TELEDYNE LECROY
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Operator's Manual

ZS4000

High-Impedance Active Probe

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August 2013

ZS4000 High-Impedance Active Probe Operator's Manual

923360-00 Rev A

August 2013

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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Safety Instructions

Observe generally accepted safety procedures in addition to the precautions listed here in order to maintain the probe in safe working condition. **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 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 shipped 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 excessively bend cables.

Do not operate with suspected failures. Do not use the probe if any part is damaged. Cease operation immediately and sequester 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 40° C.

Humidity: Maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40° C.

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

Introduction

The ZS4000 is a small, high-impedance active probe designed to meet today's increasing demand for measurements on a variety of test points. With low input capacitance and high input resistance, circuit loading is minimized.

The ZS4000 can be used with Teledyne LeCroy's WaveSurfer, WaveRunner, WavePro, and WaveMaster oscilloscopes with firmware version 7.1.1.2 or later. With the ProBus interface, the probe becomes an integral part of the oscilloscope, able to be 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.

See the product page at **teledynelecroy.com** for probe specifications.

Key Benefits	Features
• High frequency performance • Low input capacitance • Wide dynamic range • ProBus interface	• Small, low mass probe head is designed for ease of use and high performance. • 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. • Ground socket accepts several different ground leads to provide a short ground path for high frequency performance.

Standard Accessories

The ZS4000 probe is shipped with the following standard accessories:

Standard Accessory	Shipped QTY	Replacement Part Number
Straight Tip	3	PK-ZS-001
Pogo Tip	3	PK-ZS-017
Bent Tip	1	PACC-PT003
IC Tip	1	PACC-PT005
Right Angle Socket	1	PK-ZS-006
2.54mm Square Pin Adaptor	1	PK-ZS-018
Offset Ground	2	PK-ZS-016
Ground Blade, Narrow	1	PK-ZS-021
Copper Tape Pad	2	PK-ZS-009
Ground Blade, Wide	2	PK-ZS-015
Pogo Ground Lead	1	PK-ZS-020
2.54 mm PCB Adaptor	5	PK-ZS-024
Straight Pin Lead – Short	1	PK-ZS-022
Straight Pin Lead – Long	1	PK-ZS-023
Right Angle Lead – Short	1	PACC-LD-003
Right Angle Lead – Long	1	PACC-LD-004
Y Lead Adaptor	1	PK-ZS-014
Channel ID Clips (set of 4)	1	PK-ZS-010
Micro-Grabbers (1 each)	2	PK-ZS-007R / PK-ZS-007B
QFPIC Clips (set of 2)	1	PK-ZS-025
Freehand Probe Holder	1	PK-ZS-019
Instruction Manual	1	N/A*
Certificate of Calibration	1	

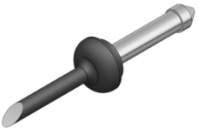
* PDF copy of this manual available free at teledynelecroy.com.

Tips

Straight Tip

The straight tip is rugged and designed for general probing. Fits in either probe socket.

IC Lead Tip

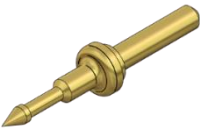


The IC Lead Tip is covered in insulation on all sides (except for a small edge), this tip was designed to prevent shorting neighboring IC leads. The gold part of the tip is not insulated and should touch the IC lead to be tested. It is one-size-fits-all and will work with any IC lead pitch. Fits in either probe socket.

Bent Tip

The Bent Tip is made out of titanium, this tip is ideal for situations that require you to hold the probe parallel to the circuit board under test. Also gives you more control when holding the probe like a pencil. Fits in either probe socket.

Pogo Tip



The pogo tip provides z-axis compliance. The tip can fit into a socket or onto an IC leg.

Right-Angle Socket

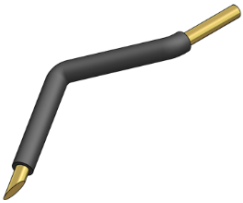
The Right Angle Socket allows the probe to be connected to a pin on the board under test, while keeping the probe parallel to the board.

