

ZLIP Series Isolated Probe

User Manual



1. INTRODUCTION

The ZLIP series isolated probe is a high-precision voltage probe based on advanced ZLPROBE's proprietary isolation technology. Engineered to provide galvanic isolation between input and output signals, it eliminates ground loop interference and high-voltage crosstalk, ensuring measurement accuracy and operational safety. With an ultra-high common-mode rejection ratio (CMRR), the ZLIP series is ideal for testing 3rd-gen semiconductor devices such as SiC and GaN, effectively mitigating common-mode interference in drive signal measurements.

Advantages

* High CMRR

Up to 140dB at DC, 90dB at 100MHz; Common-mode interference is limited to 50 mV during 1700V SiC system test

* Low Noise Floor

Delivers 1.4 mVpp at 0.1x setting; with internal 50Ω impedance setting, precisely reveal current signal via coaxial shunts or sense resistors, it's the benchmark for power semiconductor switching loss analysis.

* Wide Differential Voltage Range

3 voltage ranges with native input from 1mV to 5V, extending wider from 10mV to 2500V with 10x & 500x attenuators, providing versatility without requiring extra attenuators

* ±10KVpk Common-Mode Voltage

Up to 10KVpk isolation for both ends, fully covering most high-voltage test environments. This eliminates ground loops, ensures true signal fidelity, and protects acquisition systems from high-voltage hazards.

* Automatic Attenuation Detection

Automatically identifies the attenuator type and scaling factor. Users simply connect the probe and adjust the oscilloscope gain according to the on-screen indicator—no manual calculations required.

* Universal BNC Interface, compatible with all brands of oscilloscopes

* Powers on instantly with no warm-up required

Applications

- > Half/Full-Bridge Measurement (SiC/GaN, FET/IGBT)
- > Switching Power Supply Design
- > Motor Drive Design
- > Inverter Design
- > Electric Vehicles (OBC, BMS, Motor Control...)
- > Photovoltaics & Energy Storage Testing
- > Floating Ground Circuit Measurements

2. Specifications

Model	ZLIP200	ZLIP500
Bandwidth(-3dB)	200MHz	500MHz
Rise Time	≤1.75ns	≤700ps
Accuracy	±1%	±1%
Nosie	0.8mVrms	0.97mVrms
Output impedance	1MΩ	50MΩ
Common mode voltage	10kVpk	10kVpk
Delay time	16.3ns	16.3ns

Sensor front end	Differential input voltage range	Single-ended input impedance
ZLIP-LV-200 (¹ Standard)	1X:±1V, 10X:±10V, 50X:±50V	10M 10pF
ZLIP-LV-500 (² Standard)	2X:±1V, 20X:±10V, 100X:±50V	10M 10pF
ZLIP-HV-200 (Optional)	50X:±50V, 500X:±500V, 2500X:±2500V	99.2M 5pF
ZLIP-HV-500 (Optional)	100X:±50V, 1000X:±500V, 5000X:±2500V	99.2M 5pF

1. Standard for ZLIP200

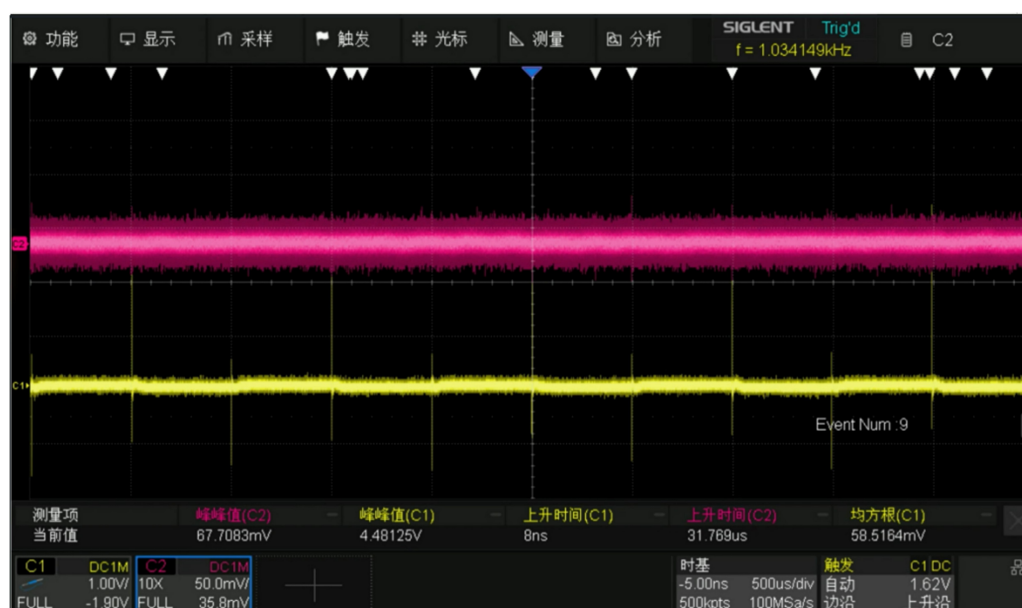
2. Standard for ZLIP500

CMRR:

