EC Directive 2014/35/EU for Product Safety. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN IEC 61010-031:2023 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement.

End-of-Life Handling / WEEE

The probe is marked with this symbol to indicate that it complies with the applicable European Union requirements to Directives 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

The probe is subject to disposal and recycling regulations that vary by country and region. Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles.

Restriction of Hazardous Substances (RoHS)

The probe conforms to the 2011/65/EU RoHS2 Directive inclusive of any further amendments or modifications of said Directive.

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

United Kingdom

The probe bears this mark to indicate it conforms to all applicable United Kingdom standards for EMC and Safety. The design of the product has been verified to conform to the applicable harmonized standards and technical specifications and is in conformity with the relevant Union harmonization legislation below:

UK SI 2016 No. 1101 The Electrical Equipment (Safety) Regulations 2016

UK SI 2016 No. 1091 Electromagnetic Compatibility Regulations 2016

UK SI 2012 No. 3032 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

China

Unless otherwise specified, all materials and processes are compliant with the latest requirements of China RoHS. The hazardous substances contained in the product are disclosed in accordance with the standards:

SJ/T 11364-2024 Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products

GB 26572-2025 Requirements for Restricted Use of Hazardous Substances in Electrical and Electronic Products.

Australia & New Zealand

The probe complies with the EMC provision of the Australian Communication and Media Authority (ACMA) Radio Communications Act:

AS/NZS CISPR 11:2009/A1:2010, EN 55011:2009/A1:2010 Radiated and Conducted Emissions, Group 1, Class A.

Technical Support

Live Support

Registered users can contact their local Teledyne LeCroy service center at the number listed on our website.

Resources

Teledyne LeCroy publishes a free Technical Library on its website. Manuals, tutorials, application notes, white papers, and videos are available to help you get the most out of your Teledyne LeCroy products.

Returning a Product for Service

Contact your local Teledyne LeCroy service center for calibration or other service. If the product cannot be serviced on location, the service center will give you a Return Material Authorization (RMA) code and instruct you where to ship the product. All products returned to the factory must have an RMA.

Return shipments must be prepaid. Teledyne LeCroy cannot accept COD or Collect shipments. We recommend air-freighting. Insure the item you are returning for at least the replacement cost.

1. Remove all accessories from the probe.
2. Pack the probe in its case. If possible, include all tips. Do not include the manual.
3. Pack the case in its original shipping box, or an equivalent carton with adequate padding to avoid damage in transit.
4. Mark the outside of the box with the shipping address given to you by Teledyne LeCroy. Be sure to add the following:
    - ATTN:<*RMA code assigned by Teledyne LeCroy*>
    - FRAGILE
5. **If returning a probe to a different country:** contact Teledyne LeCroy Service for instructions on completing your import/export documents.

Extended warranty, calibration and upgrade plans are available for purchase. Contact your Teledyne LeCroy sales representative to purchase a service plan.

Warranty

Teledyne LeCroy warrants this oscilloscope accessory for normal use and operation within specification for a period of one year from the date of shipment. Spare parts, replacement parts and repairs are warranted for 90 days.

In exercising its warranty, Teledyne LeCroy, at its option, will either repair or replace any assembly returned within its warranty period to the Customer Service Department or an authorized service center. However, this will be done only if the product is determined by Teledyne LeCroy's examination to be defective due to workmanship or materials, and the defect is not caused by misuse, neglect, accident, abnormal conditions of operation, or damage resulting from attempted repair or modifications by a non-authorized service facility.

The customer will be responsible for the transportation and insurance charges for the return of products to the service facility. Teledyne LeCroy will return all products under warranty with transportation charges prepaid.

This warranty replaces all other warranties expressed or implied, including but not limited to any implied warranty of merchantability, fitness or adequacy for any particular purposes or use. Teledyne LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise.

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