Grounds

2.54 mm Square Pin Adaptor

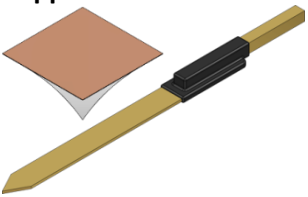
The 2.54 mm square pin adaptor fits into the ground socket of the ZS4000 probe for easy connection to standard 2.54 mm square pin spacing on a circuit board.

Offset Ground



The Offset Ground is designed to be attached to either socket of the probe head. The Offset Ground connects to the ground socket and wraps around the probe head, making it possible to probe a signal and ground that are extremely close together. The short length provides the highest quality grounding for high frequency applications.

Narrow Ground Blade and Copper Pad



The Narrow Ground Blade and Copper Pad together are the best grounding solution for probing an IC. The Narrow Ground Blade is designed to provide a short, low inductance ground path. The Copper Pad is adhesive backed to stick to the top of an IC, and can then be soldered to the IC ground.

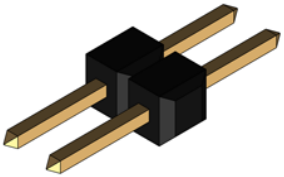
Wide Ground Blade

The Wide Ground Blade is ideal for use when the best quality ground is needed. The wide blade offers the minimal inductance compared to the narrow ground blade.

Pogo Ground Lead

The Pogo Ground Lead allows flexibility for bending and positioning the ground lead onto hard-to -reach test points, while maintaining z-axis compliance.

2.54 mm PCB Adaptor



The 2.54 mm PCB adaptor fits into the tip socket of the ZS4000 probe for easy connection to standard 2.54 mm square pin spacing on a circuit board.

Leads

While longer leads provide greater flexibility when connecting the probe to a circuit, the added inductance may degrade the fidelity of high frequency signals.

Short and Long Straight Pin Lead

These leads have a socket on one end and a square pin on the other to connect to the input or ground socket of the probe body, and may be used for general purpose probing.

Short and Long Right Angle Pin Lead

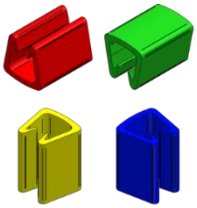
These leads have a socket on one end with a right angle and a square pin on the other to connect to the input or ground socket of the probe body, and may be used for general purpose probing.

Y Lead

This lead is used for both ground and input lead simultaneously. It has two sockets on one end and two square pins on the other and may be used for general purpose probing.

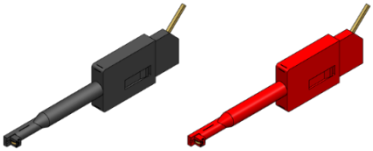
Clips and Grabbers

Channel ID Clips



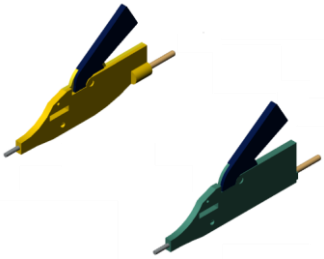
The Channel ID Clips can be attached to the probe cable to quickly identify to which channel the probe is currently connected: CH1 yellow, CH2 red, CH3 green, and CH4 blue.

Micro-Grabbers



The micro-grabbers are ideal for connecting to small IC legs or pins very tightly spaced.

QFPIC Clips



The QFPIC clips are ideal for connecting to the legs or pins of Quad Flat Pack ICs.