DC	1MHz	100MHz	200MHz	500MHz
140dB	100dB	90dB	80dB	70dB

Max. Differential Withstand Voltage:

Sensor front end	Vpk (DC + AC peak value)
ZLIP-LV	600Vpp
ZLIP-HV	3KVpp



Common-Mode Test Comparison: C1: ZLHV2150 Differential Probe, C2: ZLIP200 Isolated Probe

3. Mechanical Specifications

Power Cord Length	150 cm
Attenuator Length	50 cm (made-to-order)
BNC Output Cable	100 cm
Probe Body Dimensions	121 * 37 * 20 mm
Display Screen Dimensions	135 * 64 * 26 mm
Probe Weight	240g

4. Environmental

Operating Temperature	0°C ~ 50°C
Storage Temperature	-30°C ~ 70°C
Operating Humidity	≤85%RH
Storage Humidity	≤90%RH
Operating Altitude	3000m

5. Operating Instructions

Pre-Installation Checklist:

- * Verify the model matches the measurement type and range to prevent inaccurate readings or equipment damage;
- * Ensure the installation environment meets specifications; avoid extreme heat, humidity, strong magnetic fields, or corrosive gases;
- * Confirm no high voltage or current is present during installation and wiring to ensure operator safety.

Operating Procedure:

- * Select the appropriate method. For direct signal access, use the probe tips and ground springs. For fixed installation, solder the fixture in place and insert the probe tips into the fixture.
- * Connect the input and output cables. Link the probe to the oscilloscope or other measurement instruments.
- * Connect the power adapter. Select the correct sensor front-end based on the measured voltage.
- * Configure parameters on the probe's display and set the corresponding attenuation ratio on the oscilloscope. Adjust the oscilloscope sensitivity according to the input voltage.
- * Attach the fixture if needed and connect to the Device Under Test (DUT). During testing, keep the probe body away from high-voltage pulse circuits to minimize interference.
- * After testing, turn off the DUT power first, then the probe. Disconnect the inputs from the DUT, followed by the BNC output from the oscilloscope.

Display Operations:

Scroll up and down the side dial to navigate and select settings (AC/DC coupling, 1 M Ω /50 Ω impedance, calibration, attenuation ratio). Short press to confirm the selection.

Error Code Reference:

Code	Fault Type	Recommended Action
A1、A3	Temperature too low	Operate in environment > 0°C
A2、A4	Temperature too high	Check ventilation/heat dissipation
B1、B2	Signal Overload	Check if input signal exceeds range
B3、B4、B5、B6	Power Supply Error	Replace the power adapter

FAQ

Q: When should I select DC?	A: Directly conducts DC and AC signals without signal obstruction.
Q: When should I select AC?	A: By using built-in capacitors to block DC components, only AC signals are allowed to pass through.
Q: When should I select the 50Ω impedance?	A: HF ($\geq 100\text{MHz}$), RF/microwave signals, 50Ω system
Q: When should I select the 1 MΩ impedance?	A: LF/MF ($\leq 100\text{MHz}$), high-impedance circuits, general testing
Q: When should I use the fixed fixture?	A: Testing with high requirements for common mode
Q: When should I use the ground spring?	A: Testing with low requirements for common mode
Q: When should I use the ground clip?	A: Testing without high frequency common mode