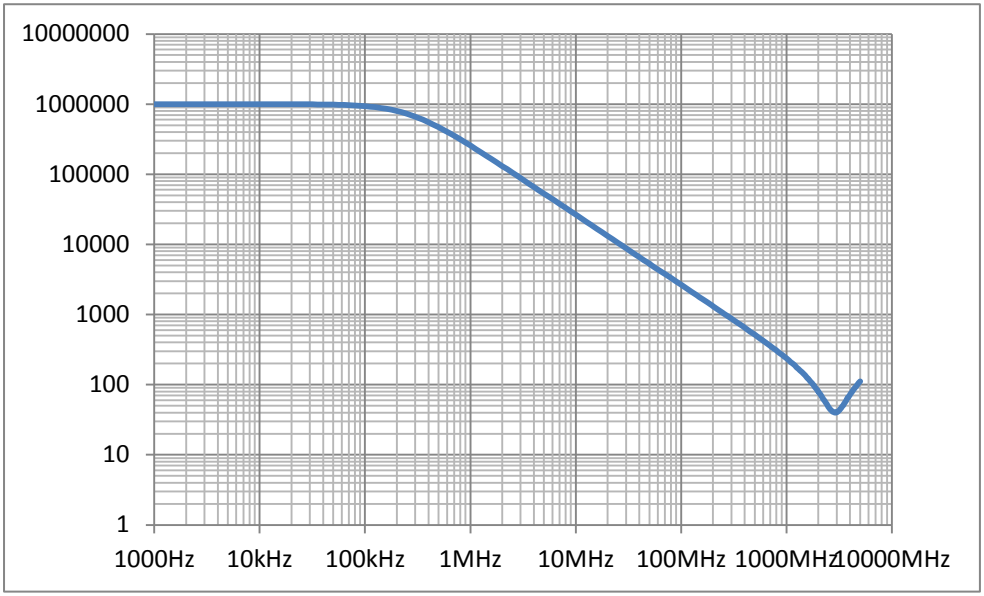
Probe Holder

Freehand Probe Holder

The FreeHand lets you focus on the oscilloscope screen instead of on maintaining contact to multiple test points. It allows you to concentrate on what is really important – the waveform.

It is designed to keep most of the weight on the probe tip and will prevent lost contact when a bump to the table shakes the circuit under test.

ZS4000 Impedance Chart



Probe Operation

Handling the Probe

The ZS4000 probe is a precision test instrument. 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.

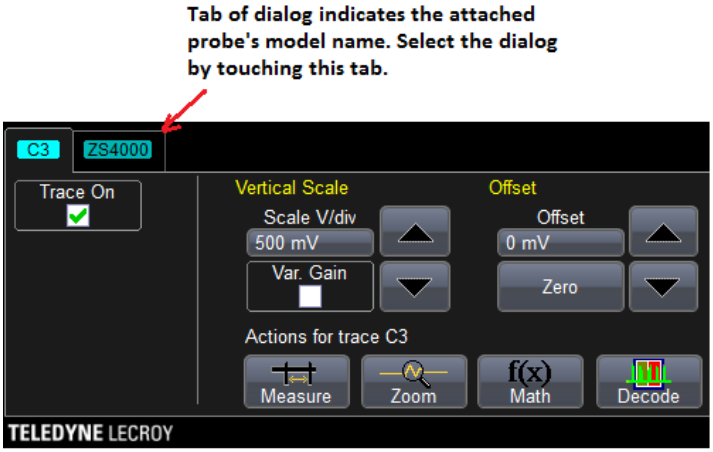
ESD Sensitive: The tips of the probes are sensitive to Electrostatic Discharge (ESD). Avoid causing damage to the probe by always following anti-static procedures (wear wrist strap, etc.) when using or handling the probe.

Connecting the Probe to an Oscilloscope

ZS4000 probes are designed for use with Teledyne LeCroy's WaveSurfer, WaveRunner, WavePro, and WaveMaster 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.

Operation with a Teledyne LeCroy Oscilloscope

When the ZS4000 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 user interface:

- 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.

Refer to your oscilloscope's manual for specific operation instructions.

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.

Using one of the available accessories makes the ZS2500 probe with its small profile and low mass head ideally suited for applications in dense circuitry.

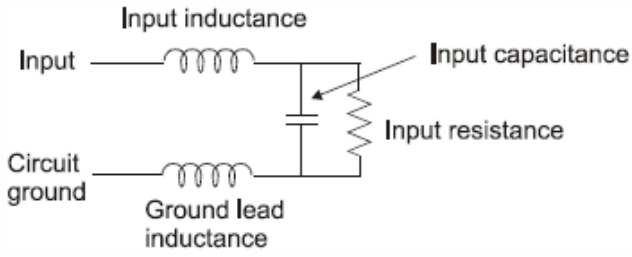
High Frequency Measurements

Probe Input Loading

When you touch a probe to the circuit under test, the probe will affect your measurement because of the probe's input impedance 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.



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 series L-C network. The impedance of a series LC network drops dramatically at its resonant frequency. This is the cause of the "ring" we often see 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 a series LC circuit can be raised by decreasing the inductance, 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 as well as the shortest possible 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 ground lead and input lead available makes probing signals on the package easier and makes for the shortest lead length for the best signal fidelity. To illustrate how dramatic this effect is, we will work a simple example. Assuming an input capacitance of 0.6 pF and a total lead length (input and ground) of 2 inches (inductance of ≈ 25 nH/inch) such a setup may cause ringing with a resonant frequency (f0) of:

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

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 a waveform to be measured can be without causing ringing on a probe like this, divide the BW (ringing frequency) of the probe into 0.35:

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

Any input signal with a rise time faster than 380 ps can cause ringing.

Capacitive Loading

Capacitive loading is usually the most troublesome of the three loading effects. It can affect the rise time, bandwidth and delay time measurements. At higher frequencies the 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:

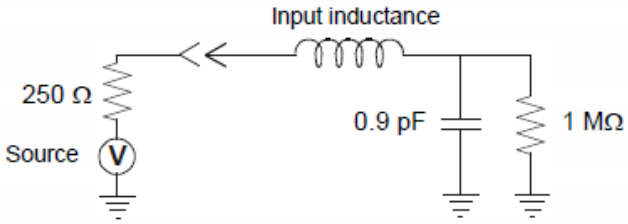
$$t_{rise} = 2.2 \times C_{total} \times R_{total}$$

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

For a setup where Ct = 0.6 pF and a source resistance is 250 Ω, the measured rise time will be 330 ps, which will correspond to a bandwidth of 909 MHz, assuming no inductive loads.

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

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



Probe input equivalent circuit

To illustrate the effect of capacitive loading at higher frequencies:

At a frequency of 750 MHz the reactance of the 0.6 pF capacitance is 354 Ω, and at 1.0 GHz the reactance has been lowered to 265 Ω.

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's input impedance and Z_{source} is the source impedance.

For example: At 750 MHz, where the probe input impedance has reduced to 354 Ω, and a source resistance of 250 Ω the probe output amplitude is reduced to:

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

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.

Service Strategy

The ZS4000 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.

Returning a Probe for Service

Contact your local Teledyne LeCroy office to return a probe for service or repair; your representative will give you a **Return Material Authorization (RMA)** number and tell you where to return the product.

All returned products should be identified by the RMA, and both model and serial number. Provide your name and contact number, and a description of the defect or failure (if possible).

NOTE: It is important that the RMA be clearly shown on the outside of the shipping package for prompt redirection to the appropriate department.

Return shipment should be prepaid. **Teledyne LeCroy cannot accept COD or Collect Return shipments.** We recommend air-freighting.

Follow these steps for a smooth product return.