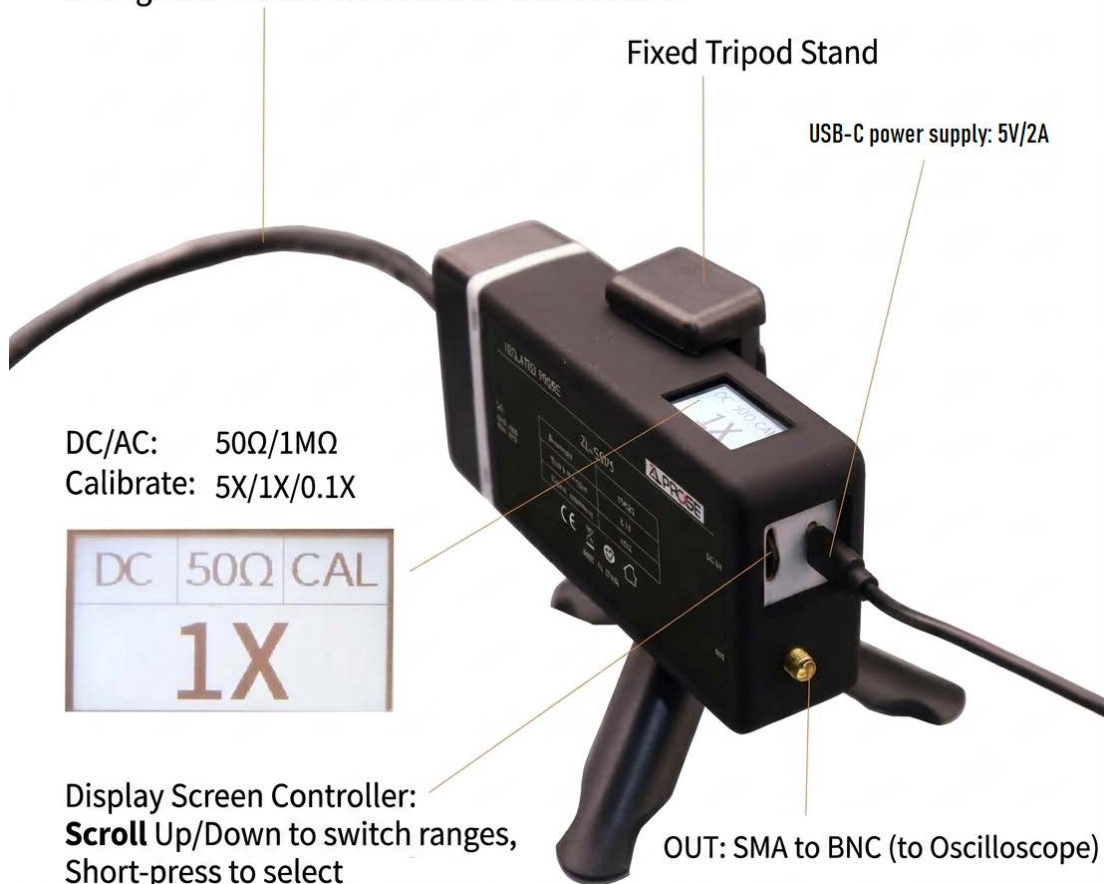
6. Usage Precautions

- ▷ Do not exceed the probe's rated range; otherwise, internal circuits may be damaged, measurement accuracy compromised, or safety hazards caused.
To measure signals beyond the current range, replace with a probe of appropriate range or use suitable signal conditioning devices.
- ▷ Before installation, wiring, or maintenance, always disconnect the relevant power supply and signal source.
Never perform live operations—ensure operator safety.
- ▷ All input, output, and power connections must be secure and correctly polarized. Avoid loose contacts, short circuits, or reversed polarity, which may damage the probe or downstream equipment.
- ▷ Do not use the probe in harsh environments such as high temperature, high humidity, strong magnetic fields, severe vibration, or corrosive atmospheres. If such use is unavoidable, implement protective measures (e.g., shielding, vibration dampening).
- ▷ The probe contains precision isolation components. Avoid severe impacts or drops to prevent internal damage.
- ▷ Do not disassemble the probe housing. Internal circuitry is complex; unauthorized disassembly may cause damage and void the warranty. In case of malfunction, contact qualified service personnel or the manufacturer.
- ▷ If abnormal heating, unusual odors, or indicator irregularities occur during operation, immediately cut off power, cease use, and troubleshoot or contact the manufacturer for repair.
- ▷ When not in use for extended periods, remove the probe from its installation site and store it in a dry, ventilated, corrosion-free environment to prevent performance degradation from prolonged exposure to adverse conditions.

7. Product and Accessories Description

- Main body description

Sensor Front-end: 50Ω/1MΩ, Max: ±5V
Changeable front-ends based on test scenario



- Accessories

Model	ZLIP200	ZLIP500
IP-LV front sensor (standard)	ZLIP-LV-200	ZLIP-LV-500
IP-HV front sensor (optional)	ZLIP-HV-200	ZLIP-HV-500
SMA-BNC (standard)	Signal output cable	
TYPE-C cable (standard)	AM-BM, 1.5m	
Tripod (standard)	To support the probe	
Accessories (standard)	Fixture, ground spring, ground clamp	

8. Warranty

1. This product is covered by a free warranty service for one (1) year from the date of purchase, excluding damage caused by misuse, mishandling, or force majeure events.
2. During the warranty period, if a non human induced fault occurs, the user may contact the manufacturer or an authorized dealer with proof of purchase to receive free repair or replacement services.
3. The following conditions are not covered under warranty:
 - Damage due to misuse (dropping, impact, incorrect wiring, over range operation, etc.);
 - Damage caused by force majeure events (earthquake, fire, lightning, flood, etc.);
 - Damage resulting from unauthorized disassembly or modification of the probe;
 - Products beyond the warranty period;
 - Damage arising from failure to follow the instructions in the product manual for use and maintenance.
4. After the warranty period expires, if the product malfunctions, the user may contact the manufacturer for repair; the manufacturer will charge applicable service and parts fees.

* ZLPROBE reserves the right to interpret the contents of this manual as well as to make changes without prior notice.

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