1. Contact your local Teledyne Lecroy sales or service representative to obtain a Return Material Authorization.
2. Remove all accessories from the probe. Do not include the manual.
3. Pack the probe in its case, surrounded by the original packing material (or equivalent) and box.
4. Label the case with a tag containing
   - The RMA
   - Name and address of the owner
   - Probe model and serial number
   - Description of failure
5. Package the probe case in a cardboard shipping box with adequate padding to avoid damage in transit.
6. Mark the outside of the box with the shipping address given to you by the Teledyne Lecroy representative; be sure to add the following:
   - ATTN: <RMA assigned by the Teledyne Lecroy representative>
   - FRAGILE
7. Insure the item for the replacement cost of the probe.
8. **If returning a probe to a different country, also**:
   - Mark shipments returned for service as a "Return of US manufactured goods for warranty repair/recalibration."
   - If there is a cost involved in the service, put the service cost in the value column and the replacement value of the probe in the body of the invoice marked "For insurance purposes only."
   - Be very specific as to the reason for shipment. Duties may have to be paid on the value of the service.

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** table (page 3).

Performance Verification

This procedure can be used to verify the warranted characteristics of the ZS4000 High Impedance Active Probe.

The recommended calibration interval for ZS series probes is one year. The complete performance verification procedure should be performed as the first step of annual calibration. Test results can be recorded on a photocopy of the Test Record provided in Appendix A at the end of the manual.

Performance verification can be completed without removing the probe covers or exposing the user to hazardous voltages. Adjustment should only be attempted if a parameter measured in the Performance Verification Procedure is outside the specification limits.

NOTE: Adjustment should only be performed by qualified personnel

This procedure tests the following specifications:

- Output Zero Voltage
- LF Attenuation Accuracy

Required Test Equipment

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

Description	Minimum Requirement	Test Equipment Examples
Digital Oscilloscope	ProBus Interface; 12-bit vertical resolution	Teledyne LeCroy HDO6000 or HRO 6xZi series
Function Generator	Sine Wave output amplitude adjustable to 14.14 Vp-p (5 Vrms) into 1 MΩ at 70 Hz	Agilent Technologies 33120A Stanford Research DS340
SMA Coaxial Cable	Male to Male, 50 Ω, 24" Cable	Pomona 4846-C-24 Pomona 4846-X-24 Pasternack PE3385LF-24
Adaptor SMA to BNC (qty 2)	SMA (f) to BNC (m)	Pomona 4289 Pasternack PE9073
Calibration Fixture	50 Ω thru line with square pins	Teledyne LeCroy PCF200

Preliminary Procedure

1. Connect the function generator to channel 1 of the oscilloscope through the calibration fixture. Function Generator – BNC/SMA – SMA cable – PCF200 – SMA/BNC – Scope C1
2. Connect the ZS4000 to channel 2 of the oscilloscope.
3. Turn on the oscilloscope and function generator and allow them to warm up for the manufacturer's recommended interval
4. While the instruments are reaching operating temperature, make a photocopy of the Performance Verification Test Record (located in Appendix A), and fill in the necessary data.
5. Select the channel to which the probe is connected. Set the oscilloscope scale factor to 200 mV/div.
6. Disconnect the Probe from the oscilloscope. Verify that the scale factor changes from 200 mV/div to 20 mV/div.
7. Reconnect the Probe to the oscilloscope.

The warranted characteristics of the probe are valid at any temperature within the Environmental Characteristics listed in the Specifications. 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 instruments used in his procedure.

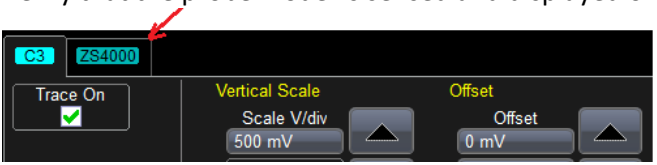
NOTE: The correct operation of the ZS4000 controls requires software version 7.1.1.2 or higher. The software version in the test oscilloscope can be verified by selecting Utilities > Utilities Setup > Status tab.

Contact your local Teledyne LeCroy representative or visit **teledynelecroy.com** if the software in your oscilloscope requires updating.

Functional Check

The functional check verifies the basic operation of the probe functions. It is recommended that the Functional Check be performed prior to the Performance Verification Procedure.

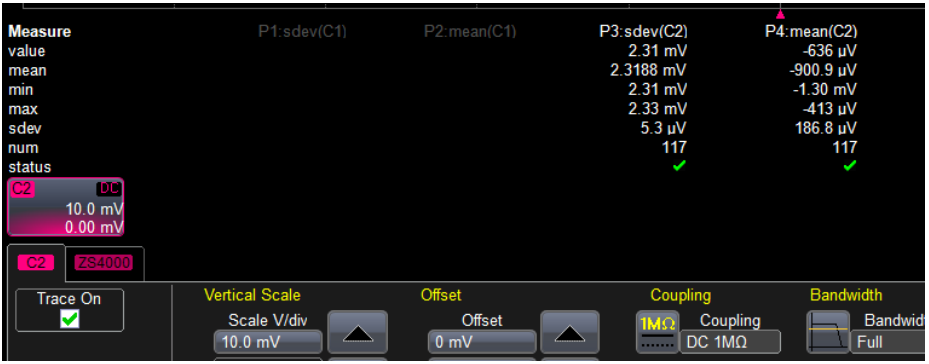
1. Return to the factory default settings:
   - Choose File > Recall Setup from the menu bar.
   - Touch the Recall Default button.
2. Touch the C2 trace label to open the C2 Channel dialog.
3. Verify that the probe model is sensed and displayed on the Probe tab.



Verification Procedure

A. Output Zero Voltage

1. Set the scope timebase to 5 ms/div.
2. On the oscilloscope, choose Measure > Measure Setup from the menu bar. Check the box to enable measurement Statistics. Enable a measurement of the mean(C2).
3. Set the C2 vertical sensitivity to 10 mV/div.
4. Record the mean value of the mean(C2) as "Output Zero Voltage" on the test record.
5. Check that the voltage recorded is between ±3 mV.

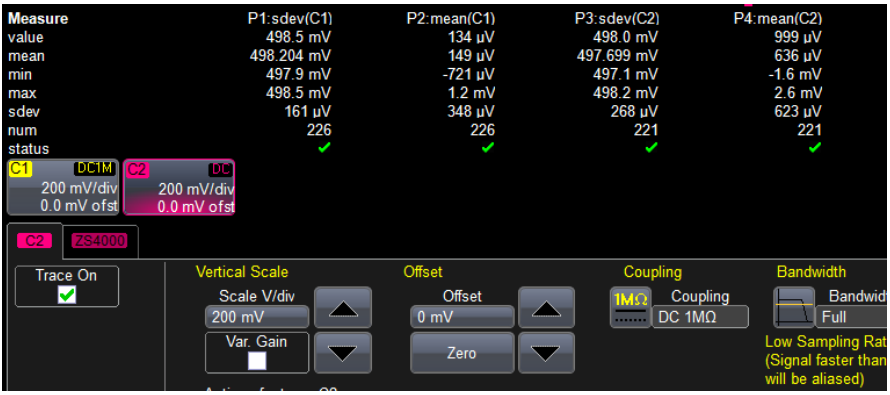


B. LF Attenuation Accuracy

1. Set the oscilloscope channel 1 to 1 MΩ input coupling. Set the vertical scale on both C1 and C2 to 200 mV/div.
2. Set the function generator to Hi Z output termination and set the output to a 100 Hz sine wave with 500 mVrms amplitude.
3. Turn on a measurement of the sdev(C1) and sdev(C2). The sdev function measures the rms voltage of a waveform.
4. Record the mean of the sdev(C1) on the test record as “Generator Output Voltage, mid range.”
5. Record the mean of the sdev(C2) on the test record as “Measured Output Voltage, mid range.”
6. Calculate the accuracy by taking (Measured Output – Generator Output)/(Generator Output). Record this value as a percentage on the test record as “Gain Error, mid range.”
7. Verify that the accuracy is < ±2.0%.
8. Set the function generator amplitude to 5 Vrms.
9. Set the vertical scale on both C1 and C2 to 2 V/div.
10. Record the mean of the sdev(C1) on the test record as “Generator Output Voltage, top range.”
11. Record the mean of the sdev(C2) on the test record as “Measured Output Voltage, top range.”

12. Calculate the accuracy by taking (Measured Output – Generator Output)/(Generator Output). Record this value as a percentage on the test record as "Gain Error, top range."

13. Verify that the accuracy is < ±2.0%.



This completes the Performance Verification of the ZS4000. Complete and file the Test Record, as required to support your internal calibration procedure.

Apply suitable calibration label to the probe housing as required.

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.

Performance Verification Test Record

Permission is granted to photocopy the following page and use it to record the results of measurements made during the performance verification.

Each table corresponds to a tested parameter. Each row corresponds to a step in the procedure that requires the recording of data. File the completed record as required by applicable internal quality procedures.

NOTE: Use a new Test Record for each tested probe, probe tip module, and lead assembly.

Items Tested

Item	Serial Number	Date	Technician
ZS4000 Probe			

Equipment Used

Instrument	Model	Serial Number	Calibration Due Date
Oscilloscope			
Function Generator			

Test Record

OUTPUT ZERO VOLTAGE

Step	Description	Intermediate Data
A-4	**Output Zero** (Test limit ≤ ±3 mV)	

LF ATTENUATION ACCURACY

Step	Description	Intermediate Data
B-4	Generator Output Voltage, mid range	V
B-5	Measured Output Voltage, mid range	V
B-6	**Gain Error**, mid range (Test Limit ≤ ± 2.0%)	%
B-10	Generator Output Voltage, top range	V
B-11	Measured Output Voltage, top range	V
B-12	**Gain Error**, top range (Test Limit ≤ ± 2.0%)	%

Reference Material

Specifications

Please refer to the product page at **teledynelecroy.com** for detailed specification information.

Certifications

This section contains the instrument's Electromagnetic Compatibility (EMC), Safety and Environmental certifications.

EMC Compliance

EC Declaration of Conformity - EMC

The probe meets intent of EC Directive 2004/108/EC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1:2006, EN 61326-2-1:2006 EMC requirements for electrical equipment for measurement, control, and laboratory use.

European Contact:

Teledyne LeCroy Europe GmbH
Waldhofer Str 104
D-69123 Heidelberg
Germany
Tel: (49) 6221 82700

Australia & New Zealand Declaration of Conformity—EMC

Probe complies with the EMC provision of the Radio Communications Act per the following standards, in accordance with requirements imposed by Australian Communication and Media Authority (ACMA):

CISPR 11:2003 Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN61326-1:2006 and EN61326-2-1:2006.

Australia / New Zealand Contacts:

Vicom Australia Ltd.
1064 Centre Road
Oakleigh, South Victoria 3167
Australia

Vicom New Zealand Ltd.
60 Grafton Road
Auckland
New Zealand

Safety Compliance

EC Declaration of Conformity – Low Voltage

The probe meets intent of EC Directive 2006/95/EC for Product Safety. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements

EN 61010-031/A1:2008 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test.

Environmental Compliance

End-Of-Life Handling

The probe is marked with this symbol to indicate that it complies with the applicable European Union requirements to Directives 2002/96/EC and 2006/66/EC on Waste Electrical and Electronic Equipment (WEEE) and Batteries.

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. For more information about proper disposal and recycling of your Teledyne LeCroy product, please visit teledynelecroy.com/recycle.

Restriction of Hazardous Substances (RoHS)

The product and its accessories conform to the 2011/65/EU RoHS2 Directive, as it has been classified as Industrial Monitoring and Control Equipment (per Article 3, Paragraph 24) and is exempt from RoHS compliance until 22 July 2017 (per Article 4, Paragraph 3).

Contact Teledyne LeCroy